

What is the Avatar?

*Fiction and Embodiment in Avatar-Based Singleplayer
Computer Games*

Rune Klevjer



Dissertation for the degree doctor rerum politicarum (dr.polit.)

University of Bergen

Submitted 14 July 2006

Department of Information Science and Media Studies
University of Bergen

Supervisor: Jostein Gripsrud

Contents

Acknowledgments	7
Chapter 1: Introduction	9
Chapter 2: Simulations, games and make-believe	16
Procedural representation	16
The worlds of play.....	17
Contest versus mimesis	19
World as the diegetic.....	21
Mimesis as Make-Believe	23
Fictional subjectivity: fiction as simulation	25
Work worlds.....	27
A prop-centred approach.....	29
Recentring	30
The paradox of play.....	33
Chapter 3: Computer game fiction	39
First-person experience	39
Cybertext	43
Ludology	47
Textplay.....	49
Half-Real	51
A critical approach to the rules perspective	55
The cursor theory	61
The immersive fallacy?.....	65
Avatars: the 3-layer model	68
The role of the computer	71
Chapter 4: The model and the avatar	74
Mental and perceptual simulations.....	74
The prop as model.....	76
Instrumental make-believe	78
Gestural simulations.....	81
Fiction versus simulation?.....	82
The avatar.....	87

The avatar and the body	89
Chapter 5: The simulator.....	97
Second-order simulations	99
The loop of communion	101
The system simulator	102
The ‘world’ of the game.....	104
3 principles of realistic agency.....	105
Environments versus automatons.....	111
Computer game worldness	114
Chapter 6: The computer game avatar	116
Character	116
Tangible (information) spaces.....	117
Miniature worlds	120
The screen-based avatar	124
The instrument.....	126
The avatar revisited	130
Four genres of the singleplayer computer game	131
The gameworld and the contest.....	136
Avatarial learning and role playing.....	140
Chapter 7: 2D/3D	144
The extended avatar	144
The subjective avatar.....	146
The avatarial configuration	152
Relative independence.....	155
3D Sound space.....	158
Continuous interfaces.....	160
Mouselook.....	164
Rumble	165
The 3D avatar defined.....	167
Self-contained fictions.....	169
Chapter 8: The avatarial camera.....	171
The simulated camera.....	172
Synthetic realism	173
Immediacy and hypermediacy	176

Virtual mobility and navigable space.....	178
Navigable space as interface	181
Realistic embodiment.....	185
Concretised abstraction versus cinematic naturalism.....	188
Functional realism.....	191
The paradigm of Virtual Reality	193
Virtual Reality versus the avatar	195
Panoramic versus vehicular vision.....	199
Negative agency	204
Vertiginous machines.....	207
Steadicam	209
The filmic camera.....	212
Cinematic space as gameworld	214
Conclusion.....	216
Bibliography.....	219

Acknowledgments

I am grateful to a number of people for their support and help during the work with this thesis. I wish to thank my supervisor Jostein Gripsrud for his guidance and support throughout the process. I am also grateful to the Faculty of Social Sciences and the Department of Information Science and Media Studies at the University of Bergen for giving me the opportunity to write the thesis, and to all the friends and colleagues at the department who have contributed to the project in various ways. I would like to thank Graeme Kirkpatrick, who read through the whole manuscript, and whose comments and suggestions have been particularly helpful during the final stages of the writing.

During 2002 – 2004 I enjoyed the hospitality and support of School of Cultural Studies, University of the West of England, where I stayed as a visiting scholar. The discussions and ideas in the Play Research Group meetings contributed significantly to the shaping of this project. I am particularly grateful to Jon Dovey for all his support and guidance, and for invaluable feedback on various drafts and papers. I also want to thank Helen Kennedy and Seth Giddings, who have contributed with helpful ideas and suggestions along the way.

And last, but not least, I am indebted to my friend and partner Eli Lea for her continuing support, enthusiasm and generosity.

Chapter 1: Introduction

In this study I will suggest a theory of the avatar in singleplayer computer games¹, and discuss how avatar-based games are different from other kinds of computer games as well as from other kinds of media. I believe that a closer study of the role of the avatar will cast light on some of the central aesthetic parameters that structure both how we play and why we play computer games. This knowledge will also have potential implications for our understanding of other formats and genres in the wider domain of digital media and culture.

The notion of the avatar that I am suggesting is not concerned with playable characters as a vehicle of communication and self-expression, but addresses how players engage with singleplayer gameworlds through fictional and vicarious embodiment. This approach connects computer game avatars to a broader category of avatars, from radio-controlled model planes to Lego men and paper dolls. In computer games, the vicarious body can take different forms; a character, a racing car, a rolling ball, a camera, a gun.

The emphasis on the role of the avatar also reflects a theoretical concern with the notion of embodiment and the notion of fictionality in computer games. My general claim is that the concepts of 'fiction' and 'representation', as these are typically being employed in game research and analysis, should be critically discussed and revised. Game studies needs a new concept of fiction, which can better account for the relationship between play and simulation, and which is more sensitive to the distinctive characteristics of computer-simulated and screen-projected gaming environments. This re-orientation needs to question the assumption that 'fiction' is synonymous with recounted (or diegetic) fiction, and it needs to be able to address the different mechanisms of embodied interaction and corporealized pleasure that are involved in computer game play. My analysis of avatar-based play in computer games is meant as a step in this direction².

¹ While it is common to differentiate between 'video games' (console games) and 'computer games' (PC or Mac), the two terms are also sometimes used interchangeably. Used as a general term covering games on all platforms, I have chosen in this thesis to use 'computer game' rather than the more widespread term 'video game'. As I will be arguing in chapters 3 and 5, the central element that distinguishes computer games from other types of games is the computer, not the ('video') screen.

² My approach here differs from, and partly conflicts with, my earlier 'In Defence of Cutscenes' (Klevjer 2002), which was, broadly speaking, an attempt to analyse narration in games from the point of view of communication and rhetoric. While this effort was not entirely unproductive, it suffers from a lack of theoretical tools to describe the basic operations of fiction in simulation-based game environments. Also, my discussion pays little attention

The computer game avatar, as I will define it in this thesis, exploits the digital computer's unique capacity for realistic simulation, and acts as a mediator of the player's embodied interaction with the gameworld. The relationship between the player and the avatar is a prosthetic relationship; through a process of learning and habituation, the avatar becomes an extension of the player's own body. Via the interface of screen, speakers and controllers, the player incorporates the computer game avatar as second nature, and the avatar disciplines the player's body.

However, the computer game avatar is not to be understood as a tool or a mouse cursor; it gives the player a subject-position within a simulated environment, a vicarious body through which the player can act as an agent in a fictional world. This vicarious body is not merely a mediator of agency or 'interactivity' in a general sense, but belongs to and is exposed to its environment. In other words, an avatar is interesting and playable not just because of what it makes us able to do or perform, but because of what happens *to* us in the world that the avatar lets us inhabit. The avatar is the embodied manifestation of the player's engagement with the gameworld; it is the player incarnated.

There are different kinds of avatars, and different forms of avatar-based play. A central concern in this thesis is with the difference between the 2D avatar and the 3D avatar, as well as with the various ways in which the relationship between the player and the avatar can be configured in different types of games. The 3D avatar is the more radical and ambitious variant of the computer game avatar. The central perceiving body of the 3D avatar, I will argue, is the navigable camera, which situates the player perceptually within a gameworld that is no longer flat, and no longer a miniature. This camera-avatar (or avatarial camera) brings avatar-based games closer to the aesthetics and discourses of cinema and Virtual Reality. However, in games, spatial continuity and visual realism has a different role to play. The goal of visual realism in avatar-based 3D is not to imitate cinema or to make cinema interactive, but to give the player realistic agency within the gameworld. On the other hand, the strict disciplining of avatarial embodiment, and the embracing of the simulated cinematic camera as a prosthetic perceptual apparatus, can only be seen as counterintuitive and inhibiting from the point of view of fully immersive VR.

to the fact that different genres of games follow very different principles and mechanisms of fictional participation.

The generic category of ‘avatar-based’ singleplayer computer games does not refer to a clearly delimited group of games, which any given game would either belong to or not. It defines a particular kind of play, a game form, which is centred around avatarial embodiment as the primary mediator of interaction with the game space. In this sense we can talk about ‘weak’ or ‘strong’ avatars, depending on the relative importance of the interaction that is performed independently of the avatarial prosthesis. As a generic form, the avatar has a central position in the contemporary computer games market, especially on consoles, which have been more or less designed for this particular mode of play³.

I will also argue that avatar-based play is a form of make-believe, a fictional form, which defines a particular way of participating with simulated environments and fictional worlds. Considered as a fictional form, avatar-based interaction has grown out of and is embedded in computer games and computer game culture. On one hand, the avatar can be thought of as relatively independent from computer game play – as a principle for interacting with computer-simulated environments in general. On the other hand, the notion of avatarial embodiment that I am suggesting implies that as long as there is an avatar, fictional participation cannot be detached from play. Without a gameworld, or at least some kind of playworld, the central motivation for vicarious embodiment falls away.

My emphasis on the significance of avatar-based play in computer games is not meant to support any notion of ‘invisible’ (or ‘embodied’ for that matter) interface design. Avatarial embodiment is a particular way of fictionalising play and interaction. From the point of view of human-computer interaction, this fictionalisation is rooted in the principles of reification and concretisation. As I will be arguing in chapters 5 and 6, this process is antagonistic to other and more transparent forms of human-computer interaction, including many kinds of computer games⁴.

³ This tendency excludes, notably, the Nintendo DS’ touch-screen interface, as well as, possibly, the innovative hardware interface of the upcoming Nintendo Wii.

⁴ The concept of reification that I will be using in chapter 5 overlaps with but is far more limited than the Marxist and more socially oriented concept of reification. At the same time, it can be argued that reified forms of computer interaction, when applied as a norm for interface design, also have problematic ideological implications. See Kirkpatrick (2004:53ff) for a discussion of reification (or ‘double reification’) as a paradigm for human-computer interaction design.

My aim is not to argue that avatar-based play is more valuable or more artistically interesting than other forms of play – and certainly not that it should be a general norm for human-computer interaction – but to describe what avatars are, and how they structure our interaction with game spaces. The analysis does not aim to produce rules or guidelines for computer game design, but it may still carry some implications for how to think about the role of the avatar within the overall player experience; what kind of play and what kind of make-believe are we designing for if we choose to build a design around the vicarious embodiment of an avatar?

The concept of the avatar that I am suggesting here is different from how the term is typically used. In computer game discourse, the most general and accepted meaning of ‘avatar’ seems to be synonymous with ‘playable character’, in all its diverse aspects. However there is still an important common ground between this general meaning and my own definition, namely the basic idea of embodiment or ‘incarnation’, which connects computerised avatarhood to the original religious meaning of the concept.

The dominant definition of the concept of the avatar in computer game discourses originates in the tradition of role-playing games⁵, but its typical use has been expanded to include also distinctly non-configurable and ready-made playable characters like Mario and Lara Croft. More narrowly even, and further removed from my own use of the concept, ‘avatar’ is also sometimes used to refer to the playable character as a mediator of communication and self-expression in multi-user virtual worlds. This use of the term – which refers to the ‘virtual persona’ of the user or player – was introduced by the massive multiplayer online game *Habitat* (1987:103), and popularised through Neal Stephenson’s influential 1992 novel *Snow Crash*.

The notion of the ‘avatar’ as prosthetic vicarious embodiment, in contrast, emerges from the tradition of action, racing and action adventure computer games, from *Spacewar!* (Russel/Graetz/Wiitanen 2006[1962]) and *Donkey Kong* (Nintendo 1981), via *Super Mario Bros.* (Nintendo 2004[1985]) and *The Legend of Zelda* (Nintendo 2004[1986]), to *Tomb Raider* (Core Design 1996), *Halo* (Bungie 2001), *Gran Turismo* (Polyphony Digital 1998) or

⁵ The notion of the ‘avatar’ was introduced in the *Ultima* role-playing game series with *Ultima IV: Quest of the Avatar* (Origin 1985). In role-playing games, the ‘avatar’ is the player’s customisable on-screen character or persona in the game.

Super Monkey Ball (Amusement Vision 2002). In all these games, the relationship between the player and the gameworld is rooted in the principle of prosthetic and vicarious embodiment.

The category of the ‘action adventure’, as I will be using it here, is broader than how the term is typically used in the gaming press and gamers’ communities. In those contexts, ‘action adventure’ (2D or 3D) is usually taken to be a very specific genre, which includes as part of its definition a significant proportion of puzzle-based challenges. While this definition of the genre includes *Prince of Persia* (Brøderbund Software 1990), *Tomb Raider* and their followers, it does not include – as my own broader category does – platform games, First Person Shooters or action-oriented role-playing games, all of which do not necessarily put a lot of emphasis on puzzle-solving⁶.

Fighting games and action-oriented sport games are left partly on a sidetrack in this study, even if they definitely belong to the broad family of ‘avatar-based’ games. This relative neglect is mainly the result of the analysis’ central focus on avatar-based 3D as a specific form of avatar-based computer gaming. Fighting games like *Ready 2 Rumble Boxing* (Point of View 1999) or *Dead or Alive* (Temco 1998), and action-based sport games like *FIFA 06* (EA Canada 2005a) or *NBA Live 06* (EA Canada 2005b) do not adopt the navigable camera as part of the player-avatar relationship in the same way that the 3D action adventures and racing games do. This means that the distinction between two-dimensional game spaces and three-dimensional games spaces, which is one of the central concerns of this thesis, becomes less important. It also means that, from a historical point of view, sport games have not to the same extent gone through a marked transition between a 2D and a 3D ‘era’; with respect to avatar-based play, the difference between *FIFA International Soccer* (Extended Play 1993) and *FIFA 06* is of less significance than the difference between *The Legend of Zelda: A Link to the Past* (Nintendo 2003[1991]) and *The Legend of Zelda: Ocarina of Time* (Nintendo 1998).

⁶ Next to the action adventure, racing is the other major genre of avatar-based play among today’s computer games. Compared to the action adventure, racing in its various forms – and here I would include also games like *SSX* (EA Canada 2000) or *Tony Hawk’s Pro Skater* (Neversoft 1999) – represent a relatively ‘pure’ form of avatar-based play, placing considerably less emphasis on narrative, dramatic and cinematic elements. This makes racing games a good case for illustrating some of the basic principles of avatarial embodiment, but makes them less relevant to the study of hybridisations and tensions between avatar-based interaction and other forms of play and fiction.

As noted above, the role playing Avatar – somewhat paradoxically – is not my object of study. Role-playing games have their own specific characteristics and their own history, a topic that would need a dedicated study beyond the scope of this thesis. Nor do I discuss in much detail the particular characteristics of action-RPG's like *Diablo* (Blizzard 1996) or *Fable* (Lionhead Studios 2004) – games that marry the stats-oriented play of role-playing games with the prosthetic extension of the avatar. For the purposes of this study, in other words, the action-RPG genre is treated as a sub-genre of the broad action adventure genre rather than as a sub-genre of role playing. The distinctive role-playing elements of these games may serve to put avatar-based play and avatar-based fiction into sharper focus; one of the defining features of the prosthetic avatar is precisely that it does *not* depend on role playing or character customisation, and that it structures the relationship between the player and the gameworld in a different way than the role-playing avatar does.

My analysis of avatar-based play is restricted to singleplayer games, and is motivated by a specific interest in singleplayer games as a particular form of play and as a unique type of gaming experience; the focus is on how the avatar mediates between the player and the game, not how it mediates between the player and other players. This implies addressing the relationship between the player and the game system, between the player and the simulated environment, and between the player and a fictional world. These concerns are of course relevant to any kind of game, but in multiplayer and online environments the social interaction of play nevertheless demands primary attention.

Methodologically, the study implies a relatively wide sweep of empirical observation and analysis. I cannot of course aim to get a complete first-hand knowledge of all games that could be relevant to the concerns of the analysis. In trying to capture the essentials of avatar-based play and its major variations, my strategy has been to play through a limited number of popular games that have been recognised as classics in some respect within their (sub-)genre, and then add to this by playing a larger number of games only briefly (1-4 hours of play). I have also been able to draw on fan-based knowledge from the numerous reviews, FAQs and walkthroughs that exist for practically every game that exists out there. Such written sources are particularly valuable in this kind of broad descriptive-analytical research.

The research process itself has evolved in a relatively disorderly hermeneutical fashion. I started out with a few games that were perceived to be central to my concerns, with no clear

idea as to what would be the conceptual and generic boundaries of the study. Originally, the project started out as a study of a more specific genre within the action adventure umbrella: the First Person Shooter. I eventually discovered, however, that the aspects that this genre shares with a wider category of games needed a more dedicated focus, particularly because very little research has been done in this area. While the FPS definitely boasts a few interesting ‘special features’ that are specific to this particular genre, those features would be difficult to describe without positioning them within a more general generic domain. Of particular importance to my change of emphasis from the FPS genre to avatar-based play as a game form – and to avatar-based 3D in particular – was the realisation that the ‘first-person’ camera, which is supposed to be the ultimate marker of the genre (hence its name), is not different in its basic functioning from the camera in *Tomb Raider* or *Super Mario 64* (Nintendo 1996). In other words: the most distinctive feature of the FPS is not the perspective but the gun.

Chapter 2: Simulations, games and make-believe

In this chapter I will discuss the differences and overlaps between games, simulations and diegetic fictions as distinct cultural forms. Drawing on the theories of Kendall L Walton, Marie-Laure Ryan and Gregory Bateson, I suggest a concept of fiction that is based on simulation and play, and which provides analytical tools to distinguish between different modalities and principles of participation in different media. In particular, the idea that fictional participation is a practice of re-positioning or ‘re-centring’ – whether in the worlds of paintings, books or children’s games of make-believe – is particularly useful for rethinking the relationship between players, avatars and fictional worlds in computer games.

Procedural representation

Any implementation of a model is a simulation. A model is, following the standard military use of the term, “A physical, mathematical or otherwise logical representation of a system, entity, phenomenon, or process”⁷. This definition covers all models, from scientific climate models to Barbie dolls or model cars. A simulation represents the world not through description, narration or argument, but through the construction of a model that is meant to in some respect mirror the underlying regularities of selected phenomena, events and processes in the world.

Espen Aarseth argues that simulation is a highly distinctive type of discourse, quite unlike other forms of communication. He calls it a ‘virtual hermeneutic’, emphasising that the simulation represents an ever more influential alternative to the established story-mode of understanding the world. The simulation represents, Aarseth argues, a distinct way of interpreting and understanding the world (Aarseth 2000). From the point of view of semiotics, Umberto Eco, even if he is not addressing simulations directly, notes that certain forms of sign-relations are established on the basis of an ‘identity of function’; a broom handle stands for a horse not via an iconic relation, but because it can be straddled. A broom handle can be used as a substitute (‘ersatz’) for an actual horse because it “serves an analogous function” (Eco 1976:209).

⁷ See *Online M&S Glossary*, Defense Modelling and Simulation Office, at <https://www.dmsomil/public/resources/glossary/> [accessed 25. July 2005].

A simulation re-constructs (in some respects) a behaviour that we can recognise as familiar from the world outside the simulation. It does so by using models, which are functional or in some way ‘logical’ representations. Models can be abstract (a mathematical model) or concrete (a tin soldier)⁸. Traditionally, models can only be implemented by humans, who run simulations for the purpose of play, training and cultural expression (as with Eco’s example of the broom handle). However, *algorithmic* abstract models are built as a system of instructions and procedures that can be implemented by computers as well as by humans. Computer simulations are simulations that are run by computers (which are simulating machines or ‘simulators’), or by humans and computers in concert. Taking a cue from Janet Murray’s categories in *Hamlet on the Holodeck* (1997), we may say that a computer simulation is a ‘procedural representation’; the world interpreted in terms of a system of instructions or rules (Klevjer 2002:200)⁹.

The worlds of play

The majority of games are in fact also simulations (although not necessarily computerised simulations), because they are governed by sets of rules that model some phenomenon in the world. Chess, for example, models the conflict between two forces on a battlefield (the board). As a model it may leave a lot to be desired in terms of scope, detail and accuracy, but it still qualifies as an abstract, procedural representation. This does not mean that all games are simulations, or that all simulations are games. Simulations do not necessarily stage or prescribe a contest between the participants. They do not necessarily, as games do, model a conflict, and they do not have to define a goal for the participants in terms of a winning or losing condition¹⁰.

⁸ A concrete model is “A model in which at least one component represented is a tangible object; for example, a physical replica of a building.” For definitions of terms of simulation and modelling as they are used by the US military, see Online M&S Glossary by the Defense Modelling and Simulation Office (2005).

⁹ *Hamlet on the Holodeck* focuses on narrative structure and narrative agency in ‘cyberspace’ – that is in digital environments of all kinds, from sprawling databases to VR installations. All these computerised environments have, Murray suggests, four essential properties. They are ‘procedural’, ‘participatory’, ‘spatial’ and ‘encyclopaedic’ (1997:71). My own adaptation of the concept of ‘procedural representation’ is also a more generalised version of the term as it can be found in the field of computer graphics. See David D. Grossman’s “Procedural Representation of Three-dimensional Objects” (1976). Salen and Zimmermann (2004) make use of the same concept, expanding considerably from the basic idea by discussing various implications for game design.

¹⁰ In literature on games well as in the newer literature on computer games there are a variety of definitions as to how games are different from playful activity in general. All of them in one way or another emphasise the importance of conflict, as well as a winning condition or alternatively a ‘negotiable and quantifiable outcome’ (Juul 2005). See Salen and Zimmerman (Salen and Zimmerman 2004) for a review of definitions found in the literature.

Nevertheless, both simulations and games establish a separate realm of activity that is governed by a set of formal procedures. The activity is motivated in the external reality in which they exist as sub-systems, and the activity may even have very serious implications beyond the boundaries of the system itself (think of for example Russian roulette, gladiator contests or military simulations). The important point is that this relationship will always be, as Jesper Juul (2005) points out, ‘negotiable’; the participants define the real-world consequences in advance. They can do so because games and simulations are autonomous systems of meaning with clear (although permeable) boundaries, and therefore are meaningful in themselves; Russian roulette may well be played with harmless blanks, and military simulations are often enjoyed on the couch, with cheese doodles.

With games as well as for simulations, their significance in relation to their contexts is premised on the fact that they possess a basic autonomy. This autonomy, according to Johan Huizinga (1955[1950]), is no less than the historical and aesthetic essence of *all* kinds of competitive play; all artificially staged contests. The key quality of play is irreducible, Huizinga argues; its meaning cannot be attributed to any purpose outside play. Play is meaningful in itself. Autonomy and non-instrumentality is at the heart of the ‘play function’ in culture, a principle which can be traced in all human activity through history. The essence of play, states Huizinga, with reference to the religious and ritualistic practices of pre-modern cultures, is the encapsulation of imagination and conflict within a *magic circle*. The magic circle signifies a separate realm of internally defined meaning, a ‘world’ of objective and shared truths within which the participants make serious intellectual effort and emotional investment. This is the familiar paradox of games – they mean nothing (because a game is just a game), yet seen from the inside of the magic circle they mean everything.

Play becomes serious, sometimes even deadly, not in spite of but *because of* its characteristic as a separate realm, according to Huizinga. The magic circle is a ‘sacred circle’, rooted in the rituals and contest of archaic cultures.

The arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the court of justice, etc., are all in form and function play-grounds, i.e. forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart. (Huizinga 1955[1950]:19).

It is precisely the meanings guaranteed by the principle of the magic circle that make the practices of ritualistic contest, warfare, law, poetry and philosophy possible. Modern computer-simulated systems tap into this same cultural realm of meaning. Through their self-contained detachment, they bring forward the autotelic ‘play function’ in (or of) culture. This cultural heritage partly explains why we will always encounter, with any participatory dynamic model, the latent temptation of non-serious play; the invitation to fool around. Computer games do not abandon the didactic and scientific rationale of abstract models, but re-contextualise this rationale within the cultural realm of play, turning latent temptations into shameless pleasure. We could say that computer games are simulations in reverse: they draw on our familiarity with the world to empower us within the simulation rather than using the simulation to empower us to handle the world. The primary function of modelling in computer games is to provide a playground, a material magic circle, a pointless system of meanings.

It is because games and simulations present themselves to us as autonomous meaning-making systems that we sometimes refer to them as worlds. In everyday language, when given no further qualifications or specifications, the term ‘world’ will usually refer to something like ‘the totality of our existence’. The degrees and modalities of metaphorical meaning vary from the presumably literal (‘world’ meaning our planet) to the more abstract (the ‘world’ of dating). All variants and shades of the term, however, resonate with the basic notion of totality; a presumed all-encompassing boundary, an outer rim that conditions meaningful practice. In the ‘world’ of dating, behaviours that would be ridiculous outside that game can still be perfectly meaningful within it. Equally, when we say that a person ‘lives in his own world’ it would typically mean that his behaviour (or a certain aspect of it) does not make sense to us. In order for something apparently meaningless to be able to make sense after all, it needs to bring its own world – its own sub-totality, its own magic circle – along with it. Given this premise, as Huizinga’s detailed historical accounts illustrate, pointless exercises can generate all sorts of serious meanings and consequences in their interfaces with the outside world, and typically will do so – even if they do not depend on such consequences to be meaningful and engaging.

Contest versus mimesis

The ‘world’ of the sacred circle captures a cultural modality that is common to games, simulated systems (whether serious or not) and to play in general. Still, imaginary worlds of

literary or cinematic fiction do not easily fit into this picture. There seems to be, on a general level, a natural affinity between Huizinga's 'magic circle' and Coleridge's 'suspension of disbelief'. Both refer to an experience of – somehow – stepping into an alternative reality, a separate and encapsulating realm of meaningful experience. However, the concept of the magic circle does not address the phenomenon of *imaginary* worlds – let alone the worlds of narrative.

While Huizinga's magic circle allows for fiction and fantasy as a natural element of playful activity, the phenomenon of make-believe is not considered part of the core of play; it is not integral to the play-principle of culture. This principle, or cultural function, is an *agonistic* principle; its paradigmatic and originating form is to be found in the ritualistic contests of archaic culture. In *Homo Ludens* (1955[1950]), Huizinga never addresses the role of drama or storytelling as such, seen as separate from the functions of the contest. All play-derived civilising practices that he discusses throughout the book, including music and poetry, are described in terms of how they instantiate and develop the agonistic principle in culture. At heart, the 'magic circle' is a realm of artificial or 'staged' contest, not fiction.

In privileging the principle of the contest, Huizinga's theoretical perspective mirrors Roger Caillois' classifications of play in *Man, Play and Games* (2001 [1961]). Caillois focuses on play and games as concrete activities rather than any abstract 'function' or 'principle' in culture, and he is therefore interested in the mimetic as well as the agonistic elements of play. However, Caillois stresses the inherent conflict and incompatibility between agonistic and mimetic play¹¹. If they mix, he argues, mimetic play will unavoidably ruin agonistic play, and vice versa. Huizinga, in contrast, never argues that the contest should be seen as incompatible with mimetic play, probably because he does not pay any attention to the 'worlds' of imagination and fiction at all. In any case, we can use neither Huizinga nor Caillois to argue that the 'world' of a game is similar to the 'world' of a novel or a film.

In spite of the potential conflicts between the two, games and fictions often blend into one single, autotelic realm of practice. In games, the world of the contest is often also an

¹¹ In his influential categorisation of play-forms in *Man, Play and Games* (2001[1961]), Roger Caillois lists *agon* (competition), *alea* (chance), *mimicry* and *vertigo* (games of physical disorientation). Whereas the latter two belong to the category of free play ('paidiea'), the first two belong to the category of ludus, which includes formally rule-based and goal-oriented forms of play.

imaginary world, a world of make-believe, both dimensions converging in the principle of simulation. The marriage between contest and mimesis is absent from the majority of modern sports and contests, with a few major exceptions like wrestling or similar types of ‘gladiatorial’ entertainment contests that is generally not regarded as honest and serious competition. This confirms Caillois’ observation that the mimetic and the agonistic do not mix well. At the same time, a natural relation between mimesis and the contest seems to be almost uniformly confirmed in the various ritualistic practices that Huizinga identifies as historically originating of the play-principle in culture.

World as the diegetic

In the third book of the Republic, Plato distinguishes between *diegesis*, which is the practice of storytelling, and *mimesis*, which is the practice of imitation or dramatic performance (Plato 1941). The modern notion of the diegetic or the story-world, introduced by Gerard Genette (1980), is rooted in the same distinction, although re-framing it within a structuralist-linguistic understanding of narrative. For Genette, story (‘histoire’) is the *signified* of narrative discourse; the ‘diégèsè’ that is constructed by the ‘diegesis’. The notion of the diegetic is used as a basis for developing a theory of how different levels of the narrative relate to each other – different levels of ‘worlds’ in which the events of the story take place, and in relation to which the narrator can be positioned in different ways. In a ‘homodiegetic’ narrative, for example, the narrator is present as a character in the world of which he narrates (1980:245). Moreover, the diegetic level of the narrative (or ‘intradiegetic’ level) refers to the primary world as it is being signified by the narrative discourse.

Genette’s notion of the diegetic, formulated in the early seventies, has been highly influential in shaping today’s dominant understandings of what a fictional world is in film and literature. This influence is in no small part due to the adoption of the term into film theory via Bordwell and Thompson’s distinction between ‘plot’ and ‘story’ in their introductory textbook *Film Art* (1993[1979]). Here they establish a distinction between diegetic and nondiegetic elements of a film, a distinction which has become common reference in film theory:

For example, while the opening of *North by Northwest* is portraying rush hour in Manhattan, we also see the film’s credits and hear orchestral music. Neither of these elements is diegetic, since they are brought from outside the story world. (The characters cannot read the credits or hear the music). Credits and such extraneous music are thus nondiegetic elements. (Bordwell and Thompson 1993[1979]:67).

Via the notion of the ‘diegetic’, the concept of ‘story-world’ is rooted in the semiotic distinction between discourse (signifier) and that which the discourse is about; its signified. What is distinctive to worlds of narrative fiction, according to this theoretical model, is that they are told¹².

Diegetic theories of narrative worlds of fiction implicitly accentuate the difference between play and fiction. There are few similarities between Huizinga’s ‘magic circle’ and the idea of a ‘story world’ as constituted by narrative discourse. Huizinga’s ‘play-function’ subdues the mimetic under the performance of agonistic practice. If there is at all any concept of fiction to be extracted from the historical and etymological studies of *Homo Ludens*, it would be that fiction – including stories – is something that we do, not something that is told or shown. Such a non-enunciative and non-narrative model of fiction would seem to fit simulated environments better than traditional mimetic or diegetic conceptions do. However, as I argued above, this model is premised on the cultural logic of the artificial contest. Huizinga is neither interested in fictional worlds nor narrative in particular.

We should note, however, that the linguistic model of narrative fiction also points to a contradiction that is inherent to the phenomenon of recounted narrative worlds. On the one hand, the primacy of language is asserted; narrative is a recounting, an utterance, a result of an act of enunciation. On the other hand, the ‘world’ that is established by this act has the capacity to present itself to us as a form of mimesis, as ‘histoire’, defying the enunciation that creates and upholds it¹³. It is as if – in the phrasing of Emile Benveniste – “No one speaks

¹² Bordwell and Thompson’s use of the model in *Film Art* is not explicitly attributed to narratology (– their most direct reference is that plot and story is also “sometimes called “story” and “discourse””), and they do not make very clear what their own modifications to the original model is (66-67). In *Narration in the Fiction Film* (1985), Bordwell replaces the loose, structuralist theoretical framework from *Film Art* with a more precise and elaborate version of ‘plot’ versus ‘story’, based on the binary of ‘syuzhet’ and ‘fabula’ from Russian formalism. Here Bordwell makes the point that the latter distinction should *not* be confused with the story/discourse-model advocated by theories of ‘enunciation’ – a category in which Bordwell includes Gerard Genette (Bordwell 1985:51).

¹³ The concept of ‘enunciation’ was introduced to structuralist theory by Emile Benveniste. His notion of *discours* refers to the particular mode of enunciation in which the enunciation itself, as an act, is made visible, as opposed to *histoire*, where enunciation is hidden. However it is Genette’s modified variant of the concept that has given the dominant meaning to the English term ‘discourse’ in narrative theory. To Genette, all strings of utterances are ‘discours’, and the signified of narrative discourse – the story – can be compared to Benveniste’s *histoire* in the sense that the traces of enunciation are expelled from it. For an introduction to central concepts in narratology as they relate to film theory, see *Narration in the Fiction Film* (Bordwell 1985), pages 21-22.

here; the events seem to recount themselves.” (Bordwell 1985:21). In this sense, we can say that the ‘world’ of a story transcends the act of communication that it is a part of.

Mimesis as Make-Believe

Kendall L. Walton’s *Mimesis as Make-Believe* (Walton 1990) suggests a play-based theory of the nature of representation, but from a very different theoretical perspective than the play-theorists Huizinga or Caillois. Walton belongs to the Anglo-Saxon tradition of analytic philosophy. He seeks to account for the representational arts and the nature of representation in general, not the cultural role of play and games. Although imaginative play is used as the central model for understanding representation in the arts, Walton never makes any reference to Huizinga or to other theories of play from anthropology, sociology, pedagogy, philosophy or literary theory.

As a theory of representation, Walton’s approach can be seen as pragmatic or process-oriented, even if he himself never uses those terms. It is motivated by the typical theoretical problems and debates within a branch of analytic philosophy often referred to as ‘semantics of fiction’; questions that address the ‘truth’ of fiction and the relationship between fiction and reality. However, Walton does not rely much on the usual tools of the trade, largely discarding possible world theory and other standard concepts derived from formal semantics. Instead he builds his arguments from detailed examples which he refers to as the ‘phenomenology’ of art appreciation, including analysis of the language that is being used in everyday discourses to describe how we experience works of art and literature.

According to Walton, an object should be considered a representation neither in terms of a semantic relation (its reference), nor in terms of its role within a linguistic and communicative act, but because it has a specific purpose, namely to engage us in imaginative practice. Artistic representations (books, paintings, film, sculpture etc) should primarily be understood as *props* in games of make-believe, no different from children’s toys and other tokens of imaginative play. This model implies that all representations – including factual representations – construct fiction. The defining function of a prop is to prescribe *fictional truths* in correspondence with the rules of the game, and these fictional truths evoke imagined

objects and events¹⁴. Fiction is a function of our engagement with representations, understood as props. Imaginary realms, Walton argues, have nothing to do with language nor the specificities of narrative discourse.

It is important to note that, within the context of a rule-based game of make-believe, fiction is *prescribed* by (not inspired or suggested by) props and rules. Consider the following example used by Walton, in which Gregory and Eric, playing in the forest, have decided that all stumps are bears:

“They approach the bear cautiously, but only to discover that the stump is not a stump at all but a moss-covered boulder. “False alarm. There isn’t a bear there after all,” Gregory observes with surprise and relief.” (...) Meanwhile, however, unbeknownst to everyone, there is an actual stump buried in a thicket not twenty feet behind Eric. Fictionally a bear is lurking in the thicket, although neither Eric nor Gregory realizes the danger. No one imagines a bear in the thicket; it is not fictional that a bear is there because somebody imagines that there is. But it is fictional. What makes it fictional? The stump. Thus does the stump generate a fictional truth. It is a prop. Props are generators of fictional truths, things which, by virtue of their nature or existence, make propositions fictional.” (Walton 1990:37).

The concept of fictional truth is at the heart of Walton’s theory. If one does not accept a fictional truth, one is stepping outside the fiction, and choosing not to play the game anymore. The theory of fictional truth asserts that fiction is not, as common sense often seems to imply, something that resides in our imagination; it is not ‘that which is imagined’. Props are generators of fictional truths “...independently of what anyone does or does not imagine” (1990:38). Fictional propositions, “...are propositions that are *to be* imagined – whether or not they are in fact imagined” (1990:39). A proposition that is ‘made fictional’ is made true in the world of the game. Once the wheels of the game have been set in motion, this truth does not depend on subjective imagination, but is an objective fact, generated by rules and props, and guaranteed by the autonomy of the game-world.

Walton’s game-based theory of the representational arts can be related to a number of other philosophers and theorists who discuss artistic representation in terms of play and games¹⁵. It

¹⁴ Walton’s idea of fiction differs significantly from the general interpretation of the term ‘fiction’ as that which is not true, or, alternatively, as that which is not factual. All representations are fictions, Walton asserts; all are part of games of make-believe. A game of make-believe may be a factual, if that which is to be imagined is accompanied by a referential commitment to historical reality. Some fictional truths are claimed to be true, some are not.

is important to emphasise, however, that Walton's work deals exclusively with the realm of representation, or 'mimicry' if we follow Roger Caillois' categorisation of game-forms (Caillois 1961). Walton does not include into his discussion the notion of play as contest. His area of interest is the representational arts, not play and culture. Still, I want to argue, *Mimesis of Make-Believe* gives us a valuable theoretical tool for analysing the role of fiction in simulation-based play. Indeed, it could be said that Walton's comprehensive conceptual model is a systematic attempt to re-define fiction as simulation.

Fictional subjectivity: fiction as simulation

Unlike the play-theorists from the continental traditions of philosophy, anthropology and cultural history, Walton's theory of fiction is also a theory of immersion, and a theory of 'virtual reality'. A fictional world, he claims, is a game in which we as 'appreciators' are invited to participate:

“We are to imagine that Willy Loman lost his job, that Superman rescues people from tall buildings, and so on. Such imaginings are part of our games of make-believe, games that have their own fictional worlds distinct from work worlds. (...) It is a mistake to think of appreciators as mere spectators of work worlds, observers from the outside of what is fictional in them. That leaves out our *participation* in games in which representations are props.” (Walton 1990:208).

Walton's approach implies that there is no essential difference between how we engage with the 'fictions' of Monopoly or Scrabble and the fictions of a painting. The 'appreciator' of any work of art is a player in a game of make-believe and a participant in a fiction, much like a little girl who is playing with her paper dolls. The appreciator herself, in order to appreciate an artwork from the inside, as it were (in order to play the game), has to take part in the fiction by imagining about herself a *subject-position* that is fictional. When we stand in front of a painting and say for example “I see a ship in the background”, we are able to say this (instead of saying “I am looking at a depiction of a ship”) precisely because of this fictional subject-position. We are given the role of a prop whose behaviours generates fictional truths about itself; we become ourselves a 'reflexive prop' (1990:213) – like a toy truck that generates about itself the properties of a fictional car.

¹⁵ Roger Caillois (Caillois 2001[1961]), Gregory Bateson (1972), and Donald C. Winnicott in *Playing and Reality* (1971) all include art, music and literature as part of a broader notion of play. Several philosophers argue that play is central to art and philosophy – among them Kant, Nietzsche, Gadamer and Derrida.

This reflexivity re-locates our subject-position within the boundaries of the game of make-believe, so that we become fictional subjects; the fact that I am looking at an image of a woman in *Mona Lisa* makes it fictional that I am looking at the woman Mona Lisa. The fact that I feel fear when I am looking at a monster in a horror film makes it fictional that I am afraid *of* the monster. Distanced observation, or “appreciation without participation” (Walton 1990:274) in which we detach ourselves from the fictional subjectivity that the painting encourages, becomes a secondary option, an activity of meta-reflection and as such a meta-game in relation to the primary game the painting invites us to join.

The theory of fictional subjectivity – which Walton elaborates on at length with respect to different kinds of representations and empirical situations – is an interaction-oriented and process-oriented theory of immersive fiction. It is not concerned with the relationship between the representation and the world, but the relationship between the representation (as prop) and the participant. It is a theory of *doing* fiction, a theory that emphasises how fictional truths are experienced as actual truths via the acts of imagination and perception. In discussing the ‘in-game’ appreciation of a traditional painting, Walton describes the various types of ‘lookings’ that we perform, and in what way different ways of looking translate to different fictional roles and positions as well as different mechanisms or modes of ‘generating’ fictional truths. For example, a painting is considered ‘realistic’ to the extent that my way of looking at it is analogous to the way that I actually look at objects and environments in the real world; the way I take in the whole before I start moving the focus across the canvas to inspect the individual elements, the way that I might move closer to the painting in order to discover fine details, and so on. When there are such analogies, the manner in which we interact with artworks is constituted as an object to be imagined, a fictional truth that is generated by the interaction itself.

Participation, then, in less technical terms, means *playing* the game of make-believe, as opposed to observing or analysing it. The essential and defining premise of all representations, according to Walton, is that role-playing is required. The kind of activity that is expected and permitted as role-playing varies between the expressive body-language of children’s games to the highly restricted and (predominantly) contemplative participation in a game of for example reading Henry David Thoreau’s *Walden*. In-game activities, Walton argues, will usually be fairly well distinguished from ‘out of character’-interaction. Whereas,

for example, kissing an icon would typically be considered in-game and part of the fiction, wrapping the icon up and taking it to storage would not.

Re-phrasing Walton's argument, we might say that representations – all representations – are essentially seductive in nature. They pull us into a role, a fictional subjectivity according to which we engage our thoughts and feelings. It is this subjectivity that, for example, makes it natural to feel deeply sorry for, even to cry over, the heroine in a well-crafted tragedy. Our fictional self laments her fate and desperately wants her to be happy instead. Seen from outside of the game of 'tragedy', however, we do not *really* want a tragedy to have a happy ending. Still, it would be absurd, as Walton points out, to consider appreciators of tragedy as accomplices to the sad and undeserved fates of their heroes, as if they were 'double-crossing' them by pretending to cry for them while secretly taking part in a plot to kill them. Once the game of tragedy is set up, as participants we cannot be blamed, because we are not responsible for the sad fictional truth. It is not that we want to save the heroine but cannot. Rather, within the game of the fiction, the question of agency is irrelevant; we neither can nor cannot. Re-writing the ending would clearly not qualify as 'saving' the heroine. It would only destroy the game, and our imagined subject-position along with it.

Work worlds

Walton's concept of the 'world' of fiction, in the primary instance, refers to the world of the game in which the representation is included as a prop. In the quote above, Walton points out that this kind of 'world', which is the world that is constituted through our *participation* with paintings, novels or films artworks, is distinct from the 'work worlds' of those artworks, as projected by the representation itself. Our games of make-believe "have their own fictional worlds distinct from work worlds." (Walton 1990:208).

Roughly, 'work-world' refers to any cluster or grouping of fictional truths within a game of make-believe that can be attributed to the objective properties of the particular representational work that is being used as a prop. A work-world of fictional truths is autonomous and non-negotiable, which means that its fictional truths will be prescribed in *any* game in which that particular representation is a prop¹⁶.

¹⁶ The concept of the work-world is somewhat less well defined than other and more central concepts in Walton's theory, but it still serves a function within his overall framework. It is necessary in order to account for the role of all-encompassing props like for example a novel in the game of 'reading a novel'. Without the notion

However, in the context of the concerns of this thesis, the notion of the ‘work world’ is not primarily interesting as tool for defining the objectivity and shared nature of representation in artworks, but as a tool to distinguish between different *types* of props: what kinds of props have ‘worlds’, and which do not? When comparing across different forms, modalities and genres of representation – and especially if we are concerned with complex and relatively unfamiliar media forms – any concept that differentiates between species of props is potentially very useful. However, Walton does not provide any clear or definitive criteria for distinguishing between what we might call ‘world-props’ and other props – although novels or films would be fairly straightforward examples of the former. He leaves the question open as to what kind of prop-generated objective clustering of fictional truths can be said to constitute a ‘world’ in any given case. He notes that, in the case of a doll, the fictional truths generated by the doll itself will not normally be experienced or referred to by the participants as the ‘world’ of the doll, and therefore – under most circumstances – a doll does not project a world; it has no ‘work world’ in the same that a novel has:

We are not as often interested in dolls themselves apart from games played with them. The contributions most dolls make to such games are relatively insignificant. What is important is usually the fictional truths generated by what is done with the dolls—that fictionally Heather bathes or dresses or scolds a baby, for instance. (Walton 1990:62).

Walton does not proceed from this observation to propose any conceptual distinction between props that have work worlds and props that do not¹⁷. However he makes an interesting remark – although in passing – with respect to how dolls or statues are different from paintings or tapestries:

“...a doll’s location in real space is significant in a way in which the actual location of a painting is not. The fact that a doll is in Heather’s arms or on her bed probably makes it fictional (in her game) that a baby is in her arms or on her bed. But the fact that the Unicorn Tapestries hang on the walls of the Metropolitan Museum does not make it fictional that there are unicorns *there*. (Walton 1990:62-63).

of work-world, Walton points out, we would have to concede that any kind of game can be played with any kind of novel – meaning that any reading of a novel, taken as a whole, would be equally valid. The category of the work-world, designating a non-negotiable and rule-generating power in games of make-believe, serves to secure and strengthen the objectivity and shared nature of the magic circle of make-believe.

¹⁷ It should be remembered here that Walton’s aim is not to give precise or exhaustive descriptions of different types and categories of props, but to investigate how various capacities of props shed light on the nature of representation.

This distinction, which has to do with the *space* of fiction and fictional participation, may not be important to Walton's general definition of fictionality, but it may be quite useful to cast light on more complex props – like computer games – that are, in a sense, both like tapestries and statues at the same time, which I will return to in chapter 5. What we may conclude from Walton's observation, I want suggest, is that a prop is a 'world-prop' when it prescribes fictional truths in a game of make-believe without being a reflexive prop with respect to how it relates to its environment. By virtue of its own properties as a truth-generating prop, it encloses the user within a separate space of game-relevant activity (a game-dedicated ad-hoc world), while at the same time blocking out the external environment, precluding this environment from having relevance within the game of make-believe. A teddy bear, therefore, cannot be a world-prop, at least not according to the typical modes of participation that we are familiar with. As with Heather's doll in the Walton's example above, the external environment will always matter; indeed it is a central attraction of teddy bears that shifting environments *do* matter to the fiction. I can take my teddy for a stroll in the garden, bring him with me on holiday, and so on. In comparison, it does not matter where I bring my book or my DVD, because as world-props they do not interact fictionally with their environment. A world-prop, I suggest, is a self-contained prop; a game of make-believe incarnated as prop.

A prop-centred approach

Kendall Walton's conceptual framework in *Mimesis as Make-Believe* is highly productive to the analysis computer game fictions. The basic idea is that fiction – any kind fiction – is a rule-based activity, and that props, used according to their specific capacities as props and in accordance with the rules of the game, create a shared reality of make-believe for the participants to play within. Props and rules create fictional truths. These truths constitute the basis for a fictional environment that can be explored as autonomous and independent of the participants' own subjective imaginations.

Moreover, Walton's theory draws attention to how different types of props (verbal props, visual props etc) encourage and discourage different types of make-believe – or, we could say, how different props draw up different types of playgrounds, suited to different kinds of mimetic play. In other words, Walton's concept of the prop offers a tool for the theoretical reflection on the *technologies* of fiction – even if his own elaborate discussions of the materialities and typical uses of various kinds of props do not include any consideration of

what might be specific or unique to ‘computerised props’, or to the computer as a particular technology of make-believe.

Finally, Walton’s analysis of a wide range of representational forms is useful in that it describes how different modalities of fictional participation and subject-positioning relate to different types of props – from toy trucks and Barbie dolls to novels and expressionist paintings. Even if he does not consider computer games, his categories for thinking about different mechanisms and principles of fictional engagement – in relation to different technological and perceptual determinants of the props – are well-suited to the task of mapping and investigating the typically multi-modal and multi-generic nature of computer game aesthetics.

Recentring

Marie-Laure Ryan’s *Narrative as Virtual Reality. Immersion and Interactivity in Literature and Electronic Media* (2001) sums up much of her earlier work and establishes a unified theoretical perspective on the relationship between interactivity, immersion and fiction in literature and in digital media. In envisioning the promises of narrative in digital media, Ryan’s main focus is on the mechanisms of immersion rather than on digital media’s capacity for textual self-reflexivity and play, as emphasised by hypertext theorists Jay David Bolter (1991) and George P. Landow (1992). Ryan aims to explore the potential of digital fictions as a new form of ‘total art’, appealing as much to our bodies as to our minds, and utilising the richness of a multitude of media forms. As the title indicates, the central theoretical idea throughout the book is that virtuality or ‘presence’ is at the core of fiction and narrative – in novels and films as in digital media. Fictional phenomena present us with ‘virtual realities’ in the sense that we can relate to them as actual worlds.

Ryan’s approach implies a shift from a text-oriented to a world-oriented paradigm of interaction and engagement in digital media; it is of crucial importance to our engagement with fiction and narrative, Ryan argues, that we are able to experience a fictional world as being an actual *world* rather than as ‘world’ simply as a metaphor; a textual web of meanings. In other words, the experience of being ‘lost’ in a book or a film is not something that we should discard or trivialise as incidental to the higher and proper goals of artistic expression and engagement, but is, on the contrary, at the core of what fictional and narrative phenomena are all about. If we loose ‘immersion’, we loose the key to the power of narrative.

What Ryan refers to as a ‘poetics of immersion’ (2001:87ff) addresses the relationship between literary immersion and computer-based interactivity, combining Walton’s theory of participation with possible worlds theory. In the field of formal semantics, possible worlds theory is a way of expressing the logical status of the modal operators possibility and necessity. Possibility means that a state of affairs exists in *at least one* possible world – under the condition that this world needs to be logically consistent. Conversely, the modality of necessity means that, given the positive truth-value of a certain proposition (‘if’), in *any* possible world, then a specific other proposition (‘then’) must also be true¹⁸.

The *modal system* of possible worlds, as formulated by Saul Kripke, refers to the organisation of possible worlds around a privileged centre, the *actual* world, a position from which all other worlds express modalities (as intentions, wishes, counterfactuals, goals etc). Taken as a whole, the modal system is a logical expression of everything that we can imagine, the totality of the thinkable. It is important to note that the modal system is more than just a formal, semantic tool. It also articulates a basic phenomenological experience of being a subject who relates to state of affairs in the world. According to David Lewis, possible world theory is the logical expression of our intuitive acknowledging that, at any point in time, “things might be otherwise than they are”¹⁹. I could, for example, be writing a different sentence than this one. Moreover, the logical construct of ‘possible world’ is by definition *complete*. It refers to a particular semantic universe of propositions and their truth-values; to the exclusively and exhaustively defined propositional configuration of all there is.

As a formal method of explaining how relationships between the actual and the possible are organised, possible world theory can be used for a variety of purposes, including investigations into the nature of fictional worlds. Marie-Laure Ryan’s adaptation of possible world theory draws on Thomas Pavel’s concept of the ‘actual possible world’ (Pavel 1986). Fictional worlds are *autonomous*, according to Pavel, because when we engage with them imaginatively, they enforce onto us a new ontological position, from which the fictional world becomes an actual world. The actual possible world is the absolute reference world for the judgment of truth-values of the propositions put forward by characters in that world. Ryan develops from this idea the notion of *recentring*; the subject-position of the reader is re-

¹⁸ My account of possible worlds theory builds on Ryan (2001; Ryan 1992).

¹⁹ Quoted in Ryan (1992:528).

located and re-centred within a new modal system of worlds, in which the possible actual world (the ‘textual actual world’) is defined in relation to other satellite possible worlds – other modalities or ‘virtualities’ that include character’s beliefs and goals. This ontological re-orientation is a ‘space travel’ of the imagination, assigning to the fictional world the same privileged position as the real world; a world that appears autonomous in relation to the subject. Through recentring, the virtual is experienced as real. Non-immersive fiction, on the other hand, is more like a ‘telescope’ rather than a ‘space travel’:

In the telescope mode, consciousness remains anchored in its native reality, and possible worlds are contemplated from the outside. In the space-travel mode, consciousness relocates itself to another world and, taking advantage of the indexical definition of actuality, reorganizes the entire universe of being around this virtual reality. I call this move recentring, and I regard it as constitutive of the fictional mode of reading. Insofar as fictional worlds are, objectively speaking, non-actual possible worlds, it takes recentring to experience them as actual – an experience that forms the basic condition for immersive reading.” (Ryan 2001:103).

With the adaptation of possible worlds theory as a theory of literary immersion, the ‘modal system’ has been re-articulated as phenomenology – as a philosophy that attempts to describe intuitive experience. Ryan’s poetics of immersive fiction, like Walton’s theory of make-believe, highlights a mode of interaction according to which both diegetic texts and magic circles can be considered different incarnations of the same basic kind of imaginative practice; mimetic discourses and mimetic contests, however different in many respects, are both practices of recentring, of experiencing the virtual as actual.

Experiencing the virtual as real, moreover, also implies that we experience the fictional world as *complete*. Fictional worlds, when contemplated from outside, as clusters of propositions about state of affairs, are far from complete. The exact family relationship between Donald Duck and his nephews, for example, cannot be decided. Considered from the point of view of our actual world, fictional realities are always radically underdetermined. The process of reading requires us to fill in the gaps, so that worlds are constructed. The whole point of recentring, however, is to relocate or re-orient ourselves into a position from which we *imagine* a world that is complete. The logical construct of a possible world is an adequate expression for our experience of the textual world being an *actual* world, a proper world with

an autonomous existence in relation to ourselves, the kind of world in which questions concerning state-of-affairs can always, in principle, be decided²⁰.

Kendall Walton argues that the worlds of make-believe should not be confused with the logical constructs of possible worlds, because the former are not complete. This is a relevant argument, provided that he never considers describing the act of fictional re-positioning *itself* in terms of possible world theory, as Ryan does. A game of make-believe, considered as a rule-based and self-contained system, could be considered as either complete or non-complete, depending on whether the participant is positioning herself inside or outside of the system. Games and literary fictions are equally underdetermined in this respect. In any kind of fictional world, including mimetic contests, completeness is a *mode of experiencing* a world, a 'space travel' which is, following Ryan's argument, the constitutive mode of experience of immersive fiction.

Ryan's broad analysis of immersion and interactivity in digital media provides valuable tools for the analysis of avatar-based interaction in computer games. At the same time, for the purpose of this thesis, the primary limitation of *Narrative as Virtual Reality* is that the specific mechanisms of play and fictional participation in computer games are not taken into account. As I will return to in chapter 8, her theories are mainly oriented towards the dominant (and distinctly avatar-less) paradigm of Virtual Reality. This means that avatar-based computer games end up in the periphery of her otherwise fairly comprehensive and unifying theoretical framework.

The paradox of play

Oscillations and conflicts between imagined and actual subject-positions are integral to how we engage with fictions. Games structure these oscillations differently from novels or films, and they typically encourage what Ryan would call the 'telescope' mode of interaction. However, in principle, games are no less 'complete' as fictional worlds, nor do they necessarily encourage us to engage with them in telescope mode. Mimetic games, simulations and literary fictions are all accessible to us as 'actual fictional worlds'. Gregory Bateson's

²⁰ 'In principle' means that we are always able to describe the conditions under which it would be possible to determine the truth-value of a proposition. We do not know, for example, whether there is life somewhere else in the universe, but we are able to specify the conditions under which we could find out (conditions which, I assume, in effect make it impossible to actually find out).

classical essay “A Theory of Play and Fantasy” (1972) casts more light on the nature of this paradox.

Bateson is concerned with the significance of play in the evolution of human communication, and with the role of play in psychotherapy. He defines ‘play’ as follows:

I saw two young monkeys *playing*, i.e., engaged in an interactive sequence of which the unit actions or signals were similar to but not the same as those of combat (...) Now, this phenomenon, play, could only occur if the participant organisms were capable of some degree of metacommunication, i.e., of exchanging signals which would carry the message "this is play." (Bateson 1972:179).

We see that Bateson here describes make-believe from a slightly different angle than Walton does, emphasising the metacommunicative nature of the rule that defines the boundary of play. The act of metacommunication (communication about communication), Bateson argues, establishes a *frame* for meaningful activity: within this frame, there is play. Through framing, humans communicate to each other what the situation is about, how the communication is to be understood. Framing – or metacommunication – defines the communicative situation, defines what is going on: ‘This is humour’; ‘This is poetry’. Because play is a basic and primitive form of metacommunication – animals do it – Bateson considers play as a driving factor in the evolution of all other kinds of metacommunication, including the development of language:

We therefore meet in play with an instance of signals standing for other events, and it appears, therefore, that the evolution of play may have been an important step in the evolution of communication”. (Bateson 1972:181).

Play, in other words, can be seen as the most basic form of *representation*, of “signals standing for other events”; through the metacommunication of play, the human species learned to discriminate between map and territory. The evolution of human communication is rooted in our ability to metacommunicate, and this ability finds its simplest form in the activity of play. If there was no metacommunication, human communication would be restricted to involuntary mood signals.

However, Bateson’s main focus is not on the discriminating function of metacommunicative framing in its most straightforward sense. His main concern is with the *paradox* of mimetic

play. Play establishes a paradoxical frame through the logical self-reference of the meta-statement “This is play”; the establishing may itself be included in the frame that it establishes. This paradoxical frame can be compared to the classical philosophical paradox that is referred to as Epimenides’ paradox or the liar’s paradox: ‘This sentence is false’²¹. The paradox follows logically from the principle of metacommunication, but takes on a particular significance, Bateson argues, in the psychological framing of play. Play is an activity that goes beyond the simple act of discriminating between map and territory, or the ability to tell fantasy from nonfantasy:

The discrimination between ‘play’ and ‘nonplay’, like the discrimination between fantasy and nonfantasy, is certainly a function of secondary process, or “ego”. Within the dream the dreamer is usually unaware that he is dreaming, and within “play” he must often be reminded that “This is play” (...) In the primary process, map and territory are equated; in secondary process, they can be discriminated. In play, they are both equated and discriminated". (Bateson 1972:185).

From a psychological and therapeutic point of view, the establishing of the frame ‘This is play’ is always fragile and vulnerable. The ‘play frame’ brings forward and accentuates the paradox that is inherent in metacommunication. While ‘This is play’ is a strategy for *avoiding* paradox (a strategy of discriminating play from non-play), it also recognises and *affirms* the paradox precisely by engaging so strongly with it. In play, therefore – as in ritual, Bateson notes – the discrimination between map and territory is always labile; always liable to brake down (1972:182). According to Bateson, the peculiar psychology of play – which goes beyond the ‘secondary processes’ of discrimination – has been central to the evolution of human communication, and must also be a necessary ingredient in psychotherapy:

The resemblance between the process of therapy and the phenomenon of play is, in fact, profound. Both occur within a delimited psychological frame, a spatial and temporal bounding of a set of interactive messages. In both play and therapy, the messages have a special and peculiar relationship to a more concrete or basic reality. Just as the pseudocombat of play is not real combat, so also the pseudolove and pseudohate of therapy are not real love and hate. (Bateson 1972:191).

In Walton’s terminology, we could say that Bateson describes the game of psychotherapy as a game of make-believe. His use of the prefix ‘pseudo’- in the context of psychotherapy echoes

²¹ ” In sum, it is our hypothesis that the message “This is play” establishes a paradoxical frame comparable to Epimenides’ paradox.” (Bateson 1972:184).

his comment on the terror that is caused by a spear flung at cinema viewer from a '3D screen', or the (homoerotic) 'pseudosexual fantasy' that may be offered in a Hollywood film (1972:183).

For the purpose of psychotherapy, which aims to "change the patient's metacommunicative habits" (1972:191), the challenge posed by cognitive and emotional 'pseudoreality' is twofold. First, Bateson points out that communicative competence includes, in its most elemental form, the ability to manipulate and make use of the kind of framing that play constructs. This is the problem with the schizophrenic, who does not "recognize the metaphoric nature of his fantasies", as he is not able to set or interpret metacommunicative frames (1972:190). Secondly, the healthy communicative mind must also learn to accept and to make use of the vulnerable and paradoxical nature of the play frame. This is why, as Bateson points out, rule-based games can only serve as an 'imperfect model' of the formal structure of therapeutic interaction. In a game like for example Canasta, the players avoid a logical paradox "... by separating their discussion of the rules from their play, and it is precisely this separation that is impossible in psychotherapy" (1972:192). In psychotherapy, rules may be implicit and constantly subject to change through experimental action. The resulting ambiguity is a challenge for the neurotic, who must learn that fantasy contains truth (1972:192).

Bateson's notion of play is similar to Walton's notion of make-believe, and as such we can also consider it as a theory of fictionality. Both theories claim that the 'as if' of mimetic play – or of simulation, in the broad sense of the term – contains the essential premise for representation. Bateson's concept of framing, however, highlights the relationships between play and *non-play* (or the fictional and the actual) rather than the internal and generative mechanisms of play itself. Moreover, Bateson's approach is more psychological than philosophical or phenomenological, emphasising how and why we differentiate between play and non-play, and how therapy can strengthen people's capacity to relate to and manipulate meta-communicative framings. This competence would include, we may add – even if Bateson only mentions this briefly, in the Canasta example – people's capacity to position themselves differently in relation to, or oscillate between, different metacommunicative

frames; in one moment, we may be playing the game, in the next we may be communicating *about* our playing of the game²².

We should note that *A theory of Play and Fantasy* does not concern itself with the question of ‘suspension of disbelief’, or with the conditions for how we are able to re-position within (actual) fictional worlds. Rather, it seems that the immersive attitude is simply taken as a given when Bateson discusses the psychology of the pseudoreality of play. Also, it is the paradoxical nature of this psychological framing that mainly interests Bateson; the strong emotions of ‘pseudolove’ and ‘pseudohate’ hence testify to the paradoxical nature of the frame. At the same time, there is very little romantic tendency or mystification to be found in Bateson’s conceptualisation of fantasy and play. There is nothing particularly peculiar about the relationship between play and non-play; play merely brings forward or accentuates a paradox that is so general that it is hardly considered as a paradox at all: the paradox that is implied by our capacity for self-referential abstraction. This is the ‘paradox’ of human communication, which enables us to exchange more than involuntary mood signals. The play of make-believe is a type of communication in which we engage more seriously with the implications of this basic paradox.

Finally, Bateson’s investigation into the secret of mimetic play does not include the role of externalised representations, or props, in Walton’s terminology. On the contrary, his focus of interest is specifically on a type of play-framed interaction that does *not* rely on props. In the “more complex form of play” that can be utilised in therapy, frame-setting is a fleeting and self-negotiating process, where frames can only be articulated and changed through their own application, from the inside; the defining statement is not “This is play”, but “Is this play?” (1972:182). This process of paradoxical self-framing is contradicted by the implementation of props. We could say that props externalise and thereby *objectify* the frames of play, stabilising and ‘disciplining’ the paradoxes that they carry. Bateson does make a hint in this direction when he observes that any psychological frame has “some degree of real existence” and that it is therefore often “...consciously recognized and even represented in vocabulary (“play,” “movie,” “interview,” “job,” “language,” etc.)”. These are examples where framing has

²² It is illustrative for Bateson’s overall concern and perspective that he only refers to non-mimetic and formally rule-based games once, as a model of therapeutic interaction – and as a model that mainly illustrates how the therapeutic use of play-framings is *not* structured. It is clear that he is neither interested in the phenomenon of non-mimetic play per se, nor in the most common way of organising metacommunication: as structured and unambiguous oscillations or frame-shifts.

become institutionalised and standardised, as it were. A similar principle is involved when we externalise frames as physical objects:

The psychological concept which we are trying to define is neither physical nor logical. Rather, the actual physical frame is, we believe, added by human beings to physical pictures because these human beings operate more easily in a universe in which some of their psychological characteristics are externalised. (Bateson 1972:187).

Props, if we follow this line of thought, can be thought of as externalised metacommunication, which provides objective, recognisable and shared frames of “This is play”. This does not mean that paintings or novels escape the paradoxes of mimetic play; on the contrary, there is a way in which the paradoxical nature of ‘pseudoreality’ becomes *more* pronounced with the use of elaborate props (especially with world-props). The safety of externalised and mutually recognised frames gives us permission to intensify and to throw ourselves into the paradox of the experience, so to speak, without worrying that other people is going to question our emotional stability. Also, we may add, although Bateson does not take his argument in that direction: the stability provided by external representations increases our cognitive capability to oscillate between – and *play with* – multiple frames of play. Also, the shared nature of the props gives us permission to do so without running the risk of losing (or appearing to lose) our grasp of reality.

Drawing on the perspective as outlined above, I will in the next chapter give a critical discussion of contemporary computer game theory that specifically addresses the role of fiction and fictional immersion in computer games, and the role of avatars. This discussion also aims to point out the tensions, links and overlaps between my own approach and the approaches that are dominant in the field. I will place particular emphasis on Jesper Juul’s book *Half-Real* (2005), which is the leading and most comprehensive theoretical contribution on the subject.

Chapter 3: Computer game fiction

First-person experience

Torben Grodal's article "Stories for Eye, Ear, and Muscles: Video Games, Media, and Embodied experiences" (2003) presents a view on computer game experience that ties in with the theoretical perspective of Walton and Ryan in some important respects. Grodal's point of departure is that playing a computer game, unlike watching films or reading books, is not something that is mediated and second-hand; it is not a representation of someone else's experience. Like real-life experience, computer game experience is 'embodied'. It is first-hand and takes place in 'a progressing present' (2003:134). Videogames, Grodal argues, "are simulations of basic modes of real-life experiences" (2003:130). He then extends this basic argument into a discussion of 'story' and the essence of narrative structure: Discursive narrative (as found in books and films) is derived from a more fundamental 'narrative format' of first-person and pre-discursive experience, and the stories of computer games must primarily be understood and theorised as a more direct variation of the latter. Computer games, just like life, offer basic, real-time and embodied 'story-experience' rather than 'stories' understood as discursive mediation.

This perspective has similarities to the concepts of simulation and fiction as they are discussed in the two previous chapters. The basic model of make-believe defines fiction in terms of active and embodied simulation, performed in real time, as opposed to a linguistic or diegetic model of fiction in which fiction is always something that is communicated, something that is told. Grodal's contribution, which shows no direct links to literary theory or philosophical aesthetics, is a kind of no-nonsense variant of the anti-linguistic approach, essentially claiming that virtual experiences should be treated no differently than any other first-hand and 'first-person' experience. This approach deserves attention as a critical and potentially useful alternative to dominant theories of computer game representation. However, at the same time Grodal seems to avoid or ignore some of unique and defining aspects of gaming 'experience'. Also, his analysis draws heavily on a set of contested philosophical assumptions, which limits the potential applications of his theory and diverts the attention from the specificity of games and game genres.

Grodal is right to point out that computer games model real life experiences in terms of similarly ‘first-person’ experiences. In simulations as in real life, meaningful action requires mastery and control, and has actual (– and, in principle, unpredictable) consequences. Also, on the most general level, Grodal’s theoretical perspective draws on fairly uncontroversial and established philosophical ideas about how human beings make sense of the world and their immediate surroundings. His basic orientation is evolutionary and ecological, taking the notion of embodied subjectivity as point of departure. Meaningful interaction and self-reflection, including language and culture, must be understood in the context of how an organism has evolved within an environment, within its particular ecological niche. This resonates with the theories of James Gibson – which I will return to below – even if Grodal does not comment on this relationship in the relatively brief article.

However, even if one points out the link between computer game ‘stories’ and real-life experience, the question still remains how best to study and describe the meanings of embodied experience in its various aspects – whether in games or in life. We can agree that simulated environments in games are similar to real-life practices in some important respects, but the question of how human embodied practices in general should be theoretically in the first place opens up, obviously, a broad field of philosophical discussion. Grodal’s elaborations on what constitutes the ‘basic embodied experience’ is rooted in the theories and findings of cognitive psychology, with an emphasis on pre-linguistic and pre-communicative “story-mechanisms in the brain” (2003:130).

This theoretical tradition is committed to the idea of pre-linguistic thought, a discussion of which goes beyond the scope of the present study. What I want to emphasise in the context of my own argument is that it is possible to advocate non-linguistic and – in the case of fiction – non-diegetic theoretical descriptions of human practice without implying any specific claims about the relationship between thought and language more generally. On the contrary, I would say that to rigidly delineate a sphere of ‘experience’ that is disconnected from language and culture constructs an unnecessary limitation on how to understand embodied practices, especially when fiction is concerned. Within Grodal’s conceptual framework, the cultural and artistic dimension of simulated practices becomes hardly more than a footnote. This is because his category of the ‘unmediated’ is never relaxed or questioned. In comparison, even if Kendall L. Walton in *Mimesis of Make-Believe* also argues against the hegemony of the linguistic paradigm in the study of fiction and narrative, he is not committed to an idea of

‘raw’ experience. Walton’s concern is the non-linguistic dimension of symbolic practice, not the pre-linguistic and ‘unmediated’ status of non-symbolic practice. Because Walton emphasises the non-discursive rather than the *pre*-discursive, he assumes no sharp distinction between what is mediated by language and what is not.

More specifically, the central difference between Grodal’s and my own approach to computer game aesthetics is that Grodal only sees computer games as a matter of embodied experience, not as a matter of embodied *fiction*. Within the perspective of cognitive psychology, the notion of subjectivity becomes quite irrelevant: there is only one subject who interacts, namely the actual subject – or, to be more precise, the embodied (and decidedly non-fictional) brain of the playing subject. This means that Grodal does not need to address the role of the avatar in computer game ‘experience’. In contrast, my argument is that we need a concept of fiction and a concept of fictional embodiment in order to account for the central mechanisms of computer game representation and interaction. Recognising and analysing the ‘full experiential flow’ of perception, cognition, emotion and action (2003:132) does not necessarily tell us – specifically – what makes computer game play meaningful as different from other types of embodied ‘flows’.

We should note that Grodal does not address the fact that our ‘real-life’ interaction (pressing buttons or moving a mouse) translates into something quite different when mediated via a screen, into a ‘world’ that is conveyed to me as sounds and images. In other words, the embodied ‘rehearsals’ of the actual and the simulated do not correspond to each other. Without a concept of embodied fiction rather than just ‘experience’, the experiential significance of these projections and transformations is not being accounted for.

Moreover, as long as the researcher’s eye is on brains rather than subjects, genre-dependent relationships between fictional and actual practice recede to the background. In fact, Grodal never makes much reference to computer game genre at all. From the examples that he uses, it seems that he is primarily talking about avatar-based and three-dimensional simulated environments (and specifically First Person Shooters), but no explicit generic qualifications are made. The central ‘story mechanisms’ of the embodied brain presumably apply to the

computer game experience on a general level, of which genres, we must assume, are different variants over the same basic type of ‘first-person’ interaction²³.

In other words, Grodal seems to imply that an FPS is engaging for largely the same reasons that *The Sims* is engaging. This generalising assumption weakens his arguments and makes it unclear what kind of ‘experiences’ he is actually talking about. When he argues, for example, that ‘interactivity is not centrally about changing a world’ (2003:143), my objection would be that the ‘centrally’ will depend on what type of game he is talking about.

Finally, it is important to keep in mind that our ‘first-person’ relationship to computer games is made possible within a self-contained and formally defined rule-system – a rigidly articulated magic circle. This rule-system describes the possible operations of the computer, and also integrates the rules that construct the computer game as a game rather than merely as a simulated environment. By comparison, life outside the contained spaces of games is not a system of formalised procedures, even if our everyday environments (roads, buildings, cars etc) obviously are, as Grodal points out, designed in ways that enable, restrict or encourage particular behaviours²⁴. Computer game environments are designed in a more radical sense than the designed environments of non-fictional, everyday life. Not only are gameworlds formally defined and closed-off from the rest of the world, but they are also *unified* as a self-contained whole, subject to a coherent purpose, a ‘master plan’ (– however haphazard or flawed) that runs through every detail of the environment. The notion of general ‘design’ does not cover it, as Grodal seems to imply. A theory of world-interaction in computer games, whether focussing on fictional or non-fictional aspects, must somehow relate to the unity, the artificiality and the *gameness* of game-worlds. Why do, for example, Hitler’s soldiers in *Brothers in Arms: Road to Hill* (Gearbox Software 2005) have bright red circles over their heads?

Moreover, we should note that the kind of games Grodal mainly seems to be talking about – contemporary, three-dimensional and avatar-based games – are also often governed by rules

²³ We may note that the central ‘generic’ difference in Grodal’s account is discussed on the level of the *player* rather than the level of the game itself; the nature of the experience depends crucially on whether the player is a novice or a master (Grodal 2003:144).

²⁴ “In a real world as well as in simulated worlds our influence is limited by the general design of that world: we follow roads, tunnels or career tracks, and obey rules, but within a given framework we may alter some elements, take different roads, build houses, and so on.” (Grodal 2003:142).

of dramatic design, in a way that makes them not directly comparable to architecture or city planning. In these cases, game-space is not just a gaming environment but also functions as a *stage*, which frames and gives dramatic significance to actions. This dramatic quality requires that the events taking place in the game are somehow scripted to achieve dramatic significance. In Grodal's own terms, we could say that certain kinds of avatar-based computer games are scripted first-person experiences.

If we accept that dominant types of gameworlds are worlds in which principles of dramatic, cinematic or literary orchestration also determine the modality of our 'experience', we will also need to discuss the role of textuality and of narrative – both as this relates to notions of 'gameness', and as it relates to the concept of fiction as outlined in chapter 2. In the following I will discuss some of the major theoretical efforts within computer game studies that address this question. I will start with Espen Aarseth's pioneering work *Cybertext* (1997).

Cybertext

Cybertext is not primarily about games, or about the notion of fiction in simulated environments; it investigates, as the title says, a particular type of literature – computerised as well as non-computerised – and uses the puzzle-based adventure genre of computer games as a central example. As such, the work addresses the concerns of this study only indirectly. On the other hand, *Cybertext* has been influential to how the questions of gameness and fictionality are being addressed in contemporary studies of game aesthetics, both directly and indirectly, via its strong influence on the so-called 'ludological' strand of game theory, which I will return to below.

The concept of cybertext focuses on the mechanical organization of the text, by positing the intricacies of the medium as an integral part of the literary exchange. However, it also centres attention on the consumer, or user, of the text, as a more integrated figure than even reader-response theorists would claim. The performance of their reader takes place all in his head, while the user of cybertext also performs in an extranoematic sense. During the cybertextual process, the user will have effectuated a semiotic sequence, and this selective movement is a work of physical construction that the various concepts of 'reading' does not account for. This phenomenon I call *ergodic*, using the term appropriated from physics that derives from the Greek words *ergon* and *hodos*, meaning 'work' or 'path'. In ergodic literature, nontrivial effort is required to allow the reader to traverse the text. (Aarseth 1997:1).

The ergodic refers to the principle of having to work with the materiality of a text, of having to participate in the construction of its material structure. While some ergodic works lead us towards a fixed solution – like jigsaw puzzles or adventure games – others can be unpredictable and open-ended, like for example an experimental hypertext novel. The cybertext, more specifically, is a ‘computerised’ text (although not necessarily computed by a digital computer); an ergodic text that calculates its response to our input²⁵. The cybertext is a “machine for the production of variety of expression” (Aarseth 1997:3).

The ergodic overlaps with the notion of play:

The cybertext reader is a player, a gambler; the cybertext is a game-world and a world-game; it is possible to explore, get lost, and discover secret paths in these texts, not metaphorically, but through the topological structures of the textual machinery. (Aarseth 1997:4).

If we choose a relatively broad definition of ‘game’ and ‘gameness’ (or the *ludic*), which covers any type of rule-based and (however loosely) goal-oriented ‘magic circle’ of self-contained activity, we could define the cybertext as a game-text, or maybe better, as a text-game. A cybertext is a configurable and playable text. From this point of view we could say that, while Kendall L. Walton directs our attention to games of make-believe, Aarseth directs our attention to games of literature; to game-like literariness.

This ‘ludic turn’ also implies a theory of the relationship between computer games and literature, which centrally focuses on the distinction between games and narration. Ergodics, Aarseth suggests, is not a variant of narrative, but constitutes a mode of discourse of its own, a different model of literariness, which is separate from and in potential conflict with narrative – although the two forms typically co-mingle and interact in a number of ways (1997:5)²⁶. In narrative discourse, the user is invited only to engage in the semantics of the text and does not have to worry about its material configuration; the user is only a reader, not a co-constructor in the material sense, not a player.

²⁵ As I am not here concerned with the distinction between ‘ergodic’ texts and cybertexts, the latter concept is simplified somewhat. According to Aarseth, a ‘cybertext’ does not have to be ergodic; the category of the cybertext would also include machines that calculate linear texts, as illustrated in his model at page 64 (Aarseth 1997).

²⁶ See also Aarseth (1999), where he adds that the relationship is “...dialectic, not dichotomic. Narrative structures and elements can be found in ergodic works, and narrative works may contain ergodic features, to the extent that only a single element from one mode is found in a work belonging to the other” (Aarseth 1999:34).

The ergodic, in other words, describes a type of textuality, not simulation or fictionality. Some ergodic works have little to do with simulation (like for example computer-generated poetry), whereas others can also be considered as models, as functional representations. Conversely, many simulations can be said to be 'ergodic', which would mean that we choose to look at them as texts. In computer game studies, a text-oriented approach may in certain cases be useful, depending on the genre and the aims of our study. Clearly, text-based adventure games, which Aarseth analyses in *Cybertext*, invite this type of approach, as they are, in a literal sense, 'text-games', setting up an explicit dialogue between the player/reader and the textual machine. Aarseth analyses this dialogue in narratological terms: The playful text is an 'intrigue' in which there is an exchange between the 'intrigant' of the textual machine and the 'intrigee' of the (implied) player, who is being challenged by the intrigant (1997:112-114).

Although Aarseth's model operates within the established narratological frameworks of Gerard Genette and Seymour Chatman, the focus is moved elsewhere; in adventure games, the interesting action is no longer going on in the world of the *diegesis*, but on the level of discourse itself, on the level of the dialogical text. While narrative discourse produces a story world, ergodic discourse produces an intrigue, a game of narration. 'Ergodics' can therefore be considered as an anti-narrativist branch of structuralist narratology, which can be used as a building-block for a dedicated theory of computer game representation.

However, as Aarseth has demonstrated also in later works, the formal structures or types of 'paths' that can be revealed by the ergodic approach may be valid and productive also beyond a linguistic and text-oriented framework. Notably, this applies to what Aarseth calls the 'master figures' of ergodic aesthetics, aporia and epiphany, which articulate the dialogical relationship between the player and the voice of the game. In games, these should not be seen as literary tropes, but as formal figures that reflect the most basic structure of the ergodic experience.

When an aporia is overcome, it is replaced by an epiphany: a sudden, often unexpected solution to the impasse in the event space. Compared to the epiphanies of narrative texts, the ergodic epiphanies are not optional, something to enhance the aesthetic experience, but essential to the exploration of the event space. Without them, the rest of the world cannot be realized. (Aarseth 1999:38).

Inspired by Paul Ricoeur's *Time and Narrative* (Ricoeur 1984-1988) – and tying in with Grodal's later emphasis on 'first-person' experience – Aarseth argues that aporia and epiphany are the 'pre-narrative master figures of experience, from which narratives are spun' (1999:39). Operating on the same level as Ricoeur's epistemological variant of 'narrative', aporia-epiphany is a figure through which time manifests itself as experienced time.

With respect to the question of fiction in games, the notion of ergodic discourse has been productive because it represents an alternative to standard diegesis-based models of narrative and fictionality: games are not told, even if they may *contain* narration as well as other forms of mediation. The worlds that they invite us to engage with are not primarily diegetic worlds, but gameworlds. The specific nature and status of a gameworld as opposed to other kinds of worlds is a dimension that is lacking from Grodal's account.

However, the textual approach is limited in that it neither addresses the role of simulation nor fiction. While Aarseth's approach does not reject or deny the dimension of world simulation in computer games, it is nevertheless being subordinated under the model of the dialogical text. Consequently, the worldness of games is seen as a device in the repertoire of the intrigant rather than as a world in which intrigues take place. From this structuralist perspective, not much separates *Doom* (id Software 1993) from *Zork* (Infocom 2005[1981]) or *Castle Wolfenstein* (Muse Software 1984), because the world simulation – and the particular kinds of perceptual participation that follows with it – is incidental to their primary functioning as ergodic works.

In contrast, I want to argue that in avatar-based games, the world simulation is the primary world of the game, a world that has the capacity to contain or colonise the 'intrigue' that structures interaction. Through simulation, the 'master experience' of aporia and epiphany does not have to be told (as in narrative) or enacted (as in drama), but can be experienced first hand. After *Cybertext*, Aarseth has moved on to more specifically game-oriented research, emphasising the role of simulation and virtuality rather than text-based interaction or 'ergodics'. However, as I will return to in chapter 4, Aarseth's concept of virtuality is articulated in opposition to the notion of fiction.

Ludology

Although ludology constitutes no clear group of theorists or tradition of works, the general term as it is typically being used nevertheless captures a distinctly game-centred and anti-narrativist strand of thought which developed in the wake of Aarseth's *Cybertext*, and which has developed as a response to the lack of a dedicated theoretical perspective on computer games in theories of digital media.

Following up on the general narrative-versus-ergodics model proposed by Aarseth, the Danish game designer and game theorist Jesper Juul (1998; Juul 2004) developed more specifically game-oriented ideas about how to understand the relationship between narration and play, calling special attention to the difference in temporality between narration and play. Playing a game is an activity that is always in the present, happening *now*, while narration is about the *prior*, what has happened. Therefore, Juul claims, you cannot have narration (the act of telling a story) and interactivity at the same time.

Other theorists who have been most commonly referred to as 'ludologists' are Markku Eskelinen (2001) and Gonzalo Frasca (Frasca 1999) – the latter being the one who most explicitly advocates ludology as the 'father discipline' of computer game studies²⁷. As the name indicates, this strand of theory emphasises the distinctive nature of 'ludus': the activity of playing a game. As a privileged way of analysing this activity, ludology focuses on the formal mechanisms of games, with attention to the basic elements and structures that distinguish different kinds of game systems. Following up Aarseth's structuralist approach in *Cybertext*, Eskelinen and Frasca (especially the former) draw on literary semiotics²⁸ to argue how games require a parallel but different *ludology*.

Even if ludology in its anti-narrative, polemic and 'purist' form is today largely denounced in computer games theory (including by Jesper Juul himself), the ludologist argument has had a strong and lasting impact on computer game theory during the early and formative years of

²⁷ For an overview of the main arguments in the ludological position, see Frasca (2003). For my own critical review of the game-centred formalist approach, especially in its radical variant as represented by Markku Eskelinen, see Klevjer (2002)

²⁸ While Eskelinen seems to be the only 'narratologist' in the group (– developing his formal theoretical framework of the 'gaming situation' in dialogue with leading figures like Gerard Genette, Seymour Chatman and Gerald Prince), Frasca's thesis *Video Games of the Oppressed: Video Games as a Means for Critical Thinking and Debate* (Frasca 2001) draws mainly on the semiotics of Charles S. Peirce.

the field of game studies. Game researchers now generally recognise that the overwhelming majority of computer games are not primarily in the business of telling stories, and that narrative in games performs a very different role from narrative in novels or films. Moreover, the tradition following Aarseth has brought attention to the aesthetic and cultural importance of what Jesper Juul refers to as the ‘gameness’ of games (Juul 2003a). The game, understood as an artificial conflict taking place within a rule-based system, is a distinct yet diverse cultural form that often blends with but should not be conflated with either ‘fiction’, ‘simulation’ or any other mode of practice or discourse.

Without a basic understanding of how different types of games are structured on a formal level, we will not be able to understand any of the complexity or representational messiness of game aesthetics as expressed through different technologies, genres and gaming situations. Also, the formalist approach – whether we call them ludologists or not – has contributed strongly to the construction of computer game studies as field of research with its own identity. The so-called ludology-narratology debate is so far the only obvious candidate for a disciplinary ‘tradition’ that might identify the young field of computer game studies.

My dedicated focus on simulated environments and the role of the avatar at the expense of formal game structures represents in this context a complimentary perspective, but also implies a critique of a tendency to place too much weight on the structures and mechanisms of the abstract game system, particularly with respect to avatar-based games. My approach also implies that the difference between a game and a computer game is more significant than the term ‘ludology’ in many cases seem to imply. As I will return to below, the formalist and structuralist approaches are also often problematic in the way they tend to confirm and reinforce an unproductive binary of ‘representation’ versus action and control, and in the way they are uncritically borrowing established conceptions of fiction from film and literature.

On the other hand, I find that a particularly productive element to be taken from the formalist tradition is the concern with *simulation* as a fundamental representational form of the computer game. This emphasis is especially strong in Frasca (2003) and Aarseth (2004), both of whom have informed the general orientation of my own work. The centrality of simulation and the principle of the model is my most direct link to the formalist tradition, although re-

interpreted via Kendall L Walton's theory of representation, and applied to the more specific context of avatar-based singleplayer games²⁹.

I also want to point out that my own approach is less directly design-oriented than some variants of the formalist approach (notably Frasca and Juul). My main focus is on the role of fiction and embodiment, not on how game systems and game mechanics are (or should be) designed from a formal and structural point of view. As noted in the introduction, my analysis could have implications for certain aspects of computer game design, but the traditional issues and problems of game design are not addressed.

Textplay

Julian Kücklich's paper "The playability of text vs. the readability of games: towards a holistic theory of fictionality" (Kücklich 2003) applies possible world theory to the analysis of computer game fictions, emphasising the process of 'fiction-making' (2003:101), of how fictional worlds are established and maintained through the interaction between player and the game system. However, Kücklich's application of possible world theory is different from Ryan's theory of recentring. A central concept in Kücklich's 'holistic' approach is Wolfgang Iser's notion of *textspiel* ('text-play'), which posits the reading of literary texts as an interactive process, in which the reader 'plays' with the text in order to establish meaning. Just as the reading of literary texts is an interactive process, Kücklich argues, playing a game can also be considered a form of reading, an interactive process of meaning-making. Texts and games are analogous processes of fiction-making ('poiesis'); as readers/players we construct worlds by 'gap-filling' the real into the imaginary, and it is this interplay between real and fictional worlds which can be described in terms of possible worlds theory. The playing of a computer game, Kücklich suggests, is a 'semiotic machine' (a concept borrowed from Umberto Eco) in which different processes of meaning-making (or 'semiosis') interlock with each other in the interaction between the player and the game.

Kücklich's unified model of playing-as-reading or reading-as-playing represents in many ways an antithesis to the concept of 'fictional world' as found in Walton and Ryan. While Ryan uses the category of possible world to formulate a theory of immersion and subjectivity, Kücklich adopts it as part of a reader-response theory of fiction in computer games. 'Fiction',

²⁹ The relationship between the 'Waltonian' notion of fiction and Aarseth's recent discussion on the 'virtual' as applied to games will be discussed in chapter 4.

according to Kücklich, whether in literary texts or in computer games, is the result of *reading*, a semiotic process of world-building in which the reader ‘plays’ the text. This notion of fiction has no place for simulation, other than as a metaphor for a semiotic process of interpretation:

However, in fictional texts, the procedural activity is something external to the text, something that takes place in the reader’s mind rather than within the text itself. In this sense, fictional texts are more interactive than simulations, because they absolutely require the participation of the reader. Simulations, on the other hand, are mostly self-sufficient enough to run at least for some time without external input. (...) Many digital games, however, are both: simulations *and* fictions. The physical aspects of the game-world are simulated by the game’s physics engine, while the aesthetic aspects are the product of a process of fiction-making that takes place between the player and the game itself. (Kücklich 2003:101).

This model is quite instructive in the way it contrasts with the notion of fiction that has been outlined in the previous chapter. The archetypical model of simulation is the closed computer simulation, which simulates all by itself and does not need our participation. Fiction-making is then something that goes on ‘in the reader’s mind’, as an interaction-based interpretation of what the simulation means. This ‘de-fictionalisation’ of simulation in games makes perfect sense from the point of view of reader-response literary theory; simulation is seen as discourse, as ‘text’, which is being read as fiction when we interact with it. Our interaction is not merely a ‘material construction’, as Aarseth would say, but becomes an ‘investment of belief’ into the simulated environment:

The player’s role in the process of fiction-making cannot be overestimated. It is only through the player’s investment of belief into that world that the game-simulation becomes a fictional world that can be inhabited and explored by the player. Samuel Taylor Coleridge’s “willing suspension of disbelief” is of equal importance in game-fictions as in literary texts or in other forms of fiction. Therefore, if we want to understand digital games as forms of fiction, we must take the player’s interaction with the game into account. (Kücklich 2003:102).

What Kücklich argues is that the fictions of literary texts and computer games are constructed via analogous processes of reading. This ‘textplay’ unifies the literary world and the computer game world under a single (holistic) concept of fiction-making, according to which game-playing is seen as a semiotic construction of diegetic worlds. In this perspective, whether a computer simulation is entirely self-sufficient or ‘mostly’ self-sufficient is of little

importance, as it is not the interaction itself but the *interpretation* of this interaction that matters to the establishing of a fictional world. Interaction (playing) is the means through which the player can comprehend and understand what the simulation is about. The player-reader puts the pieces together, in an act of practical (or experiential) hermeneutics.

We should note that Kücklich's notion of the text-game is different from the 'intrigue' of Aarseth's ergodics. While both variants highlight the playable text, Kücklich emphasises that the play of ergodic construction is also a play of interpretation, an investment of belief into a fictional world. In other words: 'ergodics' cannot be separated from the semiotic process of constructing a fictional world, and this process can be described with the help of possible world theory.

Kücklich's theory of play-reading is a useful alternative to Aarseth's distinctly anti-diegetic dialogical model, and it highlights the importance of the process of fiction-making over the ergodics of material construction. However, the notion of gap-filling does not capture the fictional rationale of the interaction itself, as a practice of make-believe. This practice of make-believe is itself not a textual practice, not a reading, although it can be interpreted or read in various ways.

Half-Real

The aims of this study partly converge with the concerns in Jesper Juul's recent book *Half-Real. Videogames between Real Rules and Fictional Worlds* (2005), which is so far the only systematic and genre-oriented analysis of the role of fiction in computer games³⁰. While the book clearly differs in important respects from Juul's earlier 'ludological' work, the central themes and arguments still inform his conceptualisation of fiction in games. Theoretically, there are many points of contact between *Half-Real* and my own approach – including a central focus on the relationship between 'world' and 'system', and a concern with the uniquely computerised nature of computer games. Like Ryan and Kücklich, Juul also draws on possible worlds theory to conceptualise the notion of 'fictional world', and proposes a

³⁰ Juul's Ph.D dissertation from 2003 and his book from 2005 have identical titles – the latter being a revised version of the former, but differing from it in a number of respects. Theoretically, a notable difference is that the dissertation uses Walton's *Mimesis as Make-Believe* to describe the relationship between rules and fiction, a reference which (for good reasons) has been removed entirely from the book version. My discussion here uses the revised book edition as a point of departure, but refers specifically to the theoretically more elaborated dissertation version when indicated.

dualist model that is similar to Kücklich's model of 'simulation' versus 'fiction'. The main concern of *Half-Real*, as the title indicates, is the relationship between the reality of the game and the imagined world of the fiction. The book analyses how game rules and fictional worlds combine, collaborate and compete in different ways in different categories and genres of computer games. When we play games that encourage us to imagine worlds, Juul argues, our actions are at once meaningful here-and-now (in the actuality of playing the game) and in the fictional world that is projected by the game. At the same time, he emphasises that playing a game is at heart a rule-based activity that does not need make-believe in order to be meaningful and interesting; many types of games have no fictional worlds at all, and many have 'incoherent' worlds which strongly discourage us from imagining them as worlds (Juul 2005:123).

The notion of the 'half-real' resonates with Ryan's distinction between the 'telescope' and the 'space travel' mode of interaction; we could say that whereas the former positions the user in front of a rule-system, the latter encapsulates the user within fictional world. However, Juul's dualist ontology is not articulated in terms of subject-positions; it is not to do with the recentring or non-recentring of the subject. As Kücklich, Juul does not employ possible worlds theory as a theory of immersion, but as a theory of interpretation, of 'gap-filling'; a theory of how we as players construct fictional worlds out of the 'cues' given to us in the game.

In Juul (2003b), the concept of 'cuing' is proposed with reference to Walton's *Mimesis as Make-Believe*; the various elements of the game (including the rules) are props that 'prompt' imaginings when we play. In this 'prop-centric' account (2003b:119), Juul emphasises that *actions* also function as props in games of make-believe.

Games can *prompt* players into imagining worlds in a large number of ways: graphics, sound, text, cut-scenes, the game title, the box or manual, haptics and rules. Additionally, the actions that the player performs by moving a mouse, pressing a key on a keyboard or using a game controller, are *props* that signify actions in the game world: pressing the mouse button may signify shooting a gun; pushing the stick on the game controller to the right may signify moving a character to the right in the game world. (Juul 2003b:120).

In Juul (2005), Walton's theories are left out, with little or no change to the analysis. The most immediate reason for this seems to be that a theory of 'props' and 'prompters' is not

really needed in the context of his argument, as the notion of ‘cuing’ brings the idea across well enough. Also, I would argue, Walton’s theory of make-believe, if implemented as more than merely a theory of prompting or ‘cuing’, would in fact conflict directly with Juul’s formal separation between rules and fictional world. Whereas the former is a theory of games of make-believe, Juul attempts to explain games *as* make-believe. Walton’s central argument throughout *Mimesis as Make-Believe* is rooted in the concept of fictional truth; fiction is that *which is to be* imagined. Juul’s notion of fiction, in contrast, represents precisely the position that Walton argues against: fiction is that which is imagined. It is this imagined world that is ‘cued’ by the playing of a game; whereas the playing takes place in the rule-governed reality of here-and-now, this (real) activity also *projects* a fictional world. The projected fictional world is constructed in the mind of the players, as “the player fills in any gaps in the fictional world” (Juul 2005:121).

The projected world, according to Juul’s model, must be separated from the notion of *game space*, which is a space defined by rules:

Rules separate the game from the rest of the world by carving out an area where the rules apply; fiction projects a world different from the real world. The space of the game is *part of* the game in which it is played, but the space of a fiction is *outside* the world from which it is created. (Juul 2005:164).

This strikes a chord with Huizinga’s notion of the ‘magic circle’ as discussed in chapter 2; the ‘world’ of games is not the same as the ‘world’ of fictions. Juul’s distinction between ‘world space’ and ‘game space’ is an attempt to clarify this relationship with respect to the particular case of computer games. He points out that computer games typically structure the relationship between game space and world space differently than board games or sport. He uses computer sport games as a central example: in those games, the (playable) game space is placed *inside* a fictional world, delineated as for example a fictional football field or a fictional boxing ring (2005:165).

How this relationship between game-space and fictional space is played out in games like *Super Mario 64* (Nintendo 1996) is more unclear from Juul’s argument. Without going into specifics, he concludes that the bounds of a ‘coherent world game’ are ‘reasonably motivated by the fictional world’ (2005:166) – with reference to the phenomenon of ‘invisible walls’, which is a common (and often debated) feature of contemporary action adventure games. It

could be that he considers game spaces of such games to be framed within a fictional world in a similar fashion as with sport games, only less explicitly so, and with a need for invisible boundaries to define the game space. The game space that is projected on the screen is placed in a fictional context, but is nevertheless delineated as part of the real world, otherwise it could not be a game space; otherwise it could not be played.

This is a paradox that sits well with Juul's general model of the 'half-real': A real, playable space is being framed within a fictional world. While Juul's primary concern is with how the meanings of the latter are being 'cued' by what is going on in the game space, he also emphasises how the rules of game are typically 'cued' by the fictional world; when we face evil-looking monsters, we are usually correct to assume that there is a rule prescribing that they should be destroyed or avoided (2005:177).

Unlike game spaces, in which our activity necessarily takes place in the here-and-now of play, projected fiction is separated from the actual world by virtue of also projecting its own *temporality*; the fiction of games, Juul argues, just like the story worlds of film or literature, takes place in a different time-space. Whereas play is real-time, fictional space has its own *fictional time* (Juul 2005:141). In a game like for example *Tomb Raider*, Juul argues,

(...) the *actions* that we perform have the duality of being real events and being assigned another meaning in a fictional world. Additionally, since our actions take place in time, that time shares the duality of being both real time *and* fictional world time. (2005:142).

Fictional time is ontologically separated from play time (the time it takes to play the game), the former being a projection of the latter. The time of the (fictional) game world is a projection of the time of the (real) play world. In real-time games, the play time "has a 1:1 projection to the game world's fictional time". A game like *SimCity* (Maxis Software 1989) is not real-time, because fictional time maps onto play time in a different way: "Playing for two minutes can make a year pass in the fictional time/game world." (2005:143).

The theory of how fictional time is 'cued' by play is linked to Juul's distinction between coherent and *incoherent* game worlds. An incoherent game world is when "the game contradicts itself or prevents the player from imagining a complete fictional world" (2005:123). It is difficult to understand, for example, why Mario in *Donkey Kong* (Nintendo

1981) has three lives, and this makes it difficult for us fill in the blanks, to imagine a coherent fictional world. Instead we simply explain it with reference to the rules of the game; we accept that three lives is a game convention:

While, technically, any world can be imagined, and we could explain Mario's reappearance by appealing to magic or reincarnation, the point here is that nothing in *Donkey Kong* suggests a world where people magically come back to life after dying. In an informal survey of *Donkey Kong* players, all players explained the three lives by appealing to *the rules of the game*: With only one life, the game would be too hard (Juul 2005:130).

Fiction in incoherent games like *Donkey Kong*, Juul concludes, is a provisional matter, and it makes the players more aware that imagining the fictional world of a game is optional; we can choose to believe in the fiction, or we can choose not to (Juul 2005:141).

Most contemporary avatar-based games in the action adventure genre, according to this perspective, are both real-time and coherent, and they generally do not have 'provisional' fictional worlds. The principle of the avatar serves as a privileged interface, as it were, which secures a 1:1 relationship between play time and 'fictional time'. As Juul notes, singleplayer adventure or 'journey' games, through their linear and progressive structure, bring the fictional world more to the fore of experience. Because the spaces and events of the fictional world are meant to be experienced only once, and because the journey model encourages a lot of 'local' variation of rules and potential actions along the way, the adventuring player is more likely to become oriented toward the fictional meanings at the expense of the underlying rules that define the game space (Juul 2005:195).

A critical approach to the rules perspective

Half-Real's investigation into the role of fiction in computer games is a vital contribution to the field, integrating a theory of fictionality in games with a systematic and empirically founded account of central generic variations. In comparison to more general theories of fictionality (or narrative), Juul's conceptual framework is dedicated to games and – specifically – to computer games. The role of fictional worlds is analysed from the point of view of the abstract rules that structure games, and this is a perspective that is not included in Walton and Ryan's account as outlined in the previous chapter. Whereas Walton never considers the function of rules in games that are *not* games of make-believe – essentially

because his theory is a theory of representation, not of games – the attention to this type of rules is precisely Juul’s point of departure; rules of play have the capacity to operate as game systems that structure meaningful activity independently of any mimetic dimension. Such rules are abstract in the sense that they constitute a set of instructions, which has a non-ambiguous formal structure. It is because a rule-set is given an abstract and formal articulation that we can think of it, on a formal level, as *themable*, in the sense that “a set of rules can be assigned a new fictional world without modifying the rules” (2005:199). The unique status and functioning of formal rule-sets is lost if we uncritically apply traditional theories of representation to the study of games.

An emphasis on the abstract articulation of rules and game systems also makes sense when applied to computer games. Because the rules need to be implemented by a computer, they need to be expressed in terms of an abstract, formal system. The central difference between games and computer games is that in the case of computer games, instructions are not instructions to the player directly but instructions to the computer³¹. Consequently, the player cannot break the rules unless the computer can be manipulated or otherwise made to cooperate. This also means that the player cannot relate directly to the instructions without somehow sharing the point of view of the computer.

Finally, Juul makes an important point when he observes that screen-mediated environments are ‘carved out’ from the larger world in a different way than other game spaces. In this respect, Walton’s discussion of ‘modes and manners’ of make-believe is unsatisfactory, as he does not address directly the difference between screen-based ‘work-worlds’ and the worlds of, for example, children playing make-believe in the woods. It is hard to see how this distinction would not be significant in terms of how fictionality and participation is structured in the process of make-believe; screen-based spaces – unlike other spaces of mimetic play – are information spaces, projected as synthetic images but still playable in a concrete and tangible sense. Juul goes some way to account for the paradox of how play relates to fiction in those kinds of information spaces.

³¹ This point only applies to instructions that are actually implemented by the computer, which the central rules usually are in computer games. Obviously, we can think of rules that are not implemented by the computer but which are still considered as authoritative game rules by the players; an example would be online racing games where the simulation allows you to go in the reverse direction on the track and crash into your fellow players – a possibility that is most often blocked, as it tends to ruin the fun for the majority of players.

However, the rule-based perspective on fiction in computer games also has a number of limitations, some of which are not adequately addressed, I would argue, in *Half-Real*. Firstly, the links to a larger tradition of mimetic play are not addressed. This leads to an over-emphasis on the dimensions that distinguish formally articulated game-play from less rigid (and less agonistic) forms of mimetic play, and a theoretical blindness to what Walton would call the objectivity, the ‘truths’, or shared nature of (explorable) make-believe environments. Walton’s basic argument that rules of games of make-believe generate fiction *independently* of what the participants imagine about those truths may be referred to in the dissertation version of *Half-Real*, yet it is not seriously taken into account, as it does not fit with the rules-versus-fiction model.

Because the rule perspective does not accommodate any notion of fictional truth or fictional objectivity, there is a lack of attention to the process of simulation as something that the players perform. This implies that *Half-Real* – maybe because one of its critical concerns is to refute literary notions of ‘immersion’ – has no theory of the role of participation and subjectivity in the construction of fiction. As with Kücklich’s notion of ‘textplay’, fiction is instead conceptualised merely as subjective imagination; fiction is not constituted by acts of simulation, but by the (gap-filling) ‘projection’, reading, or *interpretation* of what goes on in the game space – ‘simulation’ apparently assumed to be something that the computer (or the ‘rules’) is doing, not the player.

Secondly, Juul’s concept of fiction is too strictly committed to the literary notion of ‘diegesis’ or story-world; fiction is never considered as anything other than *projected* fiction, operating in its own separate time-space, its own ‘fictional time’ – or we could add: operating in diegetic time, the time of the told. This mirroring of the narratological divide between discourse and story, as established by Gerard Genette and Seymour Chatman, is explicitly acknowledged by Juul³², yet he does not consider whether computer games (or mimetic games in general) could be a phenomenon that calls for alternative and non-diegetic conceptualisations of fictionality. As a literary theorist, Juul never questions whether the dual-level model is applicable to games and simulated environments in the same way as it is to novels or films; in the theoretical universe of *Half-Real*, ‘fiction’ is simply synonymous with ‘diegesis’. This straightforward import from literary and film theory has strong limitations,

³² “In my description of time in games, play time is comparable to discourse time, and fictional time is comparable to story time” (2005:160).

because it implies that the activity of play is only fictionally relevant to the extent that we can consider it as homologous to *discourse*. It rules out the idea of real-time fictional worlds, and it separates considerations of fictionality from considerations of embodiment and subject-positioning.

The diegetic (or discursive) notion of fiction also grounds, I would argue, Juul's theory of 'coherent' versus 'incoherent' fictional worlds. What is lacking from the surreal world of *Donkey Kong*, according to Juul's analysis, is the lack of an *explanation* for why Mario has three lives. In other words: the challenge to the player is here a lack of diegetic coherence, which could be fixed with a little more context – a little more narration to explain how things work out Mario's world.

However, if we accept that the notions of 'fictional world' and 'story' should be kept distinct, a nonsensical storyline does not in itself prevent us from imagining a fictional world as complete – given that the world is not so self-contradictory that it becomes impossible to imagine it as an actual possible world. From the point of view of Walton's theory of fictional truths, Mario's three lives is simply a fact within that world, no matter how puzzling or 'improvised' it would seem to a player; take it or leave it. Surely Mario's destiny is a strange thing, but fictional worlds are often very strange for no particular reasons. Mario can magically resurrect because, we must assume, he is given three attempts to complete his mission in a hostile world that is especially staged for him. It is this *gameworld* that we are invited to participate in, a world that is no less of a 'world' because it is organically structured as a stage for a contest. And it is certainly no more incoherent or provisional just because it appears surreal. We may be inclined to engage with this world in a more distanced and 'telescopic' (and in this sense 'provisional') manner than, say, *Metroid Prime*, but this tendency cannot be ascribed to fictional incoherence. It would not encourage any deeper or less provisional commitment to the fictional world, I would argue, if the *Donkey Kong* universe were provided with a storyline that specified why Mario were only given three lives instead of four. In simulated environments, being immersed into the fiction is not the same as being immersed into a story, although the two often collaborate and merge in various ways. This also implies that the 'blue arrows' of videogames (Juul 2005:190) – elements of the gameworld that are not recognised by the *characters* of the gameworld – may well belong to the fictional world even if they do not belong to the diegetic world.

The fact that simulated environments are not primarily diegetic (or story-based) fictional worlds also accounts for the typical implementation in games of ‘characters who know you’ (Juul 2005:183). This seemingly strange but very common phenomenon occurs when, for example, in *Sly 2: Band of Thieves* (Sucker Punch Productions 2004), the sidekick Bentley the turtle guides Sly (and the player) through the mission via some sort of communication device while referring to the buttons on the controller. This type of instruction and guiding may also feature in less cartoonish games, like for example *Metal Gear Solid 3* (Konami 2005). While such a ‘subversive’ transgression of boundaries may be prohibited by certain types of gameworlds, I want to argue that as a general principle, there is in fact no ‘cross-dimensional’ issue at play here, as game fictions are not delineated by a ‘fourth wall’ as in film or literature. While ‘breaking out’ from a *diegetic* world into the realm of the discourse that produces this same world is surely a dimensional leap (as seen for example in the film *Last Action Hero* or the didactic novel *Sophie’s World*), the boundaries of non-diegetic fiction are always, by their nature, more unclear and more ambiguous. Those boundaries do not separate between the time-space of the telling and the time-space of the told, but between different frames of make-believe – boundaries that do not carry the same ontological significance. This means that when Bentley or Major Tom start talking about button configurations, we do not necessarily need to position ourselves *outside* the boundaries of fiction to make sense of it, as Juul implies; it simply means that the boundaries of the make-believe, in some important respects, are extended (as they sometimes are) to include elements of the physical interface of the game world. This kind of ‘extended fiction’ may not be compatible with a certain type of seriousness demanded by some story worlds, but seriousness is not a requirement in the construction of fictional worlds.

Finally, the rules-and-fiction approach implies a notion of *rules* that is unable to capture players’ involvement with computer-simulated environments, and hence also poorly suited to account for the unique role and status of fictional worlds in avatar-based computer games. Even if, as Juul emphasises, “...fiction *matters* in games and it is important to remember the duality of the formal and the experiential perspectives on fiction in games” (2005:199), that does not change the fact that rules and fiction are ‘formally separable’ (2005:177). In this perspective, the distinction between *game rules* – which Juul specifies as ‘explicit game rules’ (2005:58) – and *regularities* (or ‘laws’) becomes less significant:

A computer-based soccer game needs to implement the physics of the players and the soccer pitch as well as the rules of the game. Gravity existed prior to the invention of soccer, and the human body existed prior to the invention of the foot race, so including them in a game is a choice that the creators of the game make. It therefore makes sense to see the laws of physics on the same level as the conventional rules in soccer: The main difference between the rules of a video game and the rules of a sport is that sports use the preexisting systems of the physical world in the game. (Juul 2005:58-59).

Gravity and offside rules are here seen as being on the same level, because, from the point of view of the computer, both are instructions; the kind of rules that specify or instruct limitations and affordances. Generally speaking, instructions exist independently of their implementation by a player; rules are rules whether they are followed or not, and we can specify them, write them down on paper. These particular kinds of instructions are also, by definition, formal and domain-independent – or ‘themable’ – otherwise they could not be implemented by a computer. In contrast, regularities are not independent from action; they exist only in so far as they are being ‘followed’; we do not ‘implement’ regularities the way we implement instructions. It does not make sense to say that regularities are themable, unless we give them, for heuristic and scientific purposes, a formal articulation; we specify them as a set of instructions, as an abstract model.

The emphasis on formal rules instead of laws and regularities is necessary and productive when we want to understand how game systems (computerised or non-computerised) structure the activity of play. However, the rule-oriented approach does not adequately account for the phenomenological status of ‘rules’ from the point of view of the player. From this perspective, it becomes important that computer games – unlike non-computerised games – have the capacity to turn instructions into regularities or laws; into ‘rules’ that we do not ‘follow’ the way we follow the rules of Monopoly. This also implies that the computer has the capacity to integrate the rules of the game (including, in many cases, the rules that define goals and winning conditions) with the regularities of a concretised, simulated environment. In typically avatar-based games, like for example *Halo* (Bungie 2001), the explicit game rules are almost completely integrated with the behaviours of the simulated agents and environments; the equivalent to the conventional rules of computer game football would be the instruction to progress and to fulfil the mission objectives, as well as, in some sense (by a stretch), the general imperative to stay alive. Other than that, there are no conventional game rules to enforce or ‘uphold’ (Juul 2005:53). Whereas a referee in a football match can be said

to uphold the rules of the game, the central task of the computer is of a considerably more god-like nature; to uphold the simulation as such; to uphold a world.

This ‘worldness’ of the computer simulation, which I will discuss in more detail in chapter 5, calls for an alternative ontology of computer games. As long as we keep within a theoretical model that focuses our attention on the collaboration (or ‘interplay’) between ‘rules’ and the ‘representational layer’ (Juul 2005:136), the fictional worlds of avatar-based computer games will boil down to a long list of ‘modifications’ or exceptions to the general rule of themeability. It is illustrative that when Juul considers the dimension of *space* in computer games – which is hardly a small detail – the rules-versus-fiction model is dangerously close to the breaking point; space, Juul observes, is a “special issue between rules and fiction”, where the two ‘completely overlap’ (2005:188). He ends up by concluding that “...level design, space, and the shape of game objects refer simultaneously to rules and fiction. This is a case where in which rules and fiction *do* overlap” (2005:189). It is not hard not to agree with this analysis. What Juul is saying, in effect, is that our engagement with simulated environments is the (notable) exception that does not respond very well to the rules-plus-fiction model. This engagement is typically mediated by the principle of the avatar. The archetypical ‘special issue’ of computer game representation, in other words, is avatarial embodiment.

The cursor theory

In “The Myth of the Ergodic Videogame. Some thoughts on player-character relationships in videogames” (2002), James Newman rejects a character-based understanding of the role of the avatar, which would emphasise the role of ‘identification’ in relation to the visual or cinematic features the avatar. His concern is with the avatarial relationship of agency and control, and he distinguishes sharply between the player-character as part of our ‘On-Line’ activity of play (when the player is in active control) and the same player-character as perceived ‘Off-Line’ – in “periods where no registered input control is received from the player” (Newman 2002:4). The player’s immersion with the game, he argues, is based on the On-Line ‘interface-level connection’ with the player-character, which defines how the player is able to engage with the world of the game. The visual representation of the player-character is not important to play if it has no impact on what the player is able to do through the player-character. This ‘representational’ aspect of the player-character has significance through the Off-Line dimension of play; the visual appearance of on-screen characters is therefore important when we are *watching* rather than playing.

My own understanding of the role of the avatar is in line with Newman's central argument: the avatar is primarily a mediator of agency and control, not a 'character' that we identify with on the basis of its visual appearance or what it may do or say as a character in 'Off-Line' sequences of the game like cutscenes, pre-written dialogues and so on. As an embodied extension or prosthesis, the avatar is important because it enables us to act in the world of the game. However, Newman's account of the 'On-Line' player-character relationship is also significantly different from my own conceptualisation of the avatar. The central difference is that, according to Newman's model, the player-character, because it does not function as a character in a film, is to be understood as more of a *tool* than as a subject-position. The primary player-character relationship, he argues, "is one of vehicular embodiment", and the playable character is a "suite of characteristics or equipment utilised and embodied by the controlling player." (2002:1). He explains:

Thus, On-Line "character" in the sense we understand it in non-ergodic media, dissolves. Characters On-Line are embodied as sets of available capabilities and capacities. They are equipment to be utilised in the gameworld by the player. They are vehicles. This is easier to come to terms with when we think of a racing game like Gran Turismo where we drive a literal vehicle, but I am suggesting that, despite their representational traits, we can think of all videogame characters in this manner. On-Line, Lara Croft is defined less by appearance than by the fact that "she" allows the player to jump distance x, while the ravine in front of us is larger than that, so we better start thinking of a new way round... (Newman 2002:9).

My objection would be that Lara Croft or Mario, considered as 'On-Line' player extensions, are far more than 'sets of available capabilities'. At the same time it is important to emphasise, as Newman does, that computer game avatars are primarily mediators of agency rather than characters in the literary or cinematic sense of the term. Newman here draws on Mary Fuller and Henry Jenkins' influential analysis of narrative in Nintendo platform-adventure games, which also highlights the distinction between 'character' (as we know it from other media) and what children's interaction with Nintendo characters is really about:

In Nintendo®'s narratives, characters play a minimal role, displaying traits that are largely capacities for action: fighting skills, modes of transportation, preestablished goals. The game's dependence on characters (Ninja Turtles, Bart Simpson, etc.) borrowed from other media allows them to simply evoke those characters rather than to fully develop them. The character is little more than a cursor that mediates the player's relationship to the story world (Fuller and Jenkins 1995).

As with Newman, who explicitly links his argument on to their analysis, Fuller and Jenkins' rejection of cross-media character leads to the claim (admittedly almost as a footnote) that playable characters are to be considered merely as tools or as vehicles of action. If we follow this lead, the theoretical framework is set: Mario must either be conceptualised as 'character', or, alternatively, as 'little more than' a *cursor*. When 'agency' is being defined in opposition to (visual) 'representation' or appearance, and 'capacity' is contrasted with (diegetic and cinematic) 'character', embodiment gets lost in the analysis, and fiction is assigned to the inconsequential (and Off-Line) realm of visual appearances.

The cursor theory of avatarhood has heuristic value if we think of games as a relatively new and unfamiliar medium. When we look at computer game interaction in comparison to how we interact with and make sense of traditional media, the persistent *instrumentality* of the gaming experience stands out as a striking differentiating factor between the two (especially if we watch kids play, who are often relentlessly cynical and competitive). However, it seems to me that this initial academic shock or surprise over the sheer 'gameness' of computer games has led to a theoretical over-emphasis on the instrumental imperative that computer game interaction carries, at the expense of a consideration of how the fictional as well as the agonistic relates to the mechanisms of embodiment and subjectivity in play. Whereas the various dimensions of virtual embodiment have been thoroughly philosophised and celebrated by visionaries and theorists of art-based and industrial VR, children's (and adults') play with Mario or Luigi has mostly either been ignored or interpreted through a distinctly 'no-nonsense' comparison with the abstract cursor. The cursor is, Marie-Laure Ryan suggests, 'the minimal form' of the screen-projected avatar³³.

However, while the cursor is the 'minimal' as well as a paradigmatic form of instrumental agency with screen-projected environments in general, it does not in any way capture the essence of avatar-based play. For the cursor to be able to function as an avatar, it would need to belong to the simulated environment in some way. Like the spaceships in *Spacewar!* (Russel/Graetz/Wiitanen 2006[1962]) or Mario in *Super Mario Bros.* (Nintendo 2004[1985]), the 'cursor' would have to be, at least in a minimal fashion, restricted by and responding to

³³ "In third-person games, such as the Mario Brothers games for the Nintendo Play Stations, the user controls a tiny graphic of his character. The minimal form of this representation is the abstract shape of the cursor." (Ryan 2001:309).

the limitations and forces of the environment. It would have to be able to move – or at least to have a definite location – as a believable object or agent within that space, and it would need to show some sign of being exposed to the environment in one way or another.

If avatars are no more than elaborate cursors, agency in avatar-based games will be essentially no different from agency in any other type of computer game (– or from agency in any mouse-interfaced software, for that matter). Hence, Newman can conclude:

In games like *Tomb Raider* or *Super Mario*, just as in Friedman's *Civilization*, the primary-player may not see themselves as any one particular character on the screen, but rather as the sum of every force and influence that comprises the game. (Newman 2002:11).

While Ted Friedman's pioneering analysis of *SimCity* (Maxis Software 1989) and *Sid Meier's Civilization* (MicroProse 1991) may be applicable to any computer game on some level, as I will discuss in chapter 5, the principle of the avatar conflicts with the logic of management games. As I have argued elsewhere, generic differences within the diverse field of computer games need more attention and analysis³⁴, and the avatariad prosthesid is a central generic marker in this respect; it is neither, I will argue, a 'character on screen', nor merely a cursor or a 'complex' of forces and influences, but an incarnated subject-position for the player within a fictional environment.

This also implies that the concept of the avatar needs to emphasise, in contemporary 3D-based games, the navigable camera as a fundamental aspect of the player's embodiment within the gameworld. In Newman's analysis, the camera-mediated viewpoint is considered relevant to 'On-Line' relationship "only in so far as it impacts upon the game". He does not elaborate on what kind of 'impact' is relevant in this context; he refers to cases when the 'dynamic viewpoint' is directly controllable to some extent, as in *Super Mario 64* (Nintendo 1996), but seems to consider this aspect as an exception to the rule. In any case he makes it very clear that the viewpoint – navigable or not – is not included as part of the 'interface-level connection' that mediates the vehicular embodiment of the player. It is the player's On-Line relationship to the *player-character* that mediates agency and grounds the player's sense of immersion and engagement with the gameworld, not the viewpoint:

³⁴ See Klevjer (2005).

However, if we see first-hand participation as being derived from an interface-level control loop we can disentangle viewpoint from reported feelings of immersion, engagement and *being-in-the-gameworld*. (Newman 2002:6).

This ‘disentangling’ of viewpoint from the interface-level control loop must necessarily exclude the entire category of first-person perspective games, in which the ‘viewpoint’ is also the player’s projected body in the game. It must also somehow imply that when we control player-characters in a game where the camera ‘tags along’, as it were, in some fashion, then whatever that camera does will be not part of ‘agency’. However, in *Tomb Raider* (Core Design 1996) or *Super Mario 64* – or any other third-person 3D action adventure game – we *do* navigate the camera as well as our ‘character’ through the environments, and the particular configuration of the ‘control loop’ that is set up between player, camera and character is precisely what also configures the agency of the player in those games. In Newman’s model, the ‘impact’ of viewpoint on the interaction is recognised, but only as some sort of exception. As a general rule, he claims, viewpoint must be kept separate from agency or ‘capacity’, because “the degree of participative involvement and engagement with any specific game is not contingent upon the mode of representation”. (Newman 2002:7).

My argument is that viewpoint cannot be dismissed as a ‘mode of representation’, and that emphasising the role of the camera in constructing a ‘being-in-the-gameworld’ has nothing to do with theoretical ‘visualism’, as Newman claims. The camera, whether controlled directly or tagging along – or anything in between – is a central mediator of player action in contemporary games, especially in the 3D action adventure. It mediates agency and subjectivity in its most basic sense: the ability to move, look and hear.

The immersive fallacy?

The discussion over the role of the avatar and avatar-player relationships in contemporary computer game theory is closely linked to the idea of ‘the immersive fallacy’, as formulated in Katie Salen and Eric Zimmerman’s introduction to computer game- and computer game design theory *Rules of Play: Game Design Fundamentals*:

The immersive fallacy is the idea that the pleasure of a media experience lies in its ability to sensually transport the participant into an illusory, simulated reality. According to the immersive fallacy, this reality is so complete that ideally the frame

falls away so that the player truly believes that he or she is part of an imaginary world”. (Salen and Zimmerman 2004:450-451).

What Salen and Zimmerman here argue against is the myth of the Holodeck, the quest for complete immersion³⁵. Drawing on Bateson’s theory of framing, as I have outlined in chapter 2, they claim that the nature of play contradicts the idea that the computer game experience should be as immersive as possible in terms of its simulated reality. Play is typically characterised by a hyper-awareness of the paradox that is established through framing, and this awareness produces a double-consciousness (or ‘hybrid consciousness’) that situates the player at once inside and outside the frame of make-believe. “The metacommunicative state of mind”, Salen and Zimmerman argue, “is deeply intertwined with the unique pleasures and experiences of play” (2004:450).

On one hand, the claim involved in this critique is that the Holodeck imperative, although valid in some respect and with certain types of games, is too strong and too dominant in contemporary design discourses, at the expense of the recognition of other types of engagement. The immersive fallacy ‘grossly overemphasises’ the pleasure of sensory illusion, and therefore “...misrepresents the diverse palette of experiences game offer” (2004:453). On the other hand, the notion of the ‘immersive fallacy’ also points to what Salen and Zimmerman see as a more fundamental misunderstanding of what play is about – or should be about – and it is here that they invoke Bateson’s notion of metacommunication and the paradox of play.

In any game, players move constantly between cognitive frames, shifting from a deep immersion with a game’s representation to a deep immersion with the game’s strategic mechanisms to an acknowledgement of the space outside the magic circle. Devotees of the immersive fallacy tend to see this hybrid consciousness as a regrettable state of affairs that will only evolve to its true state of pure immersion when the technology arrives. Play tells us otherwise. The many-layered state of mind that occurs during play is something to be celebrated, not repressed—it is responsible for some of the unique pleasures that emerge from a game. (Salen and Zimmerman 2004:455).

While we may agree with Salen and Zimmerman’s general argument that game designers should pay more attention to the ‘diverse palette’ of different types and modalities of

³⁵ The Holodeck, which Janet Murray uses as the ultimate model of total immersion in *Hamlet on the Holodeck* (Murray 1997), is a perfect holographic reality simulator from the *Star Trek* series.

engagement in computer game play, there is also a theoretical assumption here about the ‘true nature’ of mimetic play – which underpins the general argument that “Play tells us otherwise”; that play is inherently anti-immersive. This assumption, I will argue, obscures the discussion of different modalities of immersion, and it also tends to cloud the analysis of player-avatar relationships.

In *Rules of Play*, the assumption that play is by definition anti-immersive is based on a game-centred reading of Bateson’s “A theory of Play and Fantasy” (Bateson 1972). However, the paradox of play can only be seen as ‘unique’ in so far as it accentuates and plays out the more general paradox of metacommunication, which is a paradox of abstraction, or representation (that is, any communication that goes beyond simple mood signals). Secondly, ‘the paradoxes of play’ that Bateson discusses in the article do not apply to games or even to what we usually consider as ‘play’ in particular, but to a broad category of make-believe, including ‘3D screens’, Hollywood films and therapeutic interaction – the latter being Bateson’s main focus of interest. Games are really not part of the picture at all, other than as a heuristic (and imperfect) model to make a point about the formal structure of framing in psychotherapy. This means that we cannot use Bateson as support for the thesis that ‘play itself’ contradicts the Holodeck imperative or the kind of immersion that we find in detective novels or Imax cinemas. The paradox of play, as a broad concept of the phenomenon of make-believe, is precisely about the kind of paradoxical pseudoreality and pseudoemotion that those types of experiences offer. The quest for total sensory immersion – whether it is a fallacy or not – does not aim for the frames to ‘fall away’, as Salen and Zimmerman assumes, but rather for the contrary; the technological wonders of immersion, from Victorian stereographs to theme park motion rides or ‘fully immersive’ Virtual Reality, are all about intensifying the paradox of mimesis, creating a hyper-awareness of technologically constructed artificiality.

At the same time, Bateson’s main concern is more specific than this. For the purposes of psychotherapy (at least, it seems, for neurotic patients), he advocates the more complex variant of ‘Is this play?’ over the safer ‘This is Play’, as a method to improve the patient’s ability to manoeuvre and cope with the complex psychological paradox of how ‘as if’ relates to reality. However, Bateson never claims that this particular kind of ‘game’ is the default mode of how the paradox of play operates – or should operate – in most forms of make-believe. The dimension of play that Salen and Zimmerman mainly addresses as lacking among the ‘devotees of the immersive fallacy’, and which is at odds with the immersive

imperative of the Holodeck, is the ‘hybrid consciousness’ of dual-frame orientation during play. This imperative highlights the pleasure (and competence) of loose and flexible positioning during mimetic play, emphasising what Salen and Zimmerman call “the many-layered state of mind that occurs during play”. This kind of engagement is characterised by “...shifting from a deep immersion with a game’s representation to a deep immersion with the game’s strategic mechanisms to an acknowledgement of the space outside the magic circle”. However, dual-mode and frame-shifting play is not the only ‘metacommunicative state of mind’. According to Bateson, meta-communicative competence is at the heart of *any* make-believe (– unless, as Bateson points out, one is either schizophrenic or neurotic). The paradox of play cannot be used as an argument against the immersive fallacy.

I am not arguing here that Salen and Zimmerman’s attack on the ‘immersive fallacy’ has not got a point, or that computer games should emphasise immersive simulation over frame-shifting playfulness. It is important to draw attention to, as *Rules of Play* does, the typically loose and frame-defying nature of people’s engagement with mimetic games and toys, which is different from the more rigid imperative of simulation that we are more familiar with from traditional media and spectacular attractions. The two are different types of fictional interaction, two types of make-believe, and it makes little sense to directly compare them in terms of which one is more engrossing or engaging in a general sense. We may argue over whether *Half-Life 2* (Valve 2004) is more ‘immersive’ than *Breakout* (EC Interactive 2005[1978]), or vice versa, but it would be very much a case of comparing apples and bananas. The debate over the Holodeck model is not about levels of engagement or how ‘meaningful’ the experience is, but about different ways in which players are encouraged to position themselves in relation to the frames that define the ‘what is going on here’ of computer game experience. The relatively rigid positioning of *Halo* tends to produce ‘engrossment’, yes, but so does *Lemmings* (DMA Design 1992). The difference is that they do it (or fail to do it) through different dynamics of framing. There is no ‘rule of play’ that excludes Full Total Immersion from taking its place among the traditions and variants of mimetic play. The Holodeck, as a concrete idea as well as a more general ideal, is about stabilising and intensifying the paradox of play, not abandoning it.

Avatars: the 3-layer model

The (legitimate) eagerness to counter the cultural force of the Holodeck myth, combined with an opposition to the techno-romantic rhetoric and ideology that drives the mainstream

industry, is part of the reason why the cursor theory of player-avatar relationships seems to pervade so much of computer game theory – in one form or another. The cursor model, as most explicitly advocated by Newman, is very much formulated as a down-to-earth opposition to the preoccupations with representational and sensory sophistication of contemporary game-spaces. In *Rules of Play*, although in a more nuanced fashion, the distinctly anti-immersive interpretation of the concept of framing is also linked to the analysis of player-avatar relationships. Borrowing from Gary Alan Fine’s study of tabletop role-playing, which also utilises Bateson’s notion of framing³⁶, Salen and Zimmerman suggest that the experience of computer game play can be described as a “three-fold framing of player consciousness – as *character* in a simulated world, as a *player* in a game, and as a *person* in a larger social setting...” (Salen and Zimmerman 2004:454). Fine’s 3-layer model is here advocated as an alternative to “the immersive fallacy’s ideal game”, according to which the player would “identify completely with the character” (2004:453). The alternative approach means that the significance of character-identification and illusionistic immersion is not rejected, but instead complimented by additional framings. The result is a model of avatar-based interaction that echoes Juul’s and Newman’s dualism of rules-versus-representation, but which at the same time avoids the latter’s radically one-dimensional emphasis:

A protagonist character is a persona through which a player exerts him or herself into an imaginary world; this relationship can be intense and emotionally ‘immersive’. However, at the very same time, the character is a tool, a puppet, an object for the player to manipulate according to the rules of the game. (Salen and Zimmerman 2004:453).

This could be seen as a ‘best of both worlds’ approach to avatar-based interaction in games: whereas the ‘protagonist character’ that we know from traditional media secures our relationship to the imaginary world, the playable avatar is a tool, a piece of equipment, which secures our relationship to the rules of the game. In “Animated game pieces. Avatars as roles, tools and props” (2005), Jonas Linderöth also uses this framework and develops it further within the analysis of children’s gaming practices. He suggests a triple-frame model for the player-avatar relationship that is similar to Salen and Zimmerman’s:

³⁶ Fine draws here on Erving Goffman’s concept of framing, which draws directly on Bateson’s concept as outlined in chapter 3. See *Frame Analysis: An Essay on the Organization of Experience* (Goffman 1974). In social life, ‘frames’, according to Goffman, is that which organises individual’s understanding of what situations are about; it provides an interpretation of ‘what is going on’. Frames are “...rendering what would otherwise be a meaningless aspect of the scene into something that is meaningful” (Goffman 1974:21).

1. A fictive character that you can pretend to be, a role.
2. A piece of equipment, a tool which extends the player's agency in the game activity.
3. A part of the players setting, props which can be used as a part of the players presentation of self. (Linderoth 2005).

Linderoth demonstrates that a theory of framing is productive in the analysis of player interaction, allowing us to see the flexible nature of players' engagement with the fictional dimension of computer games. The 3-level model is helpful for making sense of the intensely frame-shifting and 'messy' way in which players typically interact with their avatars. At the same time, considered as a theory of avatar-player relations, it does not leave much room for a notion of embodiment that goes beyond the purely instrumental (avatar as tool). The fictional dimension is accounted for in layer 1, but as with Salen and Zimmerman, this account seems to draw entirely on notions of character identification that do not discriminate between cinematic, theatrical or avatarial 'character'. As a consequence, we must assume, the kind of player-avatar relationship that is played out in racing games like for example *Gran Turismo* (Polyphony Digital 1998) would fall entirely outside the 'inner frame' of the fictional.

Linderoth excludes everything that has to do with fiction and representation from layer 2 in this model. He points out that the 'I' of the player-avatar relationship ('I need to find that key', 'I died' etc) also "...occurs in other cases when our ability to act in a certain activity systems is mediated by a tool" (Linderoth 2005). This is a timely observation, which may serve a de-mystifying warning against assumptions of 'decentred identity' and so on, but it also supports the more general idea that computer game representation is mainly a question of visual appearances and therefore largely inconsequential to the real action of play. In this perspective, the non-instrumental dimension of the avatar may easily be seen as an optional extra, as "A fictive character that you can pretend to be". If you choose to take on this identity, Salen and Zimmerman's dual-frame or 'hybrid' orientation comes into play: you role-play your avatar, as it were, staying 'in character', but you also use it as a piece of equipment.

Lisbeth Klastrup, in her analysis of multi-user virtual worlds, suggests a model of avatar-based play that is different from the 3-layer model:

“From a literary and possible world perspective, “games” (and other fictions) conjures up a fictional universe that we take as a reference point for the understanding of our actions within the world (killing a dragon is interpreted as the act of ‘killing a dragon’, not as the continuous clicking of the mouse on some darkly coloured pixels). Hence, what we do as avatars is not interpreted as events with real world “value” or reference, on the contrary, our actions are interpreted as meaningful within the given universe which, during the act of playing, serves as the actual world reference to us”. (Klastrup 2003:102).

Klastrup is drawing on Marie-Laure Ryan’s theory of recentring to explain how our actions become fictionally meaningful through avatars; when we act through the avatar, the gameworld is the ‘actual world reference’. There is a notable shift in emphasis here if we compare to Juul’s model of the ‘half-real; it is not the actions that *project* a fictional world (through interpretation), but it is rather the fictional actual world that makes our actions meaningful in the first place – ‘during the act of playing’. We could say that whereas Juul emphasises how interpretation (of the fictional significance) follows from or is ‘cued’ from action, Klastrup emphasises how action follows from interpretation. The ‘reference point’ of the fictional universe is not seen as an inner (and optional) frame of character identification or role-playing, but as a frame that is already *given* by the fact that we are acting through the avatar.

The role of the computer

Klastrup’s notion of the ‘actual world reference’, while not fleshed out as an explicit theory of avatar-based interaction, still provides a productive general model of avatarhood and fiction in computer games. The ‘best of both worlds’-approach is useful as far as it goes, but it needs to be complimented with a perspective that takes the specific nature of computer-simulated environments into account. Gary Allan Fine’s 3-layer model refers to tabletop role-playing, and is not developed with computer game avatars in mind. Hence his model will only be directly applicable to computer games to the extent that the computer-simulated player-avatar relationship is similar to any other game-based player-avatar relationship. My claim, as I will be arguing through chapter 4 and 5, is that the former is different from the latter in significant respects, and that this difference goes to the core of what we might mean with ‘embodiment’ in games.

Salen and Zimmerman’s use of the 3-layer model, which consciously avoids drawing a line between simulation in computer games and simulation in games more generally, broadly

reflects how the role of the computer is conceptualised in the so-called ‘ludological’ tradition of computer game theory. Espen Aarseth and Jesper Juul are both keen to downplay the presumed ‘revolution’ of computerised play and computerised fictions as compared to games and simulations in general. In “Genre Trouble: Narrativism and the Art of Simulation”, Aarseth explains:

It cannot be repeated often enough that the computer is not a medium, but a flexible material technology that will accommodate many different media. Hence, there is no “computer medium” with one set of fixed capabilities, nor is there “the medium of the computer game”. Games are, at best, a somewhat definable genre. (Aarseth 2004:46).

Because games are medium-independent, Aarseth continues, they are also, in Juul’s terminology, ‘themable’:

A game can be translated from board and dice, to a live role-play out in the woods, to numbers and letters on a screen, to a three-dimensional virtual world. From *SpaceWar* (1961) to *Star Raiders* (1979), *Elite* (1984), to *X – Beyond the Frontier* (1999), not much has happened in the rules and gameplay: the games have increasingly better graphics, but the theme and objectives remain the same. *Rogue* (1980) and *Diablo* are basically the same game (Aarseth 2004:50).

Aarseth’s general argument is obviously correct; games are formal systems, and as such they are a medium-independent form. The formal ontology of games (the gameness of games) needs to be emphasised in discussions of game genre and game representation. On the other hand, interaction and play is not medium-independent, and as I will show in the next chapter, props matter in important ways. We may accept, for the sake of the argument, that the concrete examples referred to in the quote above do testify to a strong structural similarity across different technological platforms and levels of representational sophistication. Nevertheless, the games listed are all *computer* games, and it seems that Aarseth hesitates somewhat to include board games or live role-playing into a list that would exemplify ‘basically the same game’. My argument is that the computer makes all the difference. Maybe ‘not much has happened’ between *Spacewar!* and *X – Beyond the Frontier*, but from board and dice to three-dimensional virtual worlds there is a revolution. It does make sense to address the digital computer as a ‘flexible material technology’ in many contexts. However, this general observation does not address the central question of computer game representation, which does not concern the computer’s various capacities as a ‘universal

medium', but has to do specifically with the role of computer as a simulating machine. Jesper Juul addresses this question more directly:

The main difference between the computer game and its nonelectronic precursors is that computer games add automation and complexity—they can uphold and calculate game rules on their own, thereby allowing for richer game worlds; this also lets them keep pace. So computer games create more worlds, more real time, and more single player than nonelectronic games. (Juul 2004:140).

In chapter 5, I will attempt to formulate an alternative to this approach. I will argue against the assumption that computer game worlds are merely larger, richer or more complex 'electronic' variants of pre-digital game worlds, and discuss critically the idea the computer 'upholds' or enforces rules. First, however, I will attempt to sketch out a general theory of the avatar, which is independent of the specificities of computerised and screen-based avatarhood, which complements the purely instrumental approach to avatarial embodiment, and which addresses the fictional significance of the avatar in relative independence from literary and cinematic notions of character, identification and diegesis. I will begin by returning to Kendall L. Walton's theory of props, fictional truths and fictional participation.

Chapter 4: The model and the avatar

Mental and perceptual simulations

What *Mimesis as Make-Believe* describes, Ryan concludes in a review of Walton's book, is the 'illusion mode' of fiction, the experience of entering a virtual reality (Ryan 1995). This type of immersion is based on a principle of fictional subjectivity, according to which participants' actions and thoughts generate fictional truths about themselves. Being prescribed to imagine a 'world' implies, first and foremost, that we are prescribed to imagine the meanings of our *own* specific experiences in relation to that world. In the case of literary fiction, this virtual reality is based on a mental re-centring, a mental simulation. This can be contrasted to *perceptual* simulations, which is what Walton calls 'depictions'. Depiction, in Ryan's words, is based on the "pretended presence of an environment of which the spectator is a member" (1995:366).

Depictions, Walton explains, are essentially different from verbal props. What *Mona Lisa* offers is a 'perceptual game of make-believe'. Our perceptual act of looking at the painting is a dynamic representation of 'lookings' as they typically take place outside the game. The process of looking at the painting imitates – in some respects – the process of looking at landscapes, houses and trees. The characteristic property of depictions is, according to Walton, that we can use the demonstrative within the game of make-believe: we can point and say 'there'.

The dominant games of our culture, those that we normally play with paintings when we are in galleries or city halls, do not permit, or at least strongly discourage, other fictional physical acts than the simple demonstrative. Perceptual and intellectual interaction is supposed to be of primary importance, preferably embedded in a layer of analytical and distanced meta-games, in which our role is to analyse and reflect on the terms of our own participation, and contemplate the various capacities of the prop to generate (or negate) fictional truths. Nevertheless, paintings, because they are perceptual fictions, have a distinct potential to expand our fictional subjectivity by making a wider range of embodied interactions fictionally relevant; if you for example throw rotten tomatoes at a portrait of Tony Blair it could be difficult to convince others that it really is only the *painting* of him that you dislike and not the prime minister himself.

Not all types of perceptual interaction with artworks can be considered as perceptual *simulations*. Most importantly, the majority of ‘readings’ of verbal representations can not. When I read a novel, the reading itself – the perceptual act of reading – is typically not made fictional, not being included as part of the game of make-believe. The book does not prescribe fictional truths based on how I relate to its materiality as an object; it is not a reflexive prop.

A novel like *Gulliver’s Travels* would be an exception, Walton notes – as would be, I want to add, the experimental hypertext-novel. In both cases, the material text is precisely meant to be a reflexive prop. *Gulliver’s Travels* presents itself, fictionally, as a copy of the physician’s journal. This strategy gives a relatively modest and hardly very imposing form of perceptual simulation. The experimental hypertext, on the other hand, has a higher ambition. Here the often disruptive nature of the reading-process is included into the world of make-believe, and this process includes material as well as perceptual navigation. In this sense the hypertext novel is a true hybrid between the novel and the interactive computer simulation. It has taken the step from being a ‘simulation’ in a psychological or metaphorical sense (as ‘mental simulation’) into also becoming a perceptual simulation, a depiction.

Jill Walker’s article *Performing Fictions: Interaction and Depiction* (2003[1991]) uses the notion of ‘depiction’ to conceptualise the general performative nature of computer-based fictions, including literary hypertexts as well as more media-rich and body-oriented art installations. Analysing Michel Joyce’s hypertext novel *afternoon*, she concludes that “...depiction in interactive works can be not only visual, auditory or conceptual, but can also occur in the links and in the act of interaction.” (2003[1991]:204)³⁷.

Walton’s notion of depiction, as distinct from the ‘description’ of mental games of make-believe, is highly relevant to the study of interactive fictions (or fictional interactions), as Walker demonstrates. However, it does not address the specific capacity of what Eco calls a ‘functional representation’, a *model*. It is the model that makes our interaction meaningful beyond the realm of the predictable and the symbolic.

³⁷ In addition to analysing the performative nature of computerised fiction, Walker’s article also provides a useful introduction to Walton’s theory of fiction more generally and to the notion of depiction in particular.

The model is what distinguishes a mental or a perceptual ‘simulation’ from a simulation proper. A simulation proper implements a clearly defined model. We could say, of course, that mental simulations also implement understandings or ‘models’ of how the world works, but these are not models that are defined or made explicit in any way. Because it is never clear exactly how they structure our participation in mental games of make-believe, they cannot act as dynamic props; they cannot accommodate our intentional agency within the world of the make-believe. This is precisely where Walton’s theory of props as ‘depictions’ is too restricted, I want to argue, for the analysis of computerised fictions. While it allows us to understand perceptual participation in terms of simulation and fictionality, it does not adequately help us to identify and describe fictional forms in which our ‘fictional selves’ are constructed primarily through intentional actions that produce objective and unpredictable results (unlike as when merely pointing at a picture). In model-based make-believe, the fictionally relevant results of our actions are determined by the fictional truths prescribed by the model.

By emphasising the relationship between agency and the principle of the model, I want to expand Walton’s own conceptual framework to include embodied simulation as well as perceptual simulation. In the following I will attempt to clarify this idea, and show how the concept of the model is needed to distinguish between different principles that govern the constructions of fictional worlds.

The prop as model

Walton provides an alternative understanding of the autonomy of fictional worlds. He connects the practice of make-believe to an ontology of objective and shared truths, based not on subjective imaginations but on the prescriptive power of props. When we accept the invitation to participate in a game of make-believe and re-position ourselves as fictional subjects, imagination is externalised, manifested as a world for us to investigate and explore. The concepts of make-believe, prop, fictional truth and fictional subjectivity enable us to recognise and analyse the dimension of simulation in our engagement with representational art forms, and provides a comprehensive tool for analysing the distinctive properties of different types of representational technologies. Unlike what we find among play-theorists like Huizinga, Caillois or Bateson, Walton pays close attention to the role of the props within the magic circle, asking what kinds of interactions are allowed and encouraged as fictionally meaningful by different kinds of props.

Walton's model does not address, however, the difference between on the one hand cognitive or perceptual modes of 'simulation', and on the other hand simulation in the more literal sense of the term: simulation through the implementation of models. His category of 'depictions' does not distinguish between props that are *dynamically* reflexive and props that are only *perceptually* reflexive. While the latter, I want to suggest, is merely a depiction, the former is also a model. A painting, when used as a depiction in a game of make-believe, is reflexive with respect to how it enables us to look at it, and how we are able to refer to and express this perceptual act through the use of demonstrative and through pointing or otherwise designating. A model, on the other hand, because it is a functional representation (the expression of a process in terms of a material or logical structure) is a prop that prescribes as fictional the *changes* that we effect in it.

In a purely perceptual simulation, no part of the process that we are prescribed to imagine something about is modelled in advance. There are no pre-made structural descriptions which our perceptual activities are 'implementing' – other than, as mentioned above, in a highly generalised sense. In a proper simulation, by contrast, fictionally meaningful procedures are articulated as formal systems (mathematical or computational models) or as tangible objects (concrete models). As opposed to the underlying principles or 'models' of mental simulations, these models are *external* in relation to us as participants and can be interacted with as autonomous objects. Their fictional significance emerges from this interaction. The specific capacities of the model-prop give meaning to the imaginative actions of the participant, and the agency of the participant realises the imaginative function of the model.

Whether a given representation is a model or merely a depiction will sometimes vary according to the rules of the specific game of make-believe in which the representation functions as a prop. As the example with the Blair-painting illustrates, a representation that is most commonly understood as a depiction can nevertheless be used as a model (making our embodied actions relevant within the game of make-believe), as long as we allow fictionally relevant process to be instantiated and articulated by the representation itself. If we are throwing tomatoes at the painting, *and* the resulting changes to the painting are allowed to prescribe imaginings reflexively, then we have an example of a simulation proper; a model-based game of make-believe. The painting itself, realised via our agency, comes to represent

the *process* ‘Tony Blair is being thrown at’ – just like a teddy bear may represent, for example, ‘Teddy is being put to bed’ or ‘Teddy is being accidentally dropped’.

Even if the difference between a model and a mere depiction is often in the eye of the beholder, as it were – dependent on what type of game of make-believe is being played – this does not mean that the objective properties are of less importance because of this flexibility. It is always the objective properties of the prop that enable it to function as a model. In the case of the Blair-painting, for example, it is evident that the tomato-game could not come about unless the painting itself is solid and ‘hittable’; the tomato may be crushed against the canvas and drip slowly across the surface. A hologram of Tony Blair clearly would not work, although it would work fine considered as a depiction.

To conclude, a model, defined in terms of Walton’s theory of representation, is a dynamically reflexive prop. The principle of the model makes the changes that we effect in props fictionally relevant. As long as a prop is not allowed to function as a model, whereas the *acts* of the participant can be recognised as fictionally relevant, the *changes* that the participant effects in the prop can not. Leaving coffee stains on the pages of a novel, for example, usually acquires no meaning within the game of make-believe. As long as the book itself is not granted the status of a functional representation it does not matter to the fiction what we do with it³⁸.

Instrumental make-believe

When a fictionally relevant process is functionally represented by a prop, independently from the participating subject, this enables the subject to act meaningfully on the prop from a position outside the game of make-believe. Whereas a model needs to be implemented as fiction via some form of agency, this agency itself does not necessarily have to be situated in a way that is fictionally meaningful. With reference to Ryan’s notion of ‘recentering’, we can say that this type of make-believe is a paradox: The autonomy and integrity of fiction is maintained even if we interact in ‘telescope’ mode, from a position outside the world of the make-believe (Ryan 2001:103).

³⁸ A book can also be a model, depending on the rules of the game we are playing with it. Intentionally burning a book, for example, will usually imply that the material prop of the book is being treated as a *metonymic substitute*: a concretised model of the set of ideas that is conveyed by the written text that the book contains.

Instrumental agency retains for the participant a non-fictional subjectivity. Model-based instrumental agency is the kind of agency where make-believe is constituted only through the behaviours of the model (the dynamically reflexive prop) as those are affected by the player. While the *results* of the player's actions will be fictionally meaningful, the actions themselves are not. Instrumental make-believe, considered as a modality of interaction, is not dependent on the principle of the model, but the model gives it a new significance. The objective and independent capacities of the model serve to consolidate and expand the possibility-space for meaningful instrumental interaction with fictional worlds.

In its minimal form, instrumental interaction emerges simply from the rule-based nature of make-believe; from the fact that fiction is, as Walton points out, generative. The paradigmatic example would be the writing of fiction: the author's relevant actions are constrained by the fictional truths generated by the game of make-believe (truths generated by rules and props), which dictate what can possibly happen next and what cannot, or which dictate, for example, how the beginning must be changed in order to accommodate the ending. However, the author is not, in Walton's terminology, 'participating' in the game through his or her acts of writing; re-writing a tragic ending into a happy ending does not qualify as 'saving' the hero.

This basic form of instrumental action acquires a whole new set of possibilities when rule-based processes of make-believe are instantiated and externalised in dynamically reflexive props. Models follow their own ways, as it were, and the player (or author) does not have to understand how they work in order to be able to take meaningful action. When playing with a group of Lego men, for example, we can simply experiment freely, arranging them in different shapes and patterns (or even just throw them out on the floor), and then see what kind of fictional truths emerge from that. This kind of 'testing out' – doing something and then watch the results – could also be done, in a certain sense, by a novelist, but the novelist would be a lot more dependent on knowledge of the fictional process in order to have a chance of anything fairly consistent and meaningful to happen. In other words, the novelist would be much more dependent on the immersive mechanism of fictional participation, relying on imaginative recentring into the story that he or she writes. When this option is not available to the writer, as is for example in the case in collaboratively improvised 'folding stories', the fictional world is not likely to make much sense (unless, of course, the participants' inputs are restricted by an abstract model of some sort).

In games of instrumental make-believe, fictional subject-positions are still be available – to writers as well as to Lego-players – only these are not defined in terms of agency, and not premised on the principle of the model. While agency always implies a subject-position (a subject that acts), the reverse is not true: a fictional subject-position does not necessarily require agency. In mental and perceptual ‘simulations’, the fictional subject-position of the participant is allowed to exist *nowhere* from the point of view of the fictional world – it is not being assigned any ‘acting instance’; no embodied status or presence.

Instrumental and non-fictional agency is always an option when we play with toys, acting in parallel with or in various ways alternating with in-game modes of agency. The typical example, again, will be playing with Lego: While there will usually be – fictionally – someone piloting the Star Wars vehicles that I am building, the question as to ‘who’ is *constructing* those vehicles would hardly be considered as relevant within my game of make-believe; the Millennium Falcon may be fictionally piloted by myself as Luke Skywalker, but is being constructed by no one, nowhere. Because toys generally encourage fictional as well as non-fictional positioning, there exists, we must assume, in most kinds of play a multitude of habits and strategies to negotiate various oscillations and parallelisms between ‘incompatible’ subject-positions.

A somewhat curious special case in this respect which should be mentioned here is the kind of imaginative game that offers clearly *competing* subject-positions: where a split between instrumental agency and fictional subject-position is not only allowed, but directly prescribed by the prop. Certain kinds of computerised fiction – notably the so-called ‘interactive movies’ – encourage that we re-position as fictional subjects (as when watching a movie) while at the same time restricting our agency to the instrumental level only³⁹.

Finally, there are games of make-believe – typically computer games, but also other types of computerised fiction – in which models demonstrate their *own* agency (that is, they are not just reflexive but active). This makes a particularly strong case for instrumental games of make-believe; the results of the player’ actions can be highly elaborate, complex and

³⁹ For a discussion of the distinction between interactive movies and ‘movie games’ – the latter which do, unlike the former, give the player some kind of fictional subject-position from which to act within the world of the game – see Perron (2003).

unpredictable, yet perfectly consistent and meaningful. I will return to the question of computerised models in the chapter below.

Gestural simulations

I also want to suggest that we distinguish between simulation through the implementation of models and ‘simulation’ purely through the use of mimetic gestures. Unlike mental or perceptual make-believe, gestural make-believe is based solely on the movements and appearances of the participating subject. These games of make-believe are typically played to be watched, as in the theatre, for example, when one actor ‘kills’ the other with a sword stabbing gesture⁴⁰.

According to Umberto Eco in *A Theory of Semiotics* (Eco 1976), a mimetic gesture is a particular type of iconic sign, a ‘kinesic iconic sign’, which must be distinguished from a relationship of functional resemblance or ‘analogy of function’ (Eco 1976:209), as I referred to in chapter 2. A mimetic gesture does not need to include any model or ‘functional’ sign; on the stage, for example, actors may use a plastic sword of some sort, by they do not have to. On the other hand, it is clear that certain types of concrete models – notably, the broomstick that Eco uses as an example – cannot be implemented in a game of make-believe without depending on a gestural dimension; there is no way of using this kind of model without also performing a gestural simulation. Indeed Eco, because he is essentially concerned with signs, not with simulations, is only interested in the iconic aspect; he does not consider any ‘identity of function’ that would *not* create, as he says, ‘the impression of iconism’ (Eco 1976:209). For my purposes in this thesis, it is interesting to note, however, that certain kinds of ‘functional’ representations, namely miniatures as well as many computer games, unlike hobby horses or plastic swords, do not in fact imply any iconic gestural dimension.

In the same passage, Eco also points to another interesting type of gesture, which he refers to as ‘intrinsically coded acts’. These gestures are not, he points out, ‘directly iconic’; he uses the example of a boy who pretends to be shooting a pistol by moving the finger as if he were pressing a trigger, while closing his fist as if he were clutching the butt of the pistol. In this case, Eco argues, neither the gun nor the act of shooting is being imitated. Instead the gesture

⁴⁰ The mimetic behaviour of the participants in a gestural simulation does not necessarily have to involve any actual movement; the participants might, for example, simulate skyscrapers or statues. Static positions will still qualify as gestural make-believe, made meaningful through the moving body’s capacity to not move.

is a ‘gestural sign-vehicle’ which denotes, through a *metonymic* relation, the act of someone firing a gun; the gun finger is used as a part that refers to a whole (1976:209-210). In chapter 7 I will return to the role of these kinds of gestures in computer games.

The more general point to be made here is that a gestural simulation, whether it also implements models or not, is not a *model-based* simulation. In gestural simulations, because they are usually performed as iconic *signs*, as acts of communication, any concrete models that are being used are not meant to generate unforeseen fictional truths, not meant to operate unpredictably, on their own accord. Any kind of prop, including words, bodily gestures or plastic swords, may of course generate fictional truths in ways that we cannot entirely control and predict in advance, but the point is that in model-based simulations, either in play or for other purposes (training, scientific research), it is precisely this capacity to generate truths independently of our knowledge or intentions that motivates their usage. When we use a plastic sword in a gestural simulation, whether on stage or in other settings and situations, the sword is not meant to actually have a say in what happens; we may accidentally drop the sword on the ground during the performance, but this possibility (which is always present) would not be part of our motivation for implementing the sword as a concrete model.

In contrast, when we for example play with some kind of model gun in a proper (model-based) simulation, the whole idea is that we are shooting *at* something. With certain kinds of model guns (which would not include, for example, pea guns), this make-believe would not depend on any mimetic gestures at all. With proper simulations, unlike gestural simulations, we do not want to know in advance the fictional truths generated by our actions; when we simulate shooting *at* something, we also want to run the risk of missing.

Fiction versus simulation?

Does the study of mimetic play really need an ‘alternative’ and non-diegetic theoretical understanding of fiction? Would it not be far simpler and just as productive to acknowledge that a model-based simulation (a simulation proper) is neither fictional nor real; that it simply constitutes an ontological modality of its own, for which the concept of ‘fiction’ has no real value or would even be misleading?

Espen Aarseth’s point of departure in his recent short paper “The Perception of Doors: Fiction vs Simulation in Games” (2005b) is similar to my own: we need to re-think our established

notions of fiction. As the title of the paper indicates, however, what he argues is that we should not re-define or expand it but rather reject it:

In short, games are not fictions, but a different type of world, between fiction and our world: the virtual. There are also other worlds: dream worlds, thought experiments, religious perceptions, mirror worlds, etc. All these are different alternatives to our own world, and as different from fiction as they are from each other. (Aarseth 2005b:2).

Aarseth here advocates a very different concept of ‘fiction’. But there are also important similarities. I agree with Aarseth that the principle of the model is the central difference between simulations and (other) fictions. A simulation, unlike for example a novel, is the implementation of a model. This model has objective properties and capacities that we explore, challenge and learn from when we engage with it in mimetic play. As noted above, when we simulate the shooting *at* something (– and, we might add, shooting *with* something), we also run the risk of missing. This is the point at which Walton’s theory of participation is lacking: he does not acknowledge model-based fictional participation as different in principle from purely mental and perceptual games of make-believe. According to Aarseth, the former constitutes the virtual, and should be understood in opposition to fiction rather than as one of its modalities.

Literary fiction, according to Aarseth, is not to be confused with virtuality. The realm of the fictional is defined according to two main criteria. The primary definition apparently follows common sense: fiction exists in imagination, or as in Philip K. Dick’s phrasing (quoted by Aarseth): “Reality is that which, when you stop believing in it, doesn’t go away” (Aarseth 2005b:1). Translated to Walton’s terminology, what this quote says is that fiction is that which is imagined. Reality is that which exists as something external to the subject, independently of our imaginations. Conversely: the fictional only exists in our imagination. In other words: if you do not imagine that there is a bear in the thicket, there is no bear in the thicket – only a stump. This definition of fiction excludes the idea that fictional worlds can be ‘explored’ as something that is external and objective; something that doesn’t go away when you stop believing in it.

Secondly, Aarseth’s ‘fiction’, as opposed to the ‘virtual’ of games, refers to the non-factual. This is a fairly common definition of ‘fiction’ in media and literary theory. ‘Factual’ does not here mean the same as ‘true’, but that which claims to be true, according to (broadly

speaking) social convention and the particular context. The factual is what takes an ‘assertive stance’, according to Carl Plantinga (1997:17): it asks to be judged as a statement about the world, a statement that can be true or false. This factual commitment is not always unambiguous or stable, but still works so that we in most cases are able to separate the factual from the non-factual in a given communicative context. Although not entirely clear from the brief theoretical argument in the paper⁴¹, we must assume that fiction as the non-factual is linked to the first premise, which states that fiction is that which is imagined. Fiction, then, according to Aarseth, makes no statement (about the external world) that could be true or false, because it is only meant to exist in imagination.

As indicated in the title of the paper, Aarseth refers to the well-known phenomenon of painted-on doors in computer game worlds to illustrate the difference between the virtual and the non-factual (the ‘fictional’). These are doors which, unlike simulated doors, do not function as doors but are merely visual representations.

Clearly, these two types of door are very different, and the first type is obviously fictional; it behaves like an unused door in a film, or a closed door in a painting. The game is not making a statement to the effect of “In Wartime Germany, most doors were fake, simply painted on.” So if the first type of door is fictional, what is the second type? Is it also fictional? If we conclude this, then we are clearly looking at two very different types of fiction, with only the first type being similar to fictional phenomena in all other media. (Aarseth 2005b:3).

It is clear that, as Aarseth argues, the non-factual and the virtual are indeed two ‘very different types of fiction’. What is puzzling is that he seems to imply that fictional phenomena in ‘all other media’ really are about the non-factual; about propositions that are ‘not making a statement’. This is a radical position, because as we have seen, neither Walton nor Ryan (– nor, on a more general level, Pavel) sees fictional phenomena as being based on non-factual statements. On the contrary, they argue that fiction – any fiction – is about virtuality. In Aarseth’s argument, the problem with a theorist like Walton would not be that he is “dealing with fiction in literature or film” (2005b:1) but that Walton, like Ryan after him, places the rule-based realm of the virtual (the *game* of make-believe) at the heart of fiction. Fiction is that which makes us experience the imagined as actual; as something that is upheld by

⁴¹ It is not clear whether the Dick-definition should be taken as a statement about referentiality (truth value) or a statement about perceptual presence – in other words if he is talking about non-factuals or if he is talking about illusions – but it seems that Aarseth chooses the former.

consistent rules, which is independent of us and does *not* go away if we stop imagining it. This dimension of fictionality is lost if we merely, as we often do in everyday speech, take ‘fiction’ to mean ‘non-factual’.

If the question of fiction has to do with truth and authenticity, Aarseth is of course correct to argue that the virtual and the fictional are two different things. As he points out, differences with respect to how game worlds relate to the historical world must be separated from the question of virtuality. However: so is the case with all other fictions. While game fictions are indeed different from fictions in other media, this is not due to their virtuality. On the contrary, virtuality is precisely what they *share* with fictions in other media. Various imperatives of authenticity (or lack thereof) are important generic markers, but they are not fundamental to the basic mechanisms of fictional participation, neither in games nor in other media.

The painted-on doors in *Return to Castle Wolfenstein* (Grey Matter 2001) do not belong to a different ontological realm than the simulated doors do. The problem with painted-on doors is simply that they create a contradiction in the rules of the mimetic game. Initially, through our visual participation with the game, we are led to understand that they are doors (which would behave like doors). However, as soon as we try to open them, we are told that they are *not* doors (because they do not behave like doors). What we are talking about is not an ontological split between the fictional and the non-fictional, but two different types of props; in order to avoid a contradiction in the rules of make-believe, the game asks us to *not* consider the painted-on door as a *model*, as a functional representation, even though this is what we as players would naturally assume. To the extent that we can accommodate this exception – something that is a lot easier to do if the two types of doors are also clearly distinguished in terms of visual appearance – there is no contradiction in the gameworld. When there is a contradiction (if we do not accept the modal shift), this is a contradiction in how we are asked to relate to the fictional world, not a contradiction between the fictional and the non-fictional.

So both types of doors are equally virtual, and equally fictional. What we are dealing with are two different modes of fictional participation: the purely visual mode (which Walton would call ‘perceptual games of make-believe’) versus the model-based mode. Sometimes, in mimetic games, we need to oscillate between these two different modes in order to avoid that two conflicting sets of fictional truths are being constructed. The same principle would apply

to, for example, children playing with Legos or dolls; their fictions will consist of both functional and non-functional representations, but these modal variations do not in themselves necessitate any ontological acrobatics in between the fictional and the non-fictional⁴².

While it is important to realise that computer game fictions are rooted in the principle of simulation, we should not therefore conclude that ‘fiction’ is something that goes on primarily in other media, and which is incidental to games. Doing so would be to throw the baby out with the bathwater. If we follow Aarseth’s theoretical strategy, the fictional dimension of games (including all the resonances from our engagements with literary and cinematic fictions) can be safely assigned to the realm of non-functional representations – that is: defined as a matter of narration and audio-visual appearance, and as detached from the dominant mechanisms of agency and subjectivity in computer games.

Aarseth’s distinction between the virtual and the fictional serves to reproduce, I would argue, a separation between ‘immersion’ understood narrowly as literary immersion and ‘immersion’ understood as focussed engagement. According to this model, there are only two types of immersion and subject-positioning worth considering in computer game play: *either* we are talking about the ‘flow’ that captures the computer game player (which could be similar to climbing a wall, playing checkers or configuring a router)⁴³, *or* we would be addressing a diegetic ‘reader’, as it were, who is being immersed in a similar fashion as in literature or film.

My argument is that both types of ‘immersion’ – especially the latter – are unsatisfactory as models for describing fictional participation in computer games. Now, we may of course – as I have done in previous research⁴⁴ – combine the two, attempting to account for the role of fiction in terms of how ‘gameplay’ versus ‘representation’ (or, alternatively, ‘storytelling’) interrelate and overlap in spite of their ‘ontological’ conflict. While this strategy may be productive in certain respects, there is also risk that the underlying theoretical binary will lead us to overlook the core mechanisms of imaginative play, while encouraging us to construct solutions to a lot of unnecessary problems.

⁴² As noted above, both children and adults are experts at ‘oscillating’ between or fluently negotiating the ontological divide between the fictional and the actual. However, the point I am making is that these negotiations are not triggered by the juxtaposition of models and non-models.

⁴³ The notion of ‘flow’ as I am using it here draws on Csikszentmihalyi (Csikszentmihalyi 2000[1975])

⁴⁴ See Klevjer (2002).

For the purpose of analysing avatar-based computer games, the gameplay-versus-fiction framework is especially inadequate. In order to account for the role of the avatar in computer games, we need to acknowledge that simulation includes the role of the simulating subject as part of its definition. As Aarseth also points out, simulations typically become personal – “through experience” (2005b:4). However, according to Philip K. Dick, fiction cannot include embodied experience, as this experience is clearly independent of our own subjective imagination. This could be called the *idealistic* concept of fiction: fiction belongs to the realm of ideas and imaginings; it has nothing to do with the role of the avatar, because it has nothing to do with the world of the body in the first place.

In contrast, concluding this chapter by returning to *Mimesis as Make-Believe*, the central insight we can draw from Walton’s theory is that the nature of fiction is *generative*. As long as a game of make-believe is agreed to – even if only a very simple one – the dynamic of props, rules and actors will construct an objective and shared reality of fictional truths. Once the wheels are in motion, once the cards are handed out, the fictional becomes an autonomous ‘world’ which can no longer be controlled and directed at will by the imagination of its participants. In other words: fiction is out there, to be investigated and explored.

The avatar

An avatar is an instrument or mechanism that defines for the participant a fictional body and mediates fictional agency; it is an embodied incarnation of the acting subject. It is dependent on the principle of the model, and acts as a dynamically reflexive prop in relation to its environment. Its capabilities and restrictions are based on the objective properties of the model, and these capabilities and restrictions define the possibility-space of the player’s fictional agency within the game. The avatar therefore defines the boundaries of embodied make-believe.

The notion of ‘agency’ that I am using here ties in with Janet Murray’s concept of ‘dramatic agency’, but is more specific⁴⁵. Murray’s concept has nothing to do with fictional re-orientation or fictional subject-positions; dramatic agency is secured by any kind of coherent

⁴⁵ See Murray (2004).

and fictionally relevant responses to the user's actions. By contrast, fictional agency is always 'incarnated' in a body, always defined via the mediating principle of the avatar.

It is important to emphasise here that avatars are not exclusive to computer games; avatar-based play is a long tradition of mimetic play, in all likelihood as old as mimetic rituals, and probably older than drama or roleplaying. Typical examples of models that are being used as avatars would be toy trucks or Barbie dolls; in other words the kinds of 'reflexive props' that Walton also typically uses to illustrate his general theory of props and fictional truths – even if he is not concerned with distinguishing models from non-models, or privileged 'incarnations' from other props. Avatars, I also want to emphasise, do not only belong to games that we are used to thinking about as games of make-believe. On the contrary, avatar-based games tend to be ambiguous with respect to what kind of (and how much) fictional participation they encourage. The typical model in this respect would be a radio-controlled model plane, which enables us to take to the sky even if we are firmly grounded on earth.

Finally, we should note that avatar-based play does not require us to stick to one, single avatar during the course of a game. The only requirement for vicarious embodiment to be unified and coherent, is that the avatars are comparable in certain respects; that they can be perceived as belonging to the same, temporary universe. When playing with toy trucks, for example, all the different types of vehicles can be considered as variations of the same basic type of avatar – as they are of roughly the same scale, and model the phenomenon of real cars according to roughly the same principles. A more overly designed example would be a Stiga table hockey game, in which the hockey-player figures are attached to rods that the player slides and rotates underneath the surface or 'ice'. Here the player, from one point of view, changes avatar every two seconds (– or, in the case of skilled players, considerably faster), but we could still say that the entire game unfolds through the mediation of one, singular avatar-relationship.

The particular kind of fictional world that is constituted via the avatar should neither be confused with a diegetic world, nor with the magic circle of agonistic play or with the abstract and formal 'world' of a game system. Embodied make-believe is premised upon an *environment* within which the participant can become an acting body. Mediated by the avatar, the environment becomes our tangible world, our habitat.

The avatar and the body

Whereas Walton's general notion of participation allows us to extend his conceptual framework to also describe the particular significance of fictional agency in mimetic play, his general perspective does not give a lot of pointers as to what the re-orientation of the subject might mean in terms of our *body's* relationship to the fictional world of the game. Clearly, a Barbie doll and a model plane offer different kinds of embodiment, even if both can be said to mediate fictional agency.

Maurice Merleau-Ponty's *Phenomenology of Perception* (2002[1962]) presents a useful complimentary perspective to Walton in this respect. It is centrally concerned with the relationship between the body and the environment, and with the relationship between subjectivity, perception and embodied interaction. Merleau-Ponty's notion of the 'embodied mind' has yet not been much thought through with respect to the analysis of computer games aesthetics – at least not on the level of genre, applied to particular modalities of computer game perception and interaction. While the central ideas of his phenomenology serve to broaden the basic notion of the avatar as described in light of Walton's theory of fiction, they can also help us see how different kinds of avatars structure interaction and make-believe in different ways.

In *Phenomenology of Perception*, Merleau-Ponty re-interprets his earlier ideas around the psychological concept of 'gestalt' in light of the influences from Husserl's and Heidegger's phenomenology. The central concept in this phenomenological re-orientation is the concept of intentionality; the 'alreadyness' that marks out Husserl's phenomenological subject as different from the idealised, rational and detached 'mind' that is at the heart of the epistemological systems of Descartes, Hume and Kant. For Husserl and Heidegger, the subject is something that by definition is already in the world; it is already directed or 'intended' towards a world that appears as meaningful. There is no subjectivity outside or prior to what Heidegger calls the *Dasein* or the 'Being-in-the-world'; that is, there is no 'thinking being' that can be able to reflect on itself directly, as a pure 'subject' that stands before an 'object'. Because we as beings are already in-the-world, the world is *a priori* given as meaningful to us, 'always already' before we are conscious of this meaning, and before it may occur to us to reflect on this meaning. The *Dasein* is by definition a being *in relation to* and by virtue of something that is external to itself.

Merleau-Ponty adopts and re-interprets this idea, however emphasising that the Dasein is a particular kind of *embodied* being-in-the-world. In other words: the subject is not a mind that ‘has’ a body (– as an object), but is constituted as a subject by virtue of being a body-in-the-world in the first place. The body is both object (we can relate to it as an object) and *subject*, because embodied and perceptual existence is the a priori condition for there to be any meaningful relationship to the world. This implies that ‘being’ (the question of ontology) cannot be separated from *doing*, from perception and action. The subject is not, as Descartes asserted, a ‘cogito’ or ‘I think’, but rather an ‘I can’ – a body-subject (Merleau-Ponty 2002[1962]:159). The way we perceive the world and our position in it is grounded in the phenomenology of the body, which is ‘our general medium for having a world’ (2002[1962]:169).

One of the reasons why avatar-based games appeal to us is precisely because the principle of the avatar is grounded in, and plays with, the general phenomenology of the body. It is the mediation of embodied agency that makes us relate to the avatar intuitively as an ‘I can’, and which enables us to experience a simulated environment as something that we can inhabit; a ‘world’ that we belong to. When playing make-believe through the mediation of avatars, there is no need to explain engagement and immersion in terms of mechanisms of ‘identification’ or similar kinds of bonding between the player and the (sometimes humanoid) avatars. We do not identify with the avatar; we generally ‘identify’ with *other* people’s actions, not with our own.

Merleau-Ponty’s theory of ‘habit’ is a particularly useful point of departure for the analysis of avatar-based perception and interaction:

If habit is neither a form of knowledge nor an involuntary action, what then is it? It is knowledge in the hands, which is forthcoming only when bodily effort is made, and cannot be formulated in detachment from that effort. The subject knows where the letters are on the typewriter as we know where one of our limbs is, through a knowledge bred of a familiarity which does not give us a position in objective space (Merleau-Ponty 2002[1962]:166).

In broad terms: ‘habit’ refers to how perception works, and is a result of the embodied subject’s efforts to come to grips with its environment. Perceptions are not something that is

‘picked up’ by our sensory apparatus to be ‘decoded’ into meaning; perception is a knowledge that we acquire as part of our efforts to grasp and find our place in the world.

Habit describes what the psychologist James J. Gibson later has called ‘affordances’; phenomena in the world are being perceived by the ‘I can’ as possible ways of interacting and doing⁴⁶. To Gibson, ‘affordance’ does not merely describe the conscious act of recognising possibilities of successful interaction (as when, for example, a familiar-looking door handle will indicate to us that the door can be opened), but describes a basic condition for there to be any meaningful visual perceptions at all.

The perceiving of an affordance is not a process of perceiving a value-free physical object to which meaning is somewhat added in a way no one has been able to agree upon; it is a process of perceiving a value-rich ecological object. Any substance, any surface, any layout has some affordance for benefit or injury to someone. Physics may be value-free, but ecology is not.” (Gibson 1986[1979]:140).

Gibson’s ‘ecological’ approach is a way of grounding perception in the intentionality of an *organism* which “always already” inhabits its environment. The world does not appear to us as raw sensory data which then have to be ‘clothed with meaning’ (1986[1979]:140) in an act of interpretation or abstraction. To an organism that inhabits an environment, a meaningful world appears as an *ecology* projected around that organism – as affordances which “*seem* to be perceived directly because they *are* perceived directly” (1986[1979]:140).

With particular relevance to the realm of play and games, Hubert L. Dreyfus emphasises how the notion of affordance provides a fundament for a theory of learning, calling attention to the embodied mechanisms of skillful coping, mastery and success. Dreyfus pays particular attention to what Merleau-Ponty calls the ‘maximum grip’; the mastery, the predictability of interaction and the balance that the body-subject always strives to achieve in relation to the environments it inhabits.

One is no doubt consciously motivated to acquire a skill like tennis, but one does not try consciously to discriminate more and more subtle tennis situations and pair them

⁴⁶ Donald Norman has popularised ‘affordance’ into the field of HCI, although in a more commonsensical version, as a mechanism not of perception but of conscious *recognition*, referring to “...the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used” (Norman 1988:9).

with more and more subtle responses. All one can say is that in order to improve one's skill one must be involved, and get a lot of practice. The body takes over and does the rest outside the range of consciousness. This capacity is for Merleau-Ponty a further manifestation of the body's tendency to acquire a maximum grip on the world. (Dreyfus 1996:7).

Following Dreyfus, we can see sporting and gaming as privileged kinds of activities that manifest how embodied subjects come to grips with their particular environments. An interesting paragraph in Merleau-Ponty's earlier work *The Structure of Behaviour* (1965) describes the way in which the body of a competent player 'becomes one with' its environment in a game of football. The football field is, Merleau-Ponty writes –

...pervaded with lines of force (the 'yard lines'; those which demarcate the penalty area) and articulated in sectors (for example, the 'openings' between the adversaries) which call for a certain mode of action and which initiate and guide the action as if the player were unaware of it. The field itself is not given to him, but present as the immanent term of his practical intentions; the player becomes one with it and feels the direction of the goal, for example just as immediately as the vertical and horizontal planes of his own body (...) As a result, there is a process whereby simultaneously the body-subject constitutes the field, whilst the field constitutes the practical consciousness of the body-subject. (Merleau-Ponty 1965:168).

The football player, in other words, can be seen as a temporary 'body-subject' that is being established within the situation of the game. This situation is in important respects similar to the situation of avatar-based play. Take the example of the Stiga table-hockey game above: Getting into the 'flow' is a matter of entering into a new domain or 'practical consciousness' of playing the game, of entering into a communion with a technologically articulated environment.

However, if we look at the environment of the game as a whole, it is clear that the mechanism of the hockey-figure and the rod has a privileged role in relation to our acting body, mediating our agency within the environment of the game. It is a privileged 'value-rich' object within the ecology of the playing field, which cannot be compared to any corresponding element in a game of real hockey. On a real hockey ice, neither the puck nor the stick or any other ecological object stands in a similar kind of relationship to the player. If we compare the two environments, the miniature hockey player would correspond instead to the player himself – not as an ecological object but an extension of the ecological *subject*, that is: as both object and subject, like the body that it extends from.

In the phenomenological sense, then, the avatar should be understood as a prosthetic extension of the body-in-the-world, as illustrated by Merleau-Ponty through the example of the typewriter in the quote above. For the player, it is through this perceptual extension that the rest of the game-relevant environment falls into place. Like a typewriter, the avatar integrates with the body and sets up a new space of affordances, a new bodily space (2002[1962]:167). ‘Bodily space’ describes space as it exists *for* (or by) the body-subject; it is constituted as ‘environment’ by virtue of being meaningful to bodily effort. Like a new limb or a prosthesis, the avatar has the capacity to transform bodily space; it transforms the space of potential action for the ‘I can’, and integrates with the body as a perceptual habit. In other words, when we learn to use tools or other kinds of extensions to our body, we start perceiving our environment differently. When the body-subject changes through the appropriation of a prosthetic extension, the environment that it ‘projects around itself’ also changes. Different kinds of bodies constitute different kinds of bodily spaces.

The example of a radio-controlled model car may serve to illustrate this point. When getting into the ‘habit’ of navigating the environment via the extension of the model (a habit that will usually require a lot of practice to acquire), we start perceiving the textures of the ground differently; our perception is being ‘re-wired’ to make us aware of every little bump or other tiny formation that might present a potential hurdle to our vehicle. Moreover, this sensitivity to otherwise ignored details of small sand and rock topography will not disappear in an instance once we stop playing and lose our prosthesis. Like a phantom limb, the sticks of the controller and wheels of the model car will still be there as an imprint on our faculties, calling attention to a microworld of bumps and obstacles that is no longer relevant to the efforts of the now ‘castrated’ body. Similarly, a table-hockey player is always going to make sure that his mid-striker is pulled back to the back end of its sliding slot, ready to be slammed forward when there is an opportunity. When the striker is out of position, the habituated player will automatically pull the rod quickly back to its default position. The operation becomes second nature, just like when a video photographer pulls the zoom all the way down to adjust the focus, even if his eyes tell him that everything seems ok; the ‘photographer-body’ knows when a view is *potentially* out of focus, just like the table-hockey player will know in a split-second if the mid-striker is pulled back or not. This is “knowledge in the hands”, the knowledge of the extended body.

A prosthetic extension is dependent, in one way or another, on real-time control. The more an avatar takes on behaviours that reflect either its own agency or which emerge as passive responses to forces and agents in the environment, the less it functions as a prosthesis to the body-subject, and the more its status as an avatar is being weakened. In table-hockey, the movements and actions of the figures are under my hands' direct and continuous control. This hands-on and real-time control can be distinguished from what you find in a similar-sized game like pinball, in which the metal ball is on its own once it has left the plunger. This metal ball obviously stands in a privileged relationship to the player, as its behaviours and final destiny decides the player's score, but this kind of (game-defined) relationship is not covered by the notion of the perceptual extension. Non-extensions of this type may occupy a privileged position also in games of make-believe (which, I would argue, pinball is not), typically in the form of a vehicle of some sort, but then they are not avatars; they do not articulate the player's embodied agency in the environment of the game. Examples would be a non-controllable but motorised toy-truck let loose on the kitchen floor, or a plastic toy-bobsleigh finding its way (or not) down the slope that we have prepared for it. The avatar, in contrast, is a prosthetic extension of agency and perception, not an independent agent.

On the other hand: does this mean that all extensions, from hammers and typewriters to tennis rackets and croquet mallets, should be considered as avatars? No. The avatar is not merely an extension; it is also model, mediating fictional agency and forming the basis of a sub-category within the tradition of mimetic play. Because the avatar is a model, avatar-based play can be distinguished from traditions that are rooted in gestural simulations; the principle of the avatar should neither be confused with role-playing, nor with drama, which are forms that do not rely on the principle of the prosthetic extension.

An avatar is an extension that is also a model. The environment of table hockey models, in some respects, the environment of real hockey, and the playing of table hockey simulates (– again, in certain respects) the playing of hockey. Table hockey is a miniature, modelling that which is full-size. Without the principle of the model, extensions do not become avatars, and there will be no 'props' whose behaviours prescribe fictional truths. Real hockey involves bodily extensions (skates and sticks), but does not simulate anything. A corresponding small-sized example would be – as mentioned above – pinball, in which neither the metal ball, the flippers nor the general environment of the game is typically thought of as a simulation, nor

as a miniature that models something bigger. The plunger and the flippers that we control are extensions of our body, but as *tools*, not as avatars.

While the tool is an instrumental extension, the avatar is a *reflexive* extension. We can say – following Merleau-Ponty and Gibson – that it ‘inhabits’ an environment because it belongs to it and lives in it. The avatar is not just acting upon, but also being acted upon and affected by; it is submitted to and exposed to its environment. In contrast, tools do not belong to the environment; what we are interested in is their capacity to alter the environment, not their capacity to become altered by it. This makes natural sense, because the role of the tool is not to mediate for the player a fictional subject-position within the environment. While any alteration of the avatar reflects and confirms the player’s participation in a make-believe ecology, any significant impact caused by the environment on a tool will be either irrelevant or unwanted. Unless the hammer is taking part in some kind of make-believe, there is no reason for it to be willingly affected by the nail.

Similarly, it would not make any sense to let the plunger and the paddles in pinball become exposed to and affected by their environment – unless we choose to consider this environment in some sense as a simulated environment (a miniature). As long as a pinball game is just a pinball game, the plunger and the paddles do not mediate any kind of fictional agency on behalf of the player. The perceptual extension of table-hockey games, in contrast – a small figure that we would be hard pressed not to take as a model of a hockey player – has the capacity to project around itself a fictional world, in which case the player relates to the ‘tool’ not just as an extension but also as a subject; as a vicarious body, an avatar. The unpredictable destiny of the small plastic figures then becomes part of the game of make-believe; we may for example complain that our players have become ‘injured’ when they are knocked over – a not uncommon accident in those types of games, especially if the set is old and worn.

Because the avatar is an extension that is also a model, it is submitted to its environment in a way that the phenomenological concepts of extension and tool-use do not account for. In computer games, the concept of the tool may capture the functions of a mouse cursor, but not the ‘functions’ of Mario in *Super Mario 64* (Nintendo 1996), who definitely belongs to his environment in all sorts of possible ways. Most importantly – and representing the ultimate symbol of ‘avatarhood’: Mario can ‘die’, thereby erasing or ejecting the player’s fictional presence from the environment.

In computer games, the role of the avatar is accentuated, expanded and elaborated to such an extent that traditional avatars almost seem like ‘proto-avatars’ in comparison. The action adventure format, in particular, presents a paradigmatic model of what avatarhood is essentially about, as the avatar is acutely submitted to a distinctly hostile and dangerous environment. In the action adventure, nobody is going to mistake the avatar for a mere extension or a tool, simply because the task of staying alive would be (in most cases) the principal challenge that the avatar faces.

Which brings us to the final function of the avatar that needs to be pointed out: unlike an instrumental extension (a tool), the avatar does not expose our actual bodies to the environment; it only exposes itself, as a *vicarious* body. In contrast, a walking stick, a tennis racket or a car extends the functioning of the body directly and sets up a new bodily space which could potentially hurt it. Perceptual tools do extend and transform the ‘incarnated mind’ of the body, but they do not *themselves* mimic the position and destiny of an incarnated mind. In contrast, the avatar – say, for example, a radio-controlled model plane – has the capacity to project around itself its own bodily space. Therefore, while it does mediate the agency and perceptions of the body (and as such functions as an extension), it does not subject the actual body to the aerial ecology that it mediates. This is a different kind of ‘tool’ than what is described by Heidegger and Merleau-Ponty; the whole point of engaging with an avatarial extension is that it is subjected to and resides in its environment on behalf of the player.

In avatar-based play, the environment is perceived via the vicarious body of the avatar, through which “Any substance, any surface, any layout has some affordance for benefit or injury”. (Gibson 1986[1979]:140). The principle of the avatar offers a playful and exploratory mode of being-in-the-world; it temporarily transforms our situation on the level of perception and action, allowing us to try out and struggle with new kinds of bodies and bodily spaces.

Chapter 5: The simulator

A general theory of the avatar cannot be directly applied to the domain of computer games. Computer game environments are algorithmic systems as well as formal game systems. The latter dimension is illustrated also by the example of table hockey as used above: what happens to the ‘avatars’ on the field does not make much difference unless it has some significance within the rule-system that defines what the game is about; therefore, if one of those miniature figures is accidentally knocked over, it takes a fair bit of added make-believe to make it into something more than merely an unfortunate break in the game). Moreover, the majority of computer games are *screen-based* media, which means that the avatar needs to ‘translate’, as it were, between the world of our bodies and a world of moving images. These questions will be addressed in this and the following chapter.

A computer simulation, according to the general definition outlined in chapter 2, is an implementation of a model which is not performed by a human participant, but by computers: the computer (or several computers) runs a simulation. Depending on the context, ‘simulation’ can also have more specific meanings, which I would argue are compatible with the general definition even if they have a different emphasis. In scientific, industrial and educational contexts, ‘computer simulation’ typically refers the activity of *modelling* for computer simulations. Roger D. Smith provides a concise and domain-independent definition of this concept:

Simulation is the process of designing a model of a real or imagined system and conducting experiments with that model. The purpose of simulation experiments is to understand the behavior of the system or evaluate strategies for the operation of the system.” (Smith 1999:2).

This definition does not necessarily exclude entertainment simulations, even if its emphasis is on modelling and simulation as an experimental and cognitive-analytical tool. Computer game theorist Gonzalo Frasca presents a similar, but broader definition when he says that simulation is “the modelling of a dynamic system through another system” (Frasca

2004:86).⁴⁷ This definition also refers primarily to the activity of constructing, implementing, manipulating and re-working formal systems.

However, in everyday language, ‘a simulation’ may also refer to what could be more precisely called a *simulator*: a simulating system considered as a self-contained machine; a machine that simulates. The concept of the simulator is most commonly associated with entertainment or training. It also captures, I want to suggest, the central fiction-making capacities of computer games, as these are manifested through software and hardware. Whereas non-computerised game systems are often also ‘functional representations’ or models, which can be implemented by players who take the role of ‘simulators’ (agents who perform a simulation), computer games are both models *and* simulators.

We can of course imagine many kinds of simulating machines that are not necessarily computers; a familiar example would be motion simulators, which essentially depend on video/film and various mechanical devices that are being synchronised with the images. Computer game simulators, however, are *cybernetic* machines; cybernetic simulators. The cybernetic simulator’s essential capability is the automated implementation of algorithmic models. It is a procedural machine, a machine that can simulate processes all on its own – provided those processes are interpreted through abstract models that the machine is able to compute.

This is how Ted Friedman describes the cybernetic relationship between the computer and the player:

What makes interaction with computers so powerfully absorbing – for better and worse – is the way computers can transform the exchange between reader and text into a feedback loop. Every response you make provokes a reaction from the computer, which leads to a new response, and so on, as the loop from the screen to your eyes to your fingers on the keyboard to the computer to the screen becomes a single cybernetic circuit. (Friedman 2002).

This notion of the cybernetic feedback loop or circuit has been theoretically formative within the emerging field of computer game studies⁴⁸. The conceptualisation of computer games as

⁴⁷ For the original version of Frasca’s use of the term, see *Video Games of the Oppressed: Video Games as a Means for Critical Thinking and Debate* (Frasca 2001), where Frasca investigates how computer simulations can work as tools for role-playing with oppressive structures and mechanisms in society.

cybernetic systems, introduced by Aarseth's concept of the 'cybertext' (1997), captures the dialogical relationship between the player and the computer, a relationship in which the player is struggling to get the upper hand in a continuous exchange (or 'loop') of information and control⁴⁹.

Second-order simulations

A fully automated computer simulation only needs a set of initial conditions that defines for it a point of departure. Once kicked off, such a simulation works as a closed cybernetic feedback loop, a self-controlling mechanism that is running in dialogue with itself. The open or 'interactive' computer simulation, by contrast, requires the user to stay in the loop, as part of the machinery of simulation⁵⁰. Together the user and the machine are bound together in a cybernetic dialogue, as reciprocal agents in a self-organising and self-controlling system.

However, there are two ways of staying in the loop; two different ideal models that define the role and nature of the user's (or in our case: the player's) participation with the process of simulation. These two ideal models describe how the player is positioned in relation to the activity of simulation, and define the modality of interaction that is available to the player.

In the standard mode of interactive computer simulation, the user participates as an equal partner in, or is in charge of, the process of simulation; the computer programme is a tool, an instrumental piece of technology that allows the player to perform simulations that otherwise would not be possible, or which would be significantly more laborious or impractical. The user (the scientist, the engineer, the student, the player) operates, manages and experiments with the process of simulation through observing results, varying input data, altering or tweaking the algorithmic models, and re-working underlying assumptions. The process of simulation is *transparent*, either because the programme is designed with a special-purpose interface that allows and facilitates transparency, or because the user is allowed to (and able to) change or modify the programme directly.

⁴⁸ See Lahti (2003), Kücklich (2002), Dovey and Kennedy (2006), and Giddings (2006).

⁴⁹ The principle of the feedback loop as part of a new discipline of 'cybernetics' was established by Norbert Wiener in *Cybernetics, or control and communication in the animal and machine* (Wiener 1948).

⁵⁰ The notion of the 'interactive' simulation only makes sense in relation to a *computerised* simulation. All simulations are, by definition, 'interactive' (someone is simulating something), but because the computer has the unique ability to perform its own simulation, we often use the term 'interactive' when we refer to a computer simulation that includes a human participant in the loop even if it does not need to.

In contrast, in the non-transparent or *second-order* mode of interactive computer simulation, the user relates to the process of simulation only via the output that the simulation produces – with no access to the operations that produce this information. The user enters into a dialogue with the non-transparent simulator according to the (often highly restricted) form and conventions that the programme dictates. The user is continuously influencing on how the process unfolds, but only indirectly, via the results as they are presented by the software and hardware. In the non-transparent computer simulation, the first-order simulation is transformed into an autonomous environment for the user to act within and affect upon.

A typical non-transparent computer simulation would be Joseph Weizenbaum's famous programme *Eliza* from 1964⁵¹, a text-based chatterbot that simulates the responses of the stereotypical psychotherapist. Even if *Eliza* follows a set of fairly simple rules – she is basically responding to every input from the 'patient' with questions like “why do you say that x” or “tell me more about x” – , the simulation can still be convincing enough for the user to imagine that he or she is participating in a conversation with a psychotherapist. The user can only type text as input, and the programme can accommodate only a limited range of verbal inputs without making nonsensical responses.

In we are playing with *Eliza*, the computer takes the role of the simulator, by implementing the formal dynamic model that defines the behaviours of the stereotypical psychotherapist. This simulator is a mediator between the player and the 'rules' of *Eliza*; it accepts input from the player and feeds it back into the model, while keeping this model hidden from the 'patient'. From the point of view of the player, the actual workings of the model can not be accessed or observed, only inferred; after playing for a while, the player may figure it out; the player may decipher the code.

However, if the player is not given access to the rule-governed process that defines the simulation, in what sense can we still say that he or she still is performing or 'running' a simulation? How can a player implement rules without knowing them? The answer is that the player is engaging in a second-order process of simulation; this simulation implements the first-order simulation – the simulation that the simulator performs – as a *model*. The second-

⁵¹ *Eliza* is currently available for consultation at <http://www-ai.ijs.si/eliza/eliza.html>

order simulation, performed by the user, implements the first-order simulation as a second-order dynamic model (a model of a model).

A good example of a second-order playable model would be Sony's robot dog *Aibo*, the cybernetic toy. *Aibo* is a functional representation which is itself already an implementation of an abstract model. Together, *Aibo* and the player form a second-order cybernetic system. The central difference between *Aibo* and computer games is that the former is neither a game nor a world, but a toy – a distinction I will return to below. Still, most computer games can also be described as second-order models; the first-order simulation that the computer performs is made dependent on the second-order simulation that the computer and the user perform in dialogue. If the user gives no input, the first-order simulation will go idle, repeat itself endlessly, or simply just stop.

The loop of communion

As I noted above, the idea that computer game play is a cybernetic loop between the player and the game, as proposed by Aarseth (1997) and Friedman (2002), has been influential in contemporary new media and computer game theory⁵². This is how Friedman describes the experience of playing *SimCity* (Maxis Software 1989):

It's very hard to describe what it feels like when you're "lost" inside a computer game, precisely because at that moment your sense of self has been fundamentally transformed. Flowing through a continuous series of decisions made almost automatically, hardly aware of the passage of time, you form a symbiotic circuit with the computer, a version of the cyborgian consciousness described by Donna Haraway in her influential "Manifesto for Cyborgs". The computer comes to feel like an organic extension of your consciousness, and you may feel like an extension of the computer itself. (Friedman 2002:5).

The use of the phenomenological idea of 'organic extension' has similarities with my analysis of the avatari relationship above, but with one central difference: Friedman's 'complete communion' of absorbing experience, which is offered to the competent player (2002:4), is a communion with the *computer*, not with the avatar, and certainly not with a fictional world. While the notion of 'cyborgian consciousness' is linked to the specificity of the management-

⁵² This theoretical model also connects game theory to a broader strand of cultural theory that is centred around notions of cyborgian or 'posthuman' forms of interaction, identity and politics (Haraway 1991; Hayles 1999).

and strategy game genre, his account also echoes Sherry Turkle's classical study of arcade game players from the early eighties:

People who have never played video games often think that success at them is like winning at a Las Vegas-style "one-arm bandit"; people who have played one game and given up acknowledge that they require "hand-eye coordination," often adding that this is something that children, but not they, possess. But success at video games involves much more. Working out your game strategy involves a process of deciphering the logic of the game, of understanding the intent of the game's designer, of achieving a "meeting of the minds" with the program. The video games reflect the computer within—in their animated graphics, in the rhythm they impose, in the kind of strategic thinking that they require. This "computational specificity" becomes clear when you contrast the games with their "grandparent," pinball. (Turkle 1984:68).

Although describing two different genres of computer game play, both Friedman and Turkle describe a mode of experience according to which the player gets to merge with the logic of the computer, in a 'meeting of minds' between the player and the programme. Both are classical accounts of what computer gaming is about, and they capture the role of the computer in game play (the 'computational specificity') with a precision and analytical power that is lacking from more general accounts of digital media. At the same time, I would argue that both accounts still reflect very *particular* – although central – paradigms of gaming experience. When taking a broader range of genres into account, these paradigms only cover part of the picture, especially if we look at avatar-based games.

The system simulator

Friedman's 'cyborgian consciousness' and Turkle's 'deciphering' articulate a particular kind of 'symbiotic' relationship that emerge from computer game play, accounting for how players (through hard learning and struggle) get into the cybernetic loop of mastery and control. Unlike the avatariation or prosthesis as described above, this relationship is all about getting into the guts of the machine, into 'the computer within', in order to be able to know it, to control it, to think like it, to become one with it in play. At the same time, *SimCity* and arcade games are also very different from each other; one is slow-burning and intellectual, the other frantic and tactical-visceral. While the former 'logic' is the logic of system dynamics, which invites the player to manage the parameters of change, the latter is all about pace, repetition and rhythm; in general, arcade action games are more about pattern than structure, emphasising variation over a theme rather than how a system evolves over time.

Also, we should note that only Friedman's account addresses directly the dimension of simulation. His focus is on the capacities of the system *simulator*, and on how it invites players to get under the hood of the on-screen simulation; the system simulator, in order to be mastered and conquered, requires the competent player to get at the constructedness of the simulated world, in a process of 'demystification':

In fact, I would argue that computer games reveal their own constructedness to a much greater extent than more traditional texts. Pournelle asks that designers open up their programs, so that gamers can "know what the inner relationships are." But this is exactly what the process of computer game playing reveals. Learning and winning (or, in the case of a non-competitive "software toy," "reaching one's goals at") a computer game is a process of demystification: one succeeds by discovering how the software is put together. (Friedman 2002:3).

This description has similarities with what I referred to above as the standard or 'transparent' mode of computer simulation. Rather than engaging with the computer simulation as a second-order model only, the player is taking the position of the computer, identifying with the simulator itself, and is in this way relating directly to the procedures that govern the actions of the simulator. From this emerges a *reflexive* cybernetic feedback loop; the player becomes hyper-aware of the computerised specificity of the simulation, and the player's mind is able to tune in to the workings of the underlying formal structure. The competent player of *SimCity* inhabits – in a phenomenological sense – the ecology of an abstract environment. Getting into the flow of playing the system simulator means *becoming* a system simulator. Being in the loop is to play the system. *Civilization* or *SimCity* – the strategy game genre and the simulation game genre – are paradigmatic models for this kind of play. The latter is also often called 'sim games' or management games.

Friedman's model of computer game play, more generally, implies a notion of computer game representation and computer game space that could be seen as the antithesis to the avatar-based approach that I have outlined in the chapter above. Considered as a model-based or 'procedural' representation, the simulated world of *SimCity* does represent (some aspect of) the real world, but more importantly: the miniature buildings, roads and parks also represent the system itself, the inner workings of the machine, and it is this 'inner reality' that the player has to grasp if he or she wants to get into the flow of the game. Consequently, when the player engages fluently in a transparent and 'demystifying' cybernetic feedback loop, the screen-simulated space of *SimCity* takes the role of an *interface* to the real workings of the

game. The player does not use the machine in order to play with some domain in the world, but uses instead this domain – as an interface metaphor – to play with the machine and the programme. From the point of view of the player, the simulated environment that is represented on the screen may still be seen as a functional representation of something in the world, but only indirectly; only via the abstract model that it implements.

The ‘world’ of the game

Based on the principle of the second-order cybernetic model – the model that also performs a simulation – the simulator is able to produce a ‘worldness’ that sets it apart from other technologies of play and gaming. This worldness works against the deciphering imperative of system-oriented play. Marie-Laure Ryan’s brief discussion of contemporary games in *Narrative as Virtual Reality* may serve as a cue to what kind of worldness we are talking about:

In an abstract sense, of course, most if not all games create a “game world”, or self-enclosed playing space, and the passion that the player brings to the game may be regarded as immersion in this game-world. But I would like to draw a distinction between “world” as a set of rules and tokens, and “world” as imaginary space, furnished with individuated objects. The pieces of a chess game may be labelled king, queen, bishop or knight, but chess players do not relate to them as fictional persons, nor do they imagine a royal court, a castle, an army, and a war between rival kingdoms. (Ryan 2001:307).

The fact that one does not normally engage with the fictional worlds of board games in the same way that one engages with the fictional world of *Tomb Raider* (Core Design 1996) or *Unreal* (Digital Extremes/Epic 1998), however, is not primarily due to the immersive power of “the sensorial representation of the gameworld”, which is the dimension that Ryan chooses to emphasise (2001:308). The core difference between a world of ‘rules and tokens’ and a world of ‘individuated objects’ – which is a very central distinction – does not mainly have to do with the level of abstraction as such, understood as the complexity and richness of computer game imagery. The heart of the matter, I will argue, is the computer’s capacity to implement formal models *for us*, so that we do not have to. As players, we are not asked to engage directly with the level of instructions, as we would have to do in a mimetic board game, where we would be required to do all the first-order simulation ourselves. Nor does a second-order model necessarily need to *reveal* the non-ambiguous and consistent game rules

that govern it, and which could be deciphered and internalized by a ‘demystifying’ player as a world of rules and tokens.

3 principles of realistic agency

In contemporary computer games, the prime strategy for securing non-transparency and worldness (although not the only one available) is restrictive embodiment through the avatar. This embodiment is dependent on the simulator’s capacity to simulate realistic agency. I want to suggest that realistic agency in simulated environments is premised on 3 general principles: *integration, reification and concretisation*.

The two different activities of simulation and game-play can only be seen as parallel in so far as they embody the process of *integration*, which means that the rules of the game melt with or are colonised by the rules that define possible actions, events and behaviours in a simulated world. This process is not the exclusive domain of computer simulations or computer games; colonisation is a principle at the level of instructions, and is therefore not dependent on a particular technology of implementation. Any game that also wants to be a simulation needs some level of integration. Chess is a simulation to the extent that some of the rules of the game can also make sense considered as principles of simulated warfare; we may note, for example, that pawns can only move forward and are not allowed to retreat.

Role-playing games, as well as war games and similar types of formalised simulations, are the paradigmatic form of non-computerised integration. In his paper “Word and code: code as world” (2003), Daniel Pargman accurately sums up how role-playing integration between game rules and world rules works – in a synthesis of formalised fiction that may seem peculiar and exotic to an outsider:

The characteristics of different types of creatures, such as elves, dwarfs, dragons, ogres etc. are explicated, and their game-related behaviors and effects are laid out in great detail. The same is true for armor, weapons, magic spells and potions. The same is true for character traits and professions. And mental health. And equipment. And divine intervention. And so on. It is exactly such expositions – collected in thick rulebooks – which one gets hold of when a roleplaying game is bought. What is bought is a “game system” i.e. an operationalized system for how a (fantasy) world works in detail. (Pargman 2003:2).

Pargman's notion of 'code as world' describes the unique nature of the worlds of role-playing games as opposed to literary or cinematic worlds. Through the principle of integration, role-playing worlds become world-*systems*, which are highly complex yet 'logical and controllable' (Pargman 2003:1).

Reification is the kind of implementation that makes a computer simulation non-transparent. It is the principle by which the cybernetic simulator turns instructions into regularities, and abstract models into concrete models. This is possible because the simulator automates the execution of algorithmic instructions and keeps them hidden from the player. While the algorithms of the programme code are instructions from the point of view of the digital machine (which executes them), from the point of view of the human player they are simply a set of regularities, a cluster of (hopefully) consistent responses and behaviours. In a non-automated interactive simulation, by contrast, the player's interaction must follow the procedures as stated by the instructions of the system, without the mediation of a simulating machine. The procedures and behaviours that follow from instruction-based play can of course hold various degrees of realism in terms of how they relate to events and phenomena in the real world. However the interaction *itself*, the mode of interaction between the user and the system, will not be realistic in any sense.

By implementing a set of formal rules as a dynamic simulation of automated behaviours and appearances, the simulator puts flesh and bones on abstract models, potentially disguising their true origin and inner structure; the concrete *Aibo* implements the abstract *Aibo*. In computer games, instructions are reified as non-transparent objects and processes, which enter into relationships with other objects and processes in an autonomous and responsive environment, whose properties and behaviours embody 'rules' only in a metaphorical or heuristic sense.

Robots like *Aibo* also illustrate the simulator's capacity to simulate independent and autonomous *agency*, taking the position of an intentional subject or 'other' in relation to the player. This agency is rooted in the automated implementation of algorithmic procedures, whose quintessential generic form is if-then. Simulated agency adds an important dimension of realistic agency to our relationship with computer-generated environments: there are other intentional behaviours than our own. When playing a singleplayer computer game, there is *someone* who acts in relation to the player, a partner and opponent who is typically

instantiated and ‘localised’ in various simulated agents and forces of the environment, but who may also – in different forms and to different extents – penetrate or animate the simulated world as a whole, which is a dimension I will return to in chapter 6. What I want to emphasise here is that simulated others – especially the kind of simulated agents that populate computer game worlds – are premised on a certain extent of reification and non-transparency. As humans, we do not have direct access to the operations or governing ‘rules’ of other independently deliberating minds. We can only know the intentions, preferences and strategies of other subjects through their actions, through interpretation.

The principle of reification is specific to the domain of simulation; it applies only to game rules that are integrated with or ‘colonised’ by a simulated system. A game system that does not model anything cannot be reified, only automated. This distinguishes reification from the computer’s capacity to *enforce* or uphold the rules of a game. For example, in a racing game, the computer may force the player to follow a rule: the player/driver must stop when the time is up. This rule is not integrated with the rules that describe the properties of the simulated environment; no part of the simulation indicates that the vehicle should magically stop functioning after a set number of minutes and seconds, but such are the rules of the game, and the computer upholds them as unavoidable and non-negotiable absolutes. This rule is an explicit game-rule, an instruction, which is enforced by the computer much like a referee enforces the rules of football. In the case of sport games, the rules that state when a ball is out of bounds are admittedly more ‘integrated’ in the sense that they form part of a simulated game-space, but their central defining feature, with respect to reification, is nevertheless that they are explicit about their status as game rules. Automated sport game rules, just like the non-integrated rules that may cut your fuel when your time is up in a racing game, are not laws or properties, but ‘regularities’ that retain and speak openly of their conventionality and contingency as game rules.

Computerised chess illustrates a different kind of non-reified automated rules. When two participants play against each other, the computer enforces a set of rules that are also, in some respect, integrated, describing a military battle. However, the high level of abstraction inhibits reification by keeping the game rules unavoidably and unambiguously transparent, and by relying on the rule-governed behaviours of *tokens* rather than objects or agents to which we could ascribe believable properties. The simulation that is performed by the computer does not do anything that the simulation performed by the players in non-computerised chess

cannot do. Because the automation of the computer in this case is essentially superfluous to the game as well as to the simulation (although convenient and efficient), computerised chess is most accurately called just that: a computerised game, not a computer game, incapable of mediating the process of reification.

In a similar fashion, although in far more elaborate and complex ways, computer role-playing games mitigate the principle of reification by keeping the rule-sets (which are often inherited from pen and paper versions) visible. This principle or ethos of anti-reification could be seen as a defining imperative of the role-playing game genre: the imperative to keep the world-system transparent; to keep the computer as a modest ‘computer’ in the original meaning of the term, doing the maths for you, and upholding the rules. We can therefore consider role-playing games like *Planescape Torment* (Black Isles Studios 1999) or *Neverwinter Nights* (BioWare 2002) as hybrids: part computer game, part computerised game – or alternatively: part computer simulation, part computerised simulation.

The principle of *concretisation* has to do with the function of concrete models within game systems. It points to a distinction which is either ignored or not given much importance in formalist game theory. Whereas pre-digital games typically use concrete models as *tokens*, a computer game typically uses concrete models as *playthings*. This means, for example, that computer games are well suited to simulated sport games like football or Formula One racing.

Seen from the point of view of the game system, a plaything is a *found object* (Juul 2005:67). A found object, in this perspective, is a game component that generates procedures of play through its own properties as an object, by virtue of its consistency and regularity of appearance and behaviour. For example, a football that does not have the correct shape and consistence, or a Ken doll that lacks his head, would seriously change (and potentially ruin) the activity of play. A token, in contrast, only needs to have (or to retain) very basic physical properties.

Sport and other physical games generally include both formal rules and playthings. In certain types of physical games, these playthings may also function as models, as mimetic toys, but this is generally the exception to the rule. An example that comes to mind is paintball, either as can it be observed in leisure centres, or as the televised sport where serious competitors dress up in military camo gear and shoot paint-splashing pellets at each other. However, as a

general rule, mimetic toys –playthings used as models – generally tend to *compete* with or displace formal rule-sets rather than accommodate to them; we may engage in formally structured games with our Legos or our paper dolls, but their capacities as playthings tend to discourage it.

Board games, on the other hand, typically use concrete models as central components within the game system, but then those models are *not* (in ordinary types of play) treated as playthings or found objects. The properties of the miniature motorcycle model that we move around the board in Monopoly are not important in the same way that the properties of a football are important. The properties of the motorcycle matter only in terms of how they enable it to function as a token: the small figure has concrete mass, it is of proper scale; it cannot be in two different places at the same time. Given that such minimum requirements are met, the role and function of a token, by definition, is described by the formal instructions of the game system. These rules cannot operate if they are not understood and implemented by a player.

In contrast, if we are playing with a miniature vehicle as a toy – that is, outside the boundaries of any formal game system – its specific properties will be crucial in defining how we are able to play and what the playing means to us; playing with a wooden toy truck with painted-on wheels and playing with a radio-controlled plastic wonder are two different things (in spite of what our parents might want us to believe). In Monopoly, it does not matter if the little vehicle has painted-on wheels, or whether it represents a motorcycle or a sandwich or a cow. A token is by definition themable: it can take on any kind of appearance and still perform the same function within the rules of the game. The behaviours that can be ascribed to the properties of the motorcycle figure itself can never claim authority over the instructions that govern the activity of the game; if the miniature accidentally slides out of its assigned position or is knocked over, this behaviour is irrelevant to the state of the game. The properties of a token do not have the authority to generate unforeseeable actions and events within the game system. A plaything, on the other hand, like gravity or the human body, is a found object, which is interesting precisely by virtue of its capacity to ‘instruct’ or generate procedures of play.

A token can never have the same fictional significance as a plaything, because unlike a plaything, it cannot function as a model; as players we do not allow it to generate fictional

actions and events by virtue of its properties as a functional representation. It may of course be used as a prop in a game of make-believe, but only in terms of its properties as a visual representation rather than as a functional representation – that is: in terms of its potential as a *depiction*, generating what Walton calls a visual (or perceptual) game of make-believe. Unlike the fictions generated by mimetic playthings, therefore, the fictional dimension of board games is an add-on, a depictive overlay to the rule-governed procedures of play.

Computer game environments, unlike the gaming environments of Risk, Monopoly or pen and paper role-playing games, are all about the playthings. However, because these playable or ‘found’ environments are able to integrate the rules of the game, they do not compete with the requirements of formal game systems, as mimetic playthings usually do. This is a unique and revolutionary capability of computer games: *they use concrete models to colonise the rules of play*, and they can do so because those concrete models are implementations of dynamic abstract models; they are the result of reification. The simulated worlds of pen and paper role-playing games, in contrast, also colonise game rules, but not via concrete models (– if they use concrete models, these are assigned the function of tokens). In computer games, the properties of the concrete, playable and generative toy are able to absorb and concretise the workings of the game system. The principle of concretisation, consequently, may also serve to distinguish computer games from computerised games: the latter emphasise the importance of tokens over playthings.

The principles of integration, reification and concretisation – the latter being a combination of the former two – explain how the simulator is able to offer a relationship to a simulated system that mimics our relationship to the real world. Realistic agency is when you do not have to perform the simulation by following a set of instructions, and when the behaviours of agents, objects and processes in the environment can be ascribed to their own properties and capabilities rather than to formal procedures that are external to them. In computer game environments, this kind of realistic agency is often combined with and balanced by game rules that are *not* concretised – either because they are transparent and non-reified (as in a role-playing game), or because they were never integrated with the simulation in the first place (as when a timer cuts you off in a racing game).

So the simulated environments of computer games are ‘worlds’ not only because they can trigger our imaginations, or because they constitute a rule-based and self-contained ‘magic

circle' of meaningful activity, *or* because they may be sensorially immersive, but also, and more importantly, because they are world-like in terms of our mode of interacting with them. Unlike non-computerised systems – whether these are simulations, game systems, or a combination of the two – we can interact with computer-simulated environments in a way that is analogous to how we interact with the world outside the simulation.

Finally, it is useful to point out the distinction between realistic agency, which is a particular property of computer-simulated environments, and the notion of functional realism, which has been suggested by Geoff King in his analysis of *Full Spectrum Warrior* (Pandemic Studios 2004), an hybridised action/strategy game that is marketed as a realistic and authentic military entertainment simulator. The functional realism of this game, King says, operates at the level of military tactics; compared to other military-style shooters, the manner in which the player is forced to perform the basic tasks in *Full Spectrum Warrior* – the game's 'core mechanics' – corresponds more closely (or, we could add, less badly) to the way professional soldiers are actually trained to do combat in those kinds of environments (King 2005). This type of realism, I will suggest, does not primarily address the world-like responses of simulated environments, but a (presumed) homology at the structural level, a *functional* homology that can be expressed in entirely abstract terms, that is, in terms of the rules that govern the possible actions of the player. Functional realism is therefore separate from realistic agency. As noted above, any simulation – for example a pen and paper simulation or a board game – can be measured and found realistic in terms of how its rules correspond to the perceived patterns and regularities of the particular domain that it simulates. Conversely, a computer game that offers a high degree of realistic agency and 'worldness' – say, for example, *Black* (Criterion 2006) – may not score very high in terms of functional realism.

Environments versus automatons

As noted above, mimetic toys do not generally mix well with formal game systems, as their capacity for generating procedures of play competes with and easily disrupts the authority of the rules. In contrast, computer games are concrete models *and* formal systems – or more accurately: formal systems as concrete models. This makes them more similar to intelligent toys and robots – to cybernetic *automatons* – than they are to paper dolls or Lego men. A cybernetic automaton, like *Aibo*, implements a formal structure that defines its dynamic responses and behaviours as a concrete model. Because *Aibo* is a second-order model, we

may, in certain respects, interact with it in ways that are analogous to how we would interact with a (slightly confused) puppy.

Whereas automatons do have the capacity to integrate game rules, however, we should note that in terms of fictional participation, they engage us as *agents* rather than as worlds. The difference between cybernetic automatons and cybernetic worlds can be described via Kendall Walton's notion of the 'work world'. Certain kinds of props – we may refer to them as 'world-props' rather than merely as props – generate a world of their own, and they do so in an exclusive sense; they cannot enter into a world of make-believe as one prop among others, because they are not reflexive with respect to their environment. A world-prop is a self-contained prop, a game of make-believe incarnated as a prop.

Typically, as in the case of paintings, books or films, world-props are meant to be used in perceptual games of make-believe rather than in model-based games of make-believe; we do not normally use them as dynamically reflexive props – props that makes fictional the changes that we effect in them. To the extent that it *is* possible to appropriate a novel or a painted portrait as a model – say, by burning the novel or throwing rotten eggs on the portrait – we are stepping out of their work-worlds in order to engage in a different game of make-believe, and so they are no longer world-props. Because neither novels nor portraits model environments, the model and the work world become incompatible; if we emphasise the model, we lose the work world, and vice versa.

On the other hand, this conditional incompatibility may also give us a flexible but yet reasonably precise definition of what a simulated environment is: a simulated environment – any simulated environment – is a model that is also a world-prop. While some simulated environments are built on abstract models, like card and dice simulation games, others rely on concrete models, like film sets or other kinds of mock-up streets, buildings or towns. A computer-simulated environment is in a way a combination of those two types of environments. Because it relies on reified algorithmic models, it is both informational and concrete at the same time.

The concept of the world-prop also serves to differentiate between two ideal types of cybernetic fiction, two types of props that are both informational and concrete. Whereas the cybernetic automaton, when used in games of make-believe, communicates with and

‘fictionalises’ its environments, the cybernetic world (or ‘work world’) offers instead a self-contained and sovereign simulated environment.

We may assume that cybernetic worlds are simply a product of screen-based simulations, and that the boundary of the screen constitutes the boundary of the fictional world. However, while this is often the case, it is not necessarily so. Some computer-simulated environments combine screen-projected and physical props. Flight simulators, with their elaborate full-size cockpit models, would be a typical example. Conversely, automatons may also be screen-based in different ways. *Eliza*, to illustrate, in spite of being screen-based, lends itself well to being appropriated as an automaton. Let us say that we are playing along in a game of make-believe, according to which there is an Eliza the psychotherapist typing to us from some other terminal, or magically residing within the computer, or whatever setup will make sense to us according to the situation. In principle, considered as a concrete model, the *Eliza* programme is then reflexive with respect to the physical environment that the player uses for the game of make-believe. The boundary of this fictionalised environment is not incarnated by or clearly defined by the prop itself; the screen or the keyboard may be a part of the environment, but what about the chair? The desk? In this case, the boundaries of fictionally relevant space are not made explicit or clear (– indeed, addressing or questioning them in the first place could be seen as nonsensical) because the *Eliza* programme is being used as an automaton.

Following a similar principle, screen-based computer games may, to a greater or lesser extent, draw on the model of the automaton in the way they appeal to the player’s fictional participation. Examples would be *Nintendogs* (Nintendo 2005) and similar types of Tamagochi-inspired games, in which the player interacts with virtual pets as if they were a part of his or her everyday space and everyday life. Some games break out of their self-contained worldness primarily by absorbing (or invading) the player’s world in a temporal more than a spatial sense. In *Animal Crossing* (Nintendo 2004), the events of a persistent simulated environment follow in sync with days and seasons in real time, defining the game-space a parallel place just as much as a separate world.

Unlike *Eliza* and *Nintendogs*, many computer games are self-contained cybernetic fictions; they are unambiguously ‘work worlds’. This implies, as I will return to in chapter 7, that they are related to the screen-projected work-worlds of film and animation in a way that automatons, even screen-based ones, are not. However, in film and animation, the ontological

boundary of fiction – the ‘fourth wall’ that defines the fictional world – is usually closely associated with the boundary of the *recounted*, which is the boundary of a diegetic storyworld. In computer game work worlds, on the other hand, this diegetic dimension (in so far as there is one) is subordinated to the here-and-now of mimetic play. This means that computer game fiction, in principle, can more easily extend beyond the boundary of the screen, just like it does when playing with *Eliza*. Therefore, in computer games, the difference between an automaton and a self-contained environment is not necessarily clear-cut or unambiguous.

Computer game worlds are also, just like the automaton, self-operating intelligent machines. System simulators like *Sim City* or *The Sims*, as discussed above, are in one sense more similar to automatons than other kinds of games, because they are engaged with from the outside, as small totalities or organisms, as cybernetic toys. However, because they are world-props rather than agents, our fictional participation with them is different. Rather than re-positioning us in a game of make-believe, as the automaton does, they are more comparable to construction toys like Lego, with which we, as noted in chapter 3, typically participate through *instrumental* agency rather than fictional agency. In terms of our fictional participation, then, they are self-contained rather than dialogical. A system simulator does not generate fictional truths about its dialogue with the player, as *Eliza* or *Aibo* does, but it generates fictional truths about itself, about the state of its world as a self-contained entity. This is why the system simulator lends itself especially well to the ‘process of demystification’ that Friedman talks about. The dialogue between the player and the machine produces a fictional world, but that dialogue itself is not part of the world that it produces. We may still, though, engage in fictional participation from inside this self-contained world, but this participation will need to operate on the level of mental make-believe.

Computer game worldness

To sum up: Sherry Turkle and Ted Friedman describe in what way the notion of ‘worldness’ in computer games is a paradox; part of the pleasure is to play with this worldness itself, to get under the hood, to indulge in the paradox of the world-system. However, while this kind of ‘communion’ between the player and the system reflects, on the one hand, a general appeal that is specific to computerised media, the cultivation of this mode of interaction is also highly dependent on generic conventions. At the same time, the paradox itself is rooted in the

computer's capacity as a simulating machine, a simulator, which facilitates realistic, world-like agency. It is this realism that is the more important specificity of computer games.

Realistic agency takes fictionality beyond the status of the representational 'theme' or overlay, and beyond the metaphorical 'world' of rules and tokens. This fictionality is rooted in the same basic premise of pretence or virtuality that carries fictional worlds in other media, but it draws on the generative power of concrete – or more to the point: concretised – models rather than the generative power of depictions or verbal props. Through the power of the simulator to execute and reify formal models, computer games, like other computer simulations, give players the ability to interact in a world-like manner with fictional objects. Computer games are playthings, and as such they are comparable to toys and cybernetic automatons. Yet most computer games are self-contained worlds rather than dialogical agents; as simulated environments, they are both work worlds and concrete models.

Finally, it must be emphasised that the worlds of computer games are a special *kind* of self-contained simulated environments; they are, uncompromisingly, games as well as worlds. The computer game simulation integrates and concretises the explicit game rules that govern the actions of the player. The world of mimetic playthings merges with the game rules that govern our actions – not as a 'special case' but by default. In computer games, game rules are colonised by fiction.

Chapter 6: The computer game avatar

In chapter 4, I gave an outline of a general theory of the avatar, and of avatar-based play, without situating the concept specifically in relation to computer games. The central idea is that the avatar combines the principle of the perceptual prosthesis with the principles of fictional agency and fictional embodiment. In chapter 5, I moved on to a discussion of computer-simulated environments, what role they play in computer games, and in what way we can say that computer game spaces are also computer game worlds rather than just systems or automatons. In this chapter, building on the general theory of the avatar and of computer game ‘worldness’, I will look at the more specific characteristics of the computer game avatar, and discuss how avatar-based games relate to other categories of games.

Character

First of all, when we move from toy trucks or dolls to screen-based simulations, it is important to emphasise that the notion of the avatar, as noted in chapter 3, is distinct from the notion of playable *character*. ‘Character’, as I will define it here, is a general category that applies equally to novels or films as well as to drama or computer games. By definition, a character is an independent subject, someone who can act, and who can be related to as a human person or some sort of animated being with goals and intentions. As players, we may in a certain sense be able to act, think and feel ‘vicariously’, as it were, via the acts of a character, but as I argued in chapter 3 this is a relationship of *identification*, not a prosthetic extension of agency and perception. More specifically, the notion of ‘character’ is typically (although not always) associated with a subject that acts and thinks within a *diegetic* world. In other words, the primary function of character has to do with narrative; when we play with characters, we play with a story.

My point is not that character is unimportant to games or unimportant to avatar-based computer game play, but that there is, for analytical purposes, a lot to gain from keeping ‘character’ and ‘avatar’ distinct. In the present study, my main concern is with avatars, not characters, even if the two are often closely associated in the games that we play. In avatar-based games, characters (often more than one) are usually appropriated a part of an avatarial relationship, as a playable character or ‘avatar-character’, through which the avatar’s actions are expressed within the fictional world. However, this dimension is not necessary to avatarial embodiment; some avatars are manifested in the fictional world as vehicles (space ships,

racing cars) rather than as humans, humanoids or other kinds of animated subjects. As avatars, these are significant in terms of what kind of fictional embodiment and fictional participation they enable, but they are not characters, and we do not need a theory of character – nor of narrative – to account for how they engage us in play.

As an alternative to the established conceptualisations of ‘playable character’, and drawing on the notion of fictional embodiment that I suggested in chapter 4, I will suggest that the notion of avatar-based play in computer games can be defined along two central dimensions: tangibility and miniatureness. These two dimensions can be drawn up in a simple model, illustrating the relationship between four generic categories of computer game ‘worldness’ and computer game play.

Tangible (information) spaces

Most computer game simulations rely on screen-projected moving images⁵³. This is because of the unique way in which moving images are able to realise and express the principles of realistic agency in simulated environments. First, the informational output of the formal system must somehow translate into something that can be related to in interesting ways as concrete models. This could be done, of course, through various kinds of robotics, but screen-projected synthetic images with sound and physical interfaces are infinitely richer, more flexible and comprehensive in scope than robotic environments or installations. This is especially so if the simulation exploits the principle of embodiment through the avatar. Secondly, screen-projected moving images connect computer game environments to the projected environments of other image-based media, and to cultural conventions and perceptual habits developed through drawing, animation and film. As I will be discussing in chapter 8, contemporary games rely heavily on the habits developed by the cinematic camera.

Spacewar! (Russel/Graetz/Wiitanen 2006[1962]) was enabled by a new type of technology, which put the user in direct contact with the computer via a display screen, and made the computer playable. The screen-based computer gave birth to a new technology of mimetic play because it could draw, and draw so fast it could animate shapes and figures while you

⁵³ It should be noted that a computer game does not necessarily have to include screen-projected spaces. Location-based or ‘mixed reality’ games must be considered as only partly screen-based (as a dominant part of the visual field of interaction would be the physical environment rather than the screen-projected environment). We could also imagine singleplayer computer games that use a similar kind of setup, or which relied on printed output, or – in the more advanced category: that rely on robotic installations.

were looking. *Spacewar!* demonstrated that one could instruct the PDP-1 mini computer to draw and animate with light on a CRT display, and then interact with these images in real-time, while the programme was running, either via toggle switches on the console typewriter, or – even better – via dedicated control boxes that were custom-built by members of MIT’s Tech Model Railroad Club⁵⁴.

Spacewar! was a computer simulation, and a formal model of a real-world physical system governed its behaviour. Implemented by the PDP-1, the information output from the simulation was translated into moving lights that depicted spaceships, stars and missiles. This reifying metamorphosis was essential to the playability and appeal of the game. Sets of written instructions did not return data as numbers and words, but as dynamic, responsive and recognisable patterns of light on a screen, which behaved like real-world objects in outer space could possibly do. One did not need to know anything about computers or simulations to understand it, have fun with it, and master it. The output that was produced by the ongoing simulation did not reach the player in the shape of coded information. Neither did the player need to define his or her *input* as coded information – verbally or otherwise.

Through direct and embodied interaction, the concrete models of the simulated environment – even if those models were little more than simple shapes of light – became *tangible* models. ‘Tangibility’ in this context does not refer to that which can be physically touched and felt (although this dimension may also be implemented in various ways), but that which can be interacted with in a manner that simulates physical interaction. Indirect or informational manipulation, on the other hand, is when we control or influence elements in the environment through symbolic action, via language or other means of information that explain and designate behaviours and actions. This category includes point-and-click interfaces, which enable the player to provide quick and accurate information by pointing and designating. In contrast, the player of *Spacewar!* uses the toggle switches to thrust, turn and trigger (or fire off) the objects on the screen, as if he or she were directly manipulating these objects via a physical connection⁵⁵.

⁵⁴ See Graetz (2006).

⁵⁵ A Java applet version of *Spacewar!* is (at the time of writing) available to play at <http://lcs.www.media.mit.edu/groups/el/projects/spacewar/>

In the years after *Spacewar!*, a series of other games for mainframe computers followed that have influenced significantly the generic conventions of computer games as they appear today, but which relied entirely on text and numbers rather than tangible interaction. *Hammurabi* (Rick Merrill/David Ahl 2006[1969]), *Hunt the Wumpus* (Gregory Yob 2006[1973]), and *Adventure* (Will Crowther/Don Woods 2006[1976]) all offer a basic form of realistic agency; they meet us as worlds of rule-colonising playthings rather than as formally defined worlds of rules and tokens. This realism applies even if, in actual practice, the formal rules that drive a simulation like *Hammurabi* may be easily ‘deciphered’ because of its relative simplicity (depending on the competence of the user). The tangibility of games like *Spacewar!*, on the other hand, goes beyond the basic principles of realistic agency. At the same time, more elaborate avatar-based games depend on information-interfaced and symbolic interaction in addition to tangible relationships; in the classic action adventure *The Legend of Zelda* (Nintendo 2004[1986]), the player picks items or weapons by selecting from an inventory.

‘Tangibility’ as I use it here would overlap with the concept of ‘direct manipulation’ as used in the field of Human Computer Interaction. However, my emphasis is on the simulation of a direct physical relationship rather than trying to account for in systematic terms how this directness is constructed from the point of view of interface design⁵⁶. Tangible information spaces simulate the feel of touching, even if we cannot actually touch. This feel is not dependent on tactile feedback, but is implied by the experience of tangible interaction. Image-generated tangibility, moreover, is infinitely expressive and flexible; simulated objects have the capacity to come alive in all kinds of predictable or unpredictable ways when we touch them. Therefore, simulated physicality can be very different from anything we could experience in the real world. The following account from game designers and artists Kyle Gabler, Kyle Gray, Matt Kucic and Shalin Shodhan may illustrate this point:

“Juice” was our wet little term for constant and bountiful user feedback. A juicy game element will bounce and wiggle and squirt and make a little noise when you touch it. A juicy game feels alive and responds to everything you do – tons of cascading action and response for minimal user input. (Gabler et al. 2005).

⁵⁶ The term ‘direct manipulation’, as introduced in HCI by Ben Schneiderman (1982), does not explain directness in terms of simulation, opting instead for more descriptive terms like continuous representation and instant response. Brenda Laurel, in spite of her alternative and ‘dramatic’ approach, adopts a similar model of ‘directness’, emphasising the “tight coupling of kinesthetic input and visual response” (Laurel 1993:21).

Tangibility accentuates the integrity of concrete models, and solidifies the reified as a perceptual habit. Tangible environments are therefore no longer visual presentations of ‘output data’ from the process of simulation. In *Spacewar!*, the ‘visualisation’ *is* the simulation. And to the extent that the game rules are integrated with the algorithmic procedures that drive the simulation, the tangible moving lights on the precision CRT display *are* the game.

Miniature worlds

As noted in the previous chapter, system simulators like *SimCity* or *The Sims* are based on instrumental agency rather than fictional and avatar-based agency. Borrowing from the terminology of Seymour Papert (1980) and Chaim Gingold (2003), we may call these environments ‘microworlds’ or *miniature* worlds. A microworld is a hybrid between a world and a toy. It provides macroscopic overview, and is approached as a totality. Because microworlds are autonomous and intelligent systems that have independent agency, instrumental make-believe thrives and expands; in order to author fictionally interesting scenarios, we do not have to understand exactly how the world is put together or how it works. Nor do we have to implement the effects of our (more or less) experimental actions ourselves.

In his pioneering study *Mindstorms: Children, Computers and Powerful Ideas* (Papert 1980), Seymour Papert suggests a computer-simulated physics microworld as an ‘incubator’ for teaching Newtonian physics to children. Microworlds, he argues, enable practice-based and hands-on learning even if that which is to be learned may be complex and abstract (like mathematics). This is a learning process that operates via what Papert calls a ‘syntonic’ representation of knowledge. Syntonicity is a relationship of knowledge-transfer in two directions: our knowledge of the world (– of our body, of our intentional self, of our culture) helps us understand the relationships of some new phenomenon or system, and this phenomenon or system will in turn increase our understanding of ourselves and our position in the world. Through syntonic relationships, we are able to learn by projecting ourselves into situations rather than by trying to appropriate directly a set of formal rules. Computers are perfect for this kind of learning because they allow us to design special-purpose microworlds for learning, through which we can simulate and test out situations, mechanisms and relationships. The learner’s goal may be to grasp the precise meaning and significance of

formal rules and abstract relationships, but the learning approach is indirect, utilising the concretising power of the computer – utilising, we might say, the power of cybernetic playthings.

Chaim Gingold's thesis *Miniature Gardens & Magic Crayons: Games, Spaces & Worlds* (2003) analyses the aesthetic of computer games as miniature and playable worlds. Gingold draws on Paper's theory of syntonicity and the microworld, as well as the work and ideas of game designers Shigeru Miyamoto and Will Wright. Paradigmatic examples of 'miniature gardens', according to Gingold, are *SimCity*, *Super Mario Bros.* and *The Sims* (Maxis Software 2000). Gingold also describes the design for a prototype called *Comic Book Dollhouse*. This software is a 'magic crayon'; an authoring software for building and playing with story-based microworlds.

Miniature Gardens & Magic Crayons is an important contribution to our understanding of make-believe and fictional participation in computer games. This is how Gingold describes the principle of the miniature garden:

A miniature garden, like a snow globe, model train set, or fish tank, is complete; nothing is missing, and nothing can be taken away. Clear boundaries (spatial and non-spatial), overviews, and a consistent level of abstraction work hand in hand to make the miniature world believable, complete, and tractable for both the author and player. Miniatureness makes a garden intelligible in the mind of the player, and emotionally safe in his heart. Miniature scale, clear boundaries, and inner life help players to wrap their heads, hands, and hearts around a world. (Gingold 2003:7-8).

The miniature garden, in other words, is not merely a collection of toys, but a self-contained and complete universe, which is imbued with the 'inner life' of independent agency. At the same time, there are safe and stable ontological boundaries between the miniature world and the real world of the player. The miniature garden is an object, a graspable microworld. What I have referred to as 'realistic agency' is for Gingold something that follows from a set of syntonic relationships. The behaviours and responses of the miniature environment resonate with the player's experience from the actual world and makes possible the 'bidirectional transference of knowledge' (2003:26); our experience of the actual world helps us get our head around the miniature world, and interaction with the miniature world can teach us things about the real world.

The miniature garden provides the overview that enables and encourages the player to grasp the world as a structured whole, as a fish tank, a separate organism. The most elementary form of overview is omniscient visual perspective of *SimCity*, but other functions that provide a sense of wholeness and totality can also perform a similar function, according to Gingold. This sense of wholeness makes the miniature garden malleable and playable. Its ‘ludic playability’ is explained by Gingold in terms of possible worlds theory:

Digital worlds are procedural, which means that they can exist in a variety of states. The procedural description of a digital world defines a landscape of possible worlds: multiple world states and their relationships to one another. A digital world’s dynamics, defined by its makers, gives rise to a possible worlds landscape that is traversed by players. (2003:72).

This account presents, we should note, a distinctly systemic and information-oriented conceptualisation of game space, emphasising the diversification of possible worlds as the fundament of ludic playability. The player is located in the world in the *epistemic* sense, through a basic restriction on information access. Because there is no random access to possible world states (2003:78), the player must ‘traverse’ through different states of the world-system. It is this situatedness or re-location in terms of knowledge and action that distinguishes a microworld from merely a set of expressive tools like for example a paint programme. The task of a miniature world designer is to create a restricted but interesting and playable possibility-space of different global configurations (2003:68).

In the miniature garden, fictional recentring is not embodied and restricted but mental and flexible. ‘When playing *SimCity*’, Gingold says, “I mentally insert myself into my city’s streets and look up and around at the surrounding buildings.” (2003:25). So whereas agency is global and instrumental, there is still room for mental simulations that take the point of view of the local and the situated. This re-positioning is not perceptual in any sense; Gingold is not actually ‘looking up’ at the surrounding buildings. There is, in this form of imaginative make-believe, a playful split between agency and subject-positioning. As a player, you are given realistic agency from a position outside the fictional world, while at the same time being able to mentally insert yourself into this world.

Gingold also gives *Super Mario Bros.* a central role his analysis, even if this game is an action adventure rather than a management-oriented ‘god game’ game like *The Sims*. The Japanese

garden metaphor is borrowed from Mario's creator Shigeru Miyamoto. Gingold also includes, although with some reservations, *Super Mario 64* – a pioneering game of the 3D era – as an example of a miniature garden. His analysis emphasises the macroscopic and miniature aspect of both games rather than focussing on the role and status of the player-avatar relationship. In this way, he draws attention the playful miniatureness of Mario's world. Gingold's analysis illustrates that the notion of the miniature worlds does not exclude avatar-based play. Still, I would argue that the player's vicarious embodiment through Mario *does* make the microworld less micro, and the macroscopic more situated. From the point of view of the avatar, the magic garden is full size. In this sense, a game like *SimCity* must be categorised as a more radical variant of the miniature, because it does not provide any entry point for situated fictional embodiment within the world of the game.

In terms of fictional participation, the syntonic learning process of *SimCity* also has a type of appeal, I would argue, that action adventures like *Super Mario Bros.* do not have in the same way. *SimCity* teaches the player to manage and understand the parameters of a complex rule-based system, but it also teaches the player to think about the real world in terms of systems that can be manipulated and managed. This is not just a powerful learning tool but also a powerful fiction, as well as a persistent fantasy in our culture. System simulators enable us to play with the world as if it was a machine, as if it was a toy, entirely under our command.

As for *Super Mario 64*, Gingold finds this iteration of the series somewhat less successful as a miniature than the 2D games. This makes natural sense, I would argue, given the more restricted situatedness that the player is given in a three-dimensional world – in spite of the many tricks and devices that, admittedly, provide a different sense of overview and graspability than in, say, *Tomb Raider*. I would go further than Gingold, however, and argue that *Super Mario 64* is not primarily to be considered as a miniature at all, or at least it is relatively weak in this aspect as compared to *The Sims*, or – even more so – as compared to *SimCity*. If, as I will be arguing in the next chapter, a navigable point of view is adopted as an integrated part of the avatarsial relationship, the distinct logic and appeal of the miniature is rejected. The more general point I want to make here is that whereas miniature worlds accommodate the principle of the avatar – in a particular variant – miniatureness is also a strong moderating and balancing factor with respect to avatar-based play. Radical miniatures, like *SimCity*, have no place for the avatar.

In the following I will look more closely at the distinguishing characteristics of the screen-based computer game avatar, based on the more general principles laid out in chapter 4, and defined in relation to the notions of tangibility and miniatureness.

The screen-based avatar

In screen-based computer-simulated environments, avatarhood is produced from the appropriation or incorporation of tangible relationships. Unlike a playable character, which can be controlled in a number of indirect ways, including via point-and-click designations, the avatarial relationship is by definition a tangible and real-time relationship. Like a mouse cursor, the avatar enables us to make direct and continuous movements across the divide of the screen. The phenomenological appropriation of this relationship as a prosthetic extension of the player's own body-subject is described in detail by jazz pianist, sociologist and philosopher David Sudnow in *Pilgrim of the Microworld* (1983), where he painstakingly records how he – after hundreds of hours of training – learned to become a master of the arcade game *Breakout* (EC Interactive 2005[1978]). According to Sudnow, the link or 'wire' that connects our hand to the responsive image of a paddle – or, we might add, to a cursor – works like an 'electro-umbilical hookup', producing a "mysterious transformation" of our movements (Sudnow 1983:23).

There's that space over there, this one over here, and we traverse the wired gap with motions that make us nonetheless feel in a balanced extending touch with things. (Sudnow 1983:37).

Sudnow, who is analysing his own learning process armed with Merleau-Ponty's phenomenology of perception, discovers that *Breakout* can be learned, and can be embodied as second nature, in spite of the alienation he experiences in the early stages of the learning process, and in spite of all the unproductive strategies and sidetracks he is led to explore. This process of incorporation, he says – drawing on Merleau-Ponty's notion of bodily space – changes the player's relationship to the objects on the screen.

When a paddle or a bat is incorporated by the body, becoming a continuation of ourselves into and through which we realize and aim in a certain direction, such implements lose all existence as things in the world with the sorts of dimensions you measure on rulers. They become incorporated within a system of bodily spaces that can never be spoken of in the objective terms with which we speak of objects outside ourselves (Sudnow 1983:122).

Sudnow's phenomenological account addresses a process of learning and 'incorporation' that is equally central to the development of a competent player-avatar relationship. Through the avatar, as a privileged locus of the process of perceptual habituation, the images on the screen as well as the physical interface between the player and the controller interface all become a part of the player's own extended self. When disciplined by this real-time 'hookup', the player's bodily skills, mediated through the hardware interface, have become part of a new perceptual regime. Physical movements – moving fingers across the keyboard, pressing buttons on the controller, moving the analogue sticks in microscopic increments – are seamlessly integrated with the audio-visual perception of the screen-projected space of the game. We may say that the player has become temporally 're-wired'; the body-subject learns to perceive and act as the avatar, directly into projected space, via the invisible hardware interface of screen, speakers and control devices.

In avatar-based computer games, therefore, there is little room for what I have referred to in chapter 4 as *gestural* make-believe. In order to play the game competently, the player must learn to act intuitively within the space of the simulated environment, via the affordances of the avatar. This imperative implies that any movement or action that does *not* emerge from the 'electro-umbilical' symbiosis between the body and the avatar becomes irrelevant within the work-world of the game. So unless there are some kind of alternative 'channels', as it were, that would allow fictional participation outside and independently of the avatarial relation, mimetic gestures – or the lack thereof – become irrelevant. In avatar-based fiction, the avatar captures or colonises the body of the player, via the principle of the perceptual prosthesis. Independently of the avatar, there is no space for fictional participation.

This colonising of the player's body through the avatarial hookup – which in most cases implies that any movement apart from those of the hands (or merely the fingers) and eyes are left out of the perceptual loop – distinguishes fictional participation in avatar-based computer games from role-playing or dramatic performance. Because the actions of the player only become meaningful within the perceptual domain of the player-avatar umbilical relationship, the movements of the player's physical interaction with the hardware interface are in principle *arbitrary*; gestures do not in any way need to mimic or correspond to the movements and actions that are simulated through the embodiment of the avatar. The act of pressing a blue

button on the game controller has no relation to the simulated act of swinging a heavy bronze sword, but the two merge together perceptually nonetheless.

As we know, many computer games do require, or encourage, physical movements that imitate, to a greater or lesser extent, the actions that are performed in the screen-projected fictional world. To a certain extent, this gestural dimension may be integrated, and made second nature, as part of the player-avatar relationship. However, as a general rule, such integration requires gestures to be either metonymic – as ‘intrinsically coded acts’ – or, alternatively, they must be part of controlling some sort of replica machinery. A full Golf Launchpad peripheral, for example, would hardly qualify for either of those categories; when the player is playing a golf game by actually swinging a golf club (‘Use your own clubs!’), there is no need for any avatar. Metonymic gestures, on the other hand – like the ‘trigger finger’ that pulls the shoulder buttons on a console controller interface – because they relate to the avatar’s actions as a (small) part in relation to a whole⁵⁷, do not compete with or undermine the authority of the avatar. Neither do interfaces that replicate the controls of machines and vehicles, like, typically, steering wheels and pedals, or the fully encapsulating ‘cockpit’ in *Star Wars* (Atari 1983); like standard controllers, those kinds of hardware interfaces discipline the player through a small set of restricted and well-defined movements, and their role is to mediate a vicarious embodiment – some sort of vehicle – within the screen-projected simulated environment. Elaborate vehicle-based interfaces are mostly found in arcade games, but there are also similar devices available as peripherals for home consoles, like, for example, seats with wheel and pedals, for the racing connoisseur.

The instrument

On the other hand, we should note that Sudnow’s analysis above is not concerned with the avatar. Sudnow’s prosthesis is hooked up with what goes on across the surface of the screen, not with the paddle as such, seen in isolation. The ‘avatar’ in Sudnow’s analysis is the game space as a whole, and the perceptual extension to be incorporated is the game itself. In fact, Sudnow argues, *Breakout* is not really a game at all in the ordinary sense of the term; it is an *instrument*, merely disguising itself as a game⁵⁸. As other instruments, *Breakout* does not need to follow any other logic than its own – and it doesn’t. The simulation of physical properties

⁵⁷ Strictly speaking, the more correct rhetorical trope to describe this relationship would be a ‘synecdoche’ rather than ‘metonymy’, but I choose here to consider the former as a specific variant of the latter. ‘Metonymic’ also has a slightly better ring than ‘synecdochic’.

⁵⁸ Sudnow (1983:103).

is a far step from what a novice would expect; instead the behaviour of the ball and bricks follow seemingly irregular and ad-hoc patterns. Nevertheless, Sudnow discovers that the game *can* be learned; it can be incorporated into his bodily space the way an instrument can. Learning to play *Breakout*, Sudnow finds, is to integrate into one's perceptual apparatus a new and seemingly alien kind of being.

It's as if instead of truly incorporating the events on the screen within the framework of the body's natural way of moving and caring, the action on the screen must incorporate me, reducing or elevating me to some ideal plane of synaptic being through which the programmed coincidences will take place. (Sudnow 1983:138).

Sudnow's account of becoming a 'synaptic being' strikes a chord with Turkle's analysis as quoted in the previous chapter, where she describes how 'the rhythm they impose' facilitate a meeting of minds between the player and the computer. Both Sudnow's and Turkle's player-body is *being incorporated* by the game – and rather violently so – instead of incorporating it into some pre-existing habitual disposition. This way of appropriating a tangible relationship resonates with Friedman's (non-tangible) 'cyborg consciousness'. On the other hand, Sudnow's 'computer within' is not a predictable system to be 'deciphered' intellectually, but an instrument to be conquered, through persistent repetition and rehearsal. *Breakout* is an intelligent but uncooperative cybernetic jam partner, an erratic automaton that is willing to join the dance only if you invest the time (and stubborn effort) to integrate its alien logic as an eccentric perceptual habit.

The instrument does not primarily require the kind of 'syntonic' learning that Papert and Gingold emphasise. While tangible interactions combine well with syntonic processes on a general level, their appropriation as *prosthetic* relationships adds a dimension of learning that must be described as something other than syntonic. The player's appropriation of a tangible relationship becomes an end in itself; the goal is to establish a habit, to incorporate the relationship as second nature⁵⁹. The eccentric stubbornness of *Breakout*, because it does not

⁵⁹ The point is here not to argue that information-based interaction *must* operate on the level of the syntonic – but that tangible interaction, by definition, is different from syntonicity (including the 'body-syntonic') because it has the appropriation of an extended embodied self as a basic premise. Friedman's notion of the computer as an 'extension of the self' does point to a mode of competent flow in which the systemic and information-interfaced morphs into some kind of intuitive machine, which could be seen as less cognitive and more of a 'communion' than Papert's syntonic learning (although I am not convinced the distinction would hold). However, this 'cyborgian' variant of the systemic orientation, no matter how mystical in its transparent immediacy, will in any case operate on a different level of understanding than, say, getting the hang of Mario's jumps and acrobatics.

yield without a fight, serves to accentuate this distinction between syntonic learning and the incorporation of tangible relations. Papert's syntonic learning, including the variant that he labels the 'body syntonic', would be precisely what Sudnow refers to in terms of 'objects outside ourselves'; we learn about *other* bodies by putting ourselves in their place – by simulating or 'trying on', as it were, the situation as it appears from their point of view. Tangible relations may be included as a part of this learning process, but they do not in themselves carry or imply any imperative of heuristic or 'empathetic' projection. On the contrary, to the extent that they are appropriated as autotelic perceptual extensions, they do have the capacity to disturb or get in the way of syntonic learning and syntonic play.

Arcade games like *Breakout* or *Centipede* (EC Interactive 2005[1980]) appeal strongly to the prosthetic mode of competency and learning. While they simulate, in some fundamental respects, a physical space, their main appeal – and challenge – to the competent player lies elsewhere: in the hypnotic mastery of an instrument. The instrument, I will suggest, like Gingold's miniature, is a general model of computer gaming, a total metaphor, a candidate for a unifying concept that highlights what the gaming situation is all about.

It is clear that playing an instrument, like playing a game (or playing a system), is not typically a *mimetic* practice; neither instruments nor game systems are inherently models – though they can be (as would be the case with a video game guitar peripheral or a role-playing ruleset). This implies that the notion of 'fictional world' becomes, in many cases, irrelevant or misleading as a description of what is going on in the dialogue between the computer and the player. Many computer games and game modes encourage the player to 'take them on' as pure extensions, and are therefore more akin to instruments than they are to any form of mimetic practice. On today's market, the 'instrument game' is being cultivated by the rhythm-action game genre, which has re-invented and revitalised the arcade twitch-game tradition; games like *Dancing Stage MegaMix* (Konami 2003) are all about incorporating into your body – through repetition and discipline – that which is resistant and alien.

On the other hand, while all computer games obviously offers resistance of some sort – and the majority of them also demand some degree of bodily appropriation (including games that mainly emphasise menu-based interaction) – a lot of games do not encourage any rhythm-imposing or instrument-like relationship to any significant extent. At the same time, many games that primarily emphasise other modalities of interaction, notably the contemporary

action adventure genre, often also include the dynamics of Sudnow's 'microworld' to a certain extent, either as dedicated sequences or mini-games within the larger game (the so-called 'boss fights' in particular), or as a dimension of interaction that results from the generally repetitive and rhythmic patterns of the action. In the action adventure, this generalised 'rhythm-action' aspect of game play is something that may emerge from repeated (and competent) play, but which is typically undermined or at least severely weakened by the complexity and unpredictability of contemporary physics simulation and artificial intelligence routines. Traditional First Person Shooters like *Doom* or *Quake* (id Software 1996), or the *Timesplitters* series (Free Radical Design 2000) for the Playstation 2, clearly have this rhythmic and dance-like quality built into their mechanics. In *Timesplitters*, this form of play is also explicitly and officially encouraged and rewarded through speed-run game modes and score-based 'challenges'.

As noted, a microworld is a hybrid between a toy and a world. However, with respect to the dimension of tangibility, we can conclude from the above that microworlds differ; whereas some require the player to take them on as perceptual extensions, others rely entirely on symbolic interaction. System simulators, including *The Sims*, belong to the latter category. System simulators lack the perceptual extension or prosthesis that is at the heart of the avatari relationship. They do, as Friedman argues, offer an 'extension' of the player's consciousness – and in this respect the miniature can be compared to Sudnow's instrument – but this relationship is something that grows out of a sustained (and highly focussed) process of cognitive and systems-oriented learning; because the learning process is based on symbolic rather than tangible interaction, there is no way you can reach the intuitive 'symbiosis' with the computer other than via the route of intellectual and strategic analysis and planning.

Sudnow's variant of the microworld, in contrast, is all about perceptual extension. What this kind of world lacks is not tangibility but fictionality. It may utilise privileged mediators of agency (the falling block, the paddle), but these mediating loci of player action are avatars only in a weak sense; they do not have the capacity to become significant as *models*, projecting around themselves an environment to inhabit. The instrument is tangible as a whole; there is no 'avatar' against a 'world' – only the instrument, only the focussed and unified field of the electro-umbilical hookup itself.

We may also note that the notion of the avatar, unlike the instrument, implies a relative independence between embodied competence and world-competence. You can be a bad player and still be completely in tune with or re-wired by the avatariar prosthesis. When playing *GoldenEye 007* (Rare 1997), you may be in perfect intuitive command of the avatar, but still have no idea what you are doing, and be nowhere near a ‘meeting of minds’ in relation to the game as a whole. Conversely, you could have an expert understanding of the goals, resources and tactics involved, but the basic configurations of the avatariar relationship (or the basic configurations of your own body) may nevertheless be working against you.

The avatar revisited

Let me sum up, based on what I have established so far, the central characteristics that define the computer game avatar. Sudnow’s analysis throws light on how, in computer games, tangible information spaces may become appropriated by players as second nature. Avatariar embodiment depends on this process – and this struggle – of appropriation and incorporation. Through the avatariar prosthesis, the player acts into a fictional world even if the physical movements are arbitrary (or merely metonymic) considered as gestures. At the same time, the hypnotic unity of games like *Breakout* is distinct from the vicarious embodiment of avatar-based play. Admittedly, the humble paddle on the screen may also be seen as a privileged mediator in some sense (even if Sudnow does not emphasise this relationship specifically), but this ‘avatar’ has extremely limited capacities – all the player can do is adjust it left and right. More importantly: avatarhood, as a general principle of mimetic play, goes beyond the principle of the perceptual prosthesis, as I argued in chapter 4. The avatar is not a cursor or a mere instrument, but gives the player a meaningful embodied presence and agency within the screen-projected environment of the game. Because it is a model – a dynamically reflexive prop – the avatar is not just significant because of what it can do, but because of what happens to it. It is this vicarious body, this re-oriented subject-position, that establishes what we may call – following Bateson – the ‘framing’ of the fictional world for the player. Through the avatar, instrumental agency is replaced with fictional agency and fictional destiny; the player is incarnated as a fictional body-subject who belongs to and is exposed to the environment that it inhabits. The paddle in *Breakout*, or the falling block in *Tetris*, are able to perform this function only in a very weak sense; they mediate agency, but they hardly *incarnate* agency as embodied subjects that reside and act in a fictional world. They are more like buttons or tangents on an instrument than they are agents in an environment.

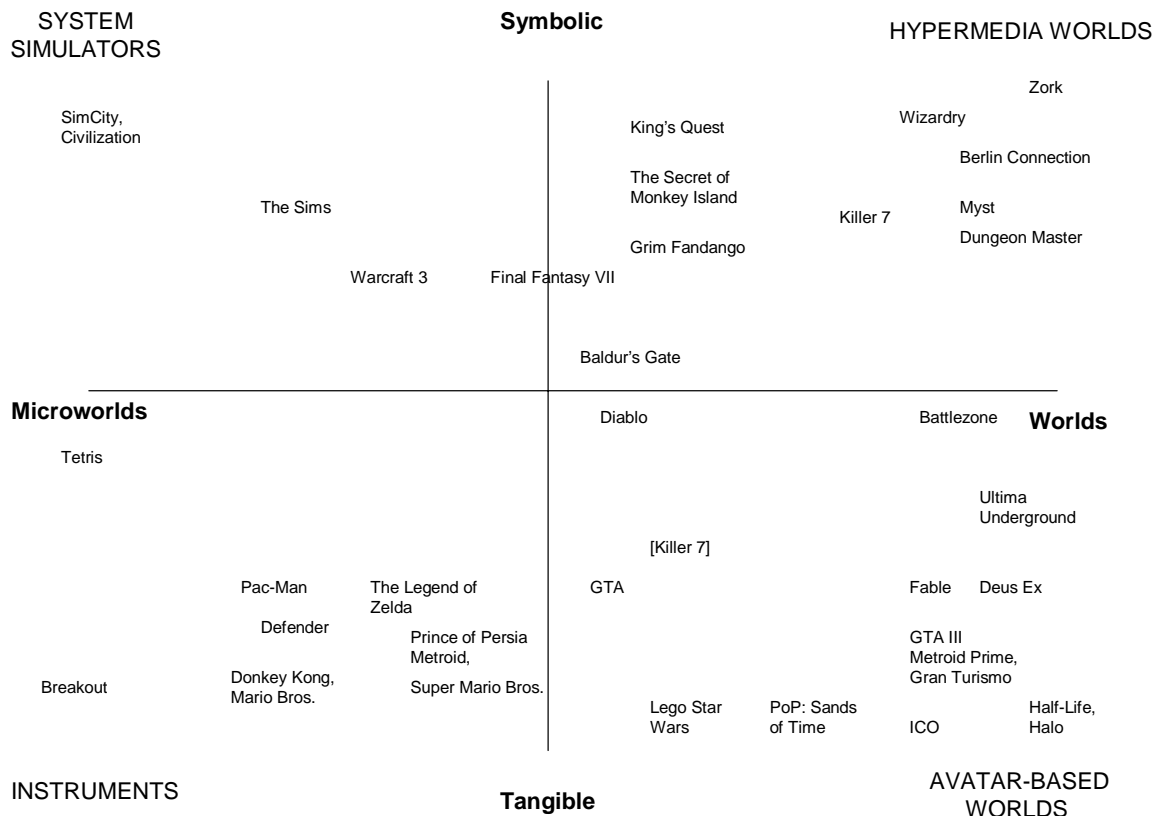
The screen-based avatar, like any avatar, is a perceptual extension, which is premised on a basic principle of tangibility. At the same time, the avatar is also a model, capable of generating fictional truths about what happens to it. The spaceships in *Spacewar!* were the world's first screen-based avatars: privileged embodiments of the player's capacity and destiny in a fictional world. Like Shigeru Miyamoto's Mario, they provided alternative embodiment within a world of images, and connected screen-projected realistic agency to a broader tradition of avatar-based play.

Breakout and *Tetris* illustrate that, even if miniature worlds do accommodate avatars, miniatureness as a principle puts strong limitations on avatars; miniatureness demands the incorporation of the game space as a whole, as a structured totality, and it encourages instrumental participation over fictional re-positioning. The system-oriented play of *SimCity* or *Civilization*, as well as the instrument-oriented play of *Breakout*, are both rooted in the principle of the miniature world or the microworld.

At the same time, whether they are tangibles or not, and whether they are miniatures or not, computer game worlds express, each in their different way, the paradoxical integration of realistic agency and rule-governed possibility spaces; they are systems that have been concretised as worlds. The avatar provides a unique entry point for fictional participation with these kinds of worlds. This entry-point is non-instrumental and non-systemic in nature; the avatar locks the player into a definite place or situation in the world of the game, incarnated in a body, and this body carries a motivation and a destiny. The ultimate significance of this vicarious body, this 'hardwired' situation, lies in fact that the avatar can die. When the avatar stops incarnating, when it ceases to exist, the world dies with it. In avatar-based games, the world revolves around the avatar, without which there would be no world.

Four genres of the singleplayer computer game

The relationship between the dimensions of tangibility and miniatureness in singleplayer computer games can be illustrated in the following model:



The horizontal axis indicates degrees of avatarhood in terms of subject-positioning; from the instrumental agency of microworlds to the fictional agency of inhabitable worlds. The vertical axis indicates degrees of avatarhood in terms of embodied interaction; from the indirect interaction of symbolic interfaces to the direct interaction of tangible interfaces.

The four corners of the model emerge as ideal types in relation to which specific gameworlds can be positioned. These ideal types would correspond to what Tzvetan Todorov calls ‘theoretical genres’ – generic categories that are deducted or ‘calculated’ from the assumption that miniatureness and tangibility are central aspects that structure our participation with simulated worlds. As Todorov states: “There are a certain number of genres not because more have not been observed, but because the principle of the system imposes that number” (Todorov 1975:14).

Super Mario Bros., as noted above, illustrates that the difference between a world and a microworld is not a sharp one, but must instead be seen as a continuum between two poles. In

the next chapter, I will discuss in more detail the mechanisms of perceptual positioning that distinguish between *Donkey Kong*, *Super Mario Bros.* and *Tomb Raider*. The main point here is that stronger avatarial relationships move games further to the right on the horizontal axis; Pac-Man is stronger than the falling block in *Tetris*, but weaker than Mario in *Super Mario Bros.*

The fourth ideal type, the hypermedia world, which I have not discussed so far, relies entirely on symbolic interaction, but is not a microworld. The player navigates a world of texts and depictions, which is often constructed through the combination of several different media forms (text, images, video, sound, music, animation). These hypermedia worlds are sometimes referred to as ‘multimedia’, ‘interactive multimedia’, ‘interactive fiction’ and so on. In the context of the model, the ‘hyper-’ of hypermedia refers to any navigable database of interlinked pieces of information, even of the simplest kind. Text-adventures like *Zork* (Infocom 2005[1981]) would be the ‘purest’ example of hypermedia worlds; worlds that are presented exclusively through verbal presentation, unlike worlds constructed through images and sounds, are by definition non-tangible. The hypermedia category would also include, however, although in slightly more ambiguous ways, graphics-based role-playing games and adventure games that rely primarily on symbolic interaction while giving the player a strong subjective point of view within the world of the game. This combination can be found in traditional first-person role-playing games like *Wizardry* (Sir-tech Software 1981), *The Bard’s Tale* (Interplay Productions 1987), or *Dungeon Master* (FTL Games 1989[1987]), and in first-person interactive slide show puzzles like *Myst* (Cyan Worlds 1993) or *Berlin Connection* (Eku interactive 1999).

Fictional participation with hypermedia-based computer game world, even if entirely symbolically mediated, is still not ‘reading’ as one would read a novel, but a simulation, which is premised on the principle of the model. Moreover, hypermedia-based games may also give fictional agency through a controllable character, who mediates for the player a situated and restricted relationship to a larger world that is to be traversed and explored. Traditional adventure- and role-playing games fall into this category, even if they do not present their worlds from a first-person perspective; this includes the classic text- or point-and-click adventures from Sierra and LucasArts – like *King’s Quest* (Sierra On-Line 1984) and *The Secret of Monkey Island* (Lucasfilm Games 1990) – a tradition that still provides a general formula for many adventure-based games.

Fictional agency in hypermedia environments, even if premised on a minimum of model-based simulation and realistic agency, lack tangibility. In point-and-click interaction, only the relationship to the mouse and the cursor must be learned in a perceptual sense, not the relationship to the playable character. The mouse-based interface itself performs the function of a perceptual prosthesis, enabling intuitive and efficient symbolic interaction (pointing, selecting, designating).

As a commercial genre, first-person role playing games like *Dungeon Master*, or first-person slideshows like *Myst*, have been marginalised by the 3D capabilities of increasingly faster computers, just like the text adventure was marginalised by the introduction of graphics-based simulated environments. This means that the top-right corner of the model is considerably less populated today than it used to be. Non-tangible player-character relationships are hard to find in combination with a strong perceptual re-location of the player. Also, we could argue that *The Bard's Tale* and *Dungeon Master* were in one sense heading towards avatarial tangibility all along – that is, towards games like *Ultima Underworld* (Origin 1992) or *The Elder Scrolls III: Morrowind* (Bethesda Softworks 2002) – but were limited by the lack of computer power at the time. This is also why I have placed them below *Zork* in the model; there are elements that point beyond the hypertextual world of words and images, approaching instead a navigable point of view that is fluent and tangible. The pure text adventure, therefore, ends up in a relatively unique position; it is purely symbolic and maximally re-centred.

In other words, there is a certain kind of co-dependence between the two axes that the model hides: in graphics-based environments, if there is a strong re-positioning through a subjective point of view, there is also a certain gravity of tangibility and embodiment that kicks in, which works against the distinctive worldness of a hypermedia landscape. This is not an unavoidable law or regularity, but a dominant cultural and technological convention. On the other hand, as I will be discussing in chapters 7 and 8, this convention does have some support in phenomenological habit, in so far as a situated point of view addresses our sense of embodied agency more directly than a detached point of view.

As the model illustrates, tangibility is a matter of degree; the puzzle-based adventure *Grim Fandango* (LucasArts 1998) is placed below *The Secret of Monkey Island*, because there is a prosthetic extension set up through the real-time control of the playable character Manny

Calavera. At the same time, this avatarial relationship is less significant than it is in the action adventure *The Legend of Zelda* (Nintendo 2004[1986]), where the avatar is more responsive and flexible, is routinely under direct threat by enemies, and must engage in battle with them. This does not mean, however, that the player's relationship to the *character* (and the story) in *Grim Fandango* is necessarily 'weaker' or less central to the experience; on the contrary, one could argue that partly because of the weaker avatarial relation, there is room for a stronger player-character connection on a different level.

In point-and-click interaction, the distinction between designating and directly controlling the movements of the playable character is not clear-cut, and the former is not necessarily less demanding on eye-hand coordination and motoric skills than the latter. In principle, however, we can distinguish real-time *control* – which simulates a physically tangible relationship – from merely real-time *interaction*, which refers to actions that the player must perform in real time, in order to control the unfolding actions of the avatar. A clear example of real-time interaction that is not real-time control would be the elaborate button-pressing sequences that are implemented in *Resident Evil 4* (Capcom 2005b) and *Fahrenheit* (Quantic Dream 2005). These sequences are performed in real-time, are heavily action-oriented and demand fast eye-hand coordination, but are still disconnected from any 'umbilical hookup' to the playable character.

Another type of avatarial 'bypass' is found in the mouse-based and action-oriented role-playing game *Diablo* (Blizzard 1996), which requires fast – and tactically chosen – clicking to defeat enemies. However, as compared to *Resident Evil 4*'s button-pushing sequences, action-roleplaying interaction is more ambiguous in its relation to the principle of the avatarial prosthesis. Although the player uses the mouse cursor to literally select and *designate* where the playable character moves and where and how it attacks (and in this sense, relying on symbolical interaction), the speed of the real-time interaction, at least for reasonably competent players, still gives a feel that approaches a tangible relationship. This ambiguity is strengthened by the fact that the player can actually use the mouse to pull the playable character along in a fluent motion (by keeping the mouse button pressed down) rather than directing the character to locations by clicking on them. Moreover, this slightly 'improvised' avatarial prosthesis is also strengthened along the horizontal dimension of the model above, through a navigable isometric frame of view that also approaches a tangible relationship.

Still, the semi point-and-click interaction of *Diablo* – along with its particular appeal – seems to become a thing of the past among singleplayer adventure and role-playing games; the next game in the *Diablo* series will in all likelihood go ‘full avatarial’ by adopting a standard real-time controlled character-and-3D-camera configuration. This type of avatar will be discussed in the next chapter.

Certain types of non-avatar-based singleplayer games do not plot into the two-dimensional continuum. While the avatar (weak or strong) is the primary model for interacting with screen-projected tangible worlds, there are other alternatives, which abandon the notion of the avatar altogether, and therefore do not relate to the category of avatar-based play along the two dimensions of tangibility and miniatureness. In the Orisinal game *Milk the Cow* (Ferry Halim 2000) and similar kinds of browser-based games, the cursor itself is the prosthesis through which the player can poke and prod at tangible objects that appear on-screen. In a similar fashion, touch-screen technology allows the player to bypass the avatar entirely by touching the screen, either directly or via a simple extension (a stylus), to simulate tangibility with the environment.

Finally, Virtual Reality installations can also be seen as an alternative to the avatarial approach; their aim is to escape the screen altogether and to push beyond avatarhood. Still, Mario demonstrates the advantages of vicarious embodiment over cursor-poking, touch-screen or VR interfaces: there is hardly any limit to what your body can be and what it can do (and how it can grow), or to the number of ways in which your body can be threatened, rejected and destroyed. It is this kind of malleable embodiment that avatar-based computer game fiction is all about.

The gameworld and the contest

In the final part of this chapter, I will draw attention to the ludic dimension of the body of the avatar, and attempt to give some more context to the relationship between the avatar and the systemic nature of games. As explained in the previous chapter, computer game environments integrate the explicit rules of a game system, through the principle of concretisation. This means that the structuring imperatives of the game system become translated or ‘absorbed’, as it were, into a world of playthings. It is this playable or ludic world that the avatar ‘projects around itself’. Different kinds of bodies constitute different kinds of bodily spaces, and the body of the computer game avatar constitutes, by definition, a *gameworld*.

A gameworld is what Chaim Gingold (2003) calls a ‘possibility space’: the sum or the ‘space’ of the possible states of the world as a system. The possible variations in game state define for the player a space of possible actions and outcomes. Gingold distinguishes between three main dimensions of a possibility space: size (how many things the player can do), domain (what types of things the player can do), and, finally, *density* – how many states of the system that are interesting (2003:69). Gingold is primarily concerned with how to design possibility spaces for game making and story making authoring tools or ‘magic crayons’, but the concept of density may also be applied to avatar-based fictional worlds: a gameworld is more than merely a simulated environment and a fictional world; it is also made intelligible to the player as a possibility space, via the vicarious body of the avatar. A gameworld is, in Gingold’s terms, “dense with interesting results” (2003:70). The avatar embodies this possibility space, giving the player a point of entry for fictional participation that is situated and non-systemic.

Brenda Laurel’s concept of *dramatic* human-computer interaction (Laurel 1993) provides a conceptual parallel to the notion of the gameworld. Dramatic interaction between humans and computers, Laurel says, hides the formal structures that define and uphold it. Like in the theatre, when dramatic action unfolds, the stage is all there is (1993:17). And like staged performances, human-computer interaction needs to have a dramatic plot; it must be carefully orchestrated and engineered according to the laws of drama, so that it can be experienced as a satisfying whole, with a beginning, a middle and an end. Dramatic action has a certain shape (a satisfying dramatic curve), and an internal structure of dramatic relationships and events. The theatre stage, according to Laurel, is the ultimate paradigm for interaction design.

The individual incidents that make up *Hamlet*—Hamlet fights with Laertes, for instance—are only meaningful insofar as they are woven into the action of the mimetic whole. The form of a play is manifest in the pattern created by the arrangement of incidents within the whole action (Laurel 1993:63).

As a principle for structuring make-believe, and as a metaphor for defining worldness, Laurel’s ‘whole action’ reflects the Shakespearian model: all the world is a stage. A concrete realisation of Laurel’s theatrical metaphor is the interactive one-act domestic drama *Façade* (Procedural Arts 2005). The simulation of *Façade* is primarily governed by the rules of a dramatic plot; it is a ‘dramatic machine’, which simulates a participatory dramatic process, and a landscape of developing relationships. Nevertheless, it is typically categorised as game

(although a very different kind of game), by its ‘players’ as well as by the media. This makes a lot of sense; gameworlds are also governed by a formal structure that gives dramatic significance to the player’s actions, only this structure is based on the model of the *contest*, not the theatrical stage. From the point of view of the avatar, all the world is a contest.

Laurel’s notion of a ‘mimetic whole’ resonates with Salen and Zimmerman’s definition of *meaningful play*:

...[Meaningful play] requires that the relationship between action and outcome is integrated into the larger context of the game. This means that an action a player takes not only has immediate significance in the game, but also affects the play experience at a later point in the game. Chess is a deep and meaningful game because the delicate opening moves directly result in the complex trajectories of the middle game—and the middle game grows into the spare and powerful encounters of the end game. Any action taken at one moment will affect possible actions at later moments. (Salen and Zimmerman 2004:35).

A gameworld is structured as a ‘whole action’ according to the principle of meaningful play, and, we could add, some gameworlds are more ‘meaningful’ in this respect than others. Salen and Zimmerman’s description illustrates that meaningful play also implies a dramatic unfolding of events, a dramatic contest, which emerges from the objective conflict that is defined by the properties of the game system.

In the article “From Game-Story to Cyberdrama” (Murray 2004), Janet Murray argues that the contest and the puzzle represent a structural similarity between storytelling, drama and games.

Furthermore, games and stories have in common two important structures, and so resemble one another whenever they emphasise these structures. The first structure is the contest, the meeting of opponents in pursuit of mutually exclusive aims. This is a structure of human experience, of course, from parenting to courtship to war, and as a cognitive structure it may have evolved as a survival mechanism in the original struggle of predator and prey in the primeval world. Games take this form, enacting this core experience; stories dramatize and narrate this experience. (...) The second structure is the puzzle, which can also be seen as a contest between the reader/player and the author/game-designer”. (Murray 2004:2).

This broad notion of the contest highlights the similarity and the overlap between the systems-oriented concept ‘meaningful play’ and the narrower Aristotelian model of dramatic action and dramatic plot that governs interaction in *Façade*. In the example of Chess above, a

conflict-drama unfolds between the players, but this contest is not, we must assume, projected into the simulated world of kings and pawns to any significant extent. In singleplayer games, this dramatic contest is set up between the player and the game system itself; this means that there is also, as Murray says, a contest between the player and the designer⁶⁰.

However, the principle of the avatar changes, on the level of perception and embodiment, what Bateson would call the ‘framing’ of this contest. The avatar re-frames and re-centres the dramatic contest, taking the ‘spare and powerful encounters’ into a vicarious world. Salen and Zimmerman’s ‘meaningful play’ is thereby transformed into an ontological principle, which penetrates and gives sense to the world that the avatar projects around itself. As players, then, we become contestants both actually and vicariously; through the embodied incarnation of the avatar, these two dimensions blend and mix. In other words, the ‘recentering’ or re-framing of the player’s subject-position is a *performed* recentering. In avatar-based play, the ‘ontological fusion’ between the actual and the fictional is a fusion of contests, a dramatic fusion⁶¹.

This also means that Murray’s trope of the *puzzle* becomes less central to avatar-based play than the broader concept of the contest – the “meeting of opponents in pursuit of mutually exclusive aims”. It is the contest that grounds the world of the avatar, not the puzzle. Consequently, avatar-based puzzle-solving needs to be embedded within a larger contest in order to have significance within a gameworld; if there is no larger contest, it makes little sense to approach the puzzle through vicarious embodiment, as an avatar.

The game-based notion of the dramatic contest is a parallel to, and therefore also competes with, the Aristotelian model of dramatic interaction and dramatic plot; the dramatic contest and the dramatic plot are, from the point of view of the avatar, different ontological principles that seek to define what the world is about, and what ultimately motivates action. In this respect, the two are not compatible, although they may be combined and balanced in relation to each other in various ways. Typically, singleplayer action adventure games furnish their gameworlds with local sequences of scripted dramatic interaction, which are subordinated to

⁶⁰ It may be added here that there is also a contest between single players, either in immediately social contexts, or in a more generalised form, in the sense that players always, directly (in terms of scores, numbers and statistics) or indirectly, compete against other players who are playing the same game.

⁶¹ The concept of ‘ontological fusion’ between the fictional and the actual refers here to Tomas Pavel’s *Fictional Worlds* (1986), which is a central influence behind Marie-Laure Ryan’s theory of ‘re-centering’. My use of the concept here takes a cue from Jill Walker’s “Performing Fictions: Interaction and depiction” (Walker 2003), which I discussed briefly in chapter 3.

and do not compete with the contest on a larger level⁶². On a larger level, the gameworld does not need to simulate a ‘world’ that responds and develops according to the laws of a dramatic plot. Gameworlds are in one sense ‘drama simulators’ like *Façade*, but they are committed to a different kind of drama, with a different kind of rules. In *Metroid Prime* (Retro Studios 2003), for example, no interpersonal relationships are addressed and developed, and the only conflict (and love affair) that is being played out is the relationship between the avatar and the environment. This journey of conquest and exploration, in all its complexity and detail, needs no dramatic plot.

If we link the concept of the gameworld to the broader notions of play and fiction that I addressed in chapter 2, the gameworld unifies *agon* and *mimesis* in a way that has similarities with the ancient religious ceremonies and rituals that Huizinga talks about in *Homo Ludens* (1955[1950]). The dramatic contest is, if we follow Roger Caillois, a highly un-modern and highly uncivilised form of play. Caillois’ perspective also finds some support in the sociological study of sport. In *From Ritual to Record. The Nature of Modern Sports* (1978), Allen Guttman discusses how the contests of archaic and ancient cultures, which were an integrated part of religious rites and ritualistic practices, have been replaced by the secularised and rationalised phenomenon of modern sport. As the title says, Guttman draws particular attention to the aspect of quantification; a defining characteristic of modern sport, he argues, is the quest for, and the obsession with, records. In a similar vein, Norbert Elias and Eric Dunning, in *Quest for Excitement. Sport and Leisure in the Civilising Process* (Elias and Dunning 1986), also emphasise the way in which the process of modernisation has civilised and formalised the contest. In this perspective, avatar-based computer game worlds can be seen as offering a space for dramatic yet serious contest that has been closed down or marginalised by modern games and competitions.

Avatarial learning and role playing

The different ways in which the fictional and the actual contest is being merged or fused through avatar-based play is a topic that requires more detailed study. What I want to point out here is that the fusion or re-framing of the avatar implies that the process of learning and

⁶² The principles and mechanisms of dramatic scripting in the action adventure genre is a topic that would need a separate study, which goes beyond the scope of the present work. *Half-Life 2* is a good example of a game that infuses the gameworld with strong elements of ‘stage-based’ dramatic interaction – especially in the opening and ending sequences. These elements of ‘interactive drama’ are mostly crafted into dedicated sections that intersperse the contest at regular intervals throughout the game.

the performance of skills are being re-framed or re-centred. In a gameworld, the player's actions are motivated in the situation of the avatar, and the player's actual skills are expressed and measured in terms of the skills of the avatar. Through the structuring of the avatarial prosthesis, this fusion typically follows a rule of radical transformation and amplification. Relatively unimpressive actual skills may translate into the most spectacular manoeuvres in the fictional world; for example, knowing how to synchronise a few button presses with a simple movement of the analogue stick means knowing how to defeat multiple enemies in an acrobatic and gracious way.

At the same time, the actual learning process of the player maps onto the learning process of the avatar as this develops in relation to the challenges that the avatar needs to overcome. The avatar embodies, therefore, what we could call a 'progressive mapping' between an actual learning process and a fictional learning process. When the player has learned to time the jumps correctly, the avatar has learned to traverse the dangerous pits. When the player fails to perform, the avatar fails to perform; when the player improves, the avatar improves. The avatar embodies a motivation and a learning experience that pulls together the actual and the fictional.

Avatarial fusion between actual and fictional skills, and between actual and fictional learning, distinguishes avatar-based interaction from role playing. Role playing, both considered as a genre (RPG) and as an element that can be added to avatar-based games more generally, is characterised by the way in which the character's 'skills' as well as the character's 'learning' is separated from rather than fused with actual skills and actual learning. Upgrading your 'skill' in a role playing game like *Planescape Torment*, or in an avatar-based game that includes some role playing element – which most games do in some form of another – does not have anything to do with your actual skills as a player; it is the playable *character* that typically 'learns' or 'improves' a skill. This de-coupling of the fictional and the actual, which distinguishes role playing from avatar-based play, may create ambiguities or even conflicts when the two combine. In the FPS role playing hybrid *Deus Ex* (Ion Storm 2000), if the shooting skills of JC Denton are not developed, the player cannot be sure to actually hit what the crosshair is aiming at, even at point-blank range. When the two collide, role playing skill triumphs the skills of the avatar.

Equally, in role playing, the concept of ‘learning’ is linked to the character, not the avatar. In terms of the player-avatar relationship, the significance of character learning does not lie in character development itself, but in how this character development might also re-configure the actual properties and potential capabilities of the avatar – which it usually does, although typically in incremental steps. In most avatar-based games, even if not a defining feature of the form, the avatar is continually expandable with new capabilities as the player progresses, and the player is given some choice in how to prioritise between different types of capabilities⁶³. Such dynamic configurations and amplifications, whether they are role-played as a character’s ‘learning’ or not, like any property of the avatar, are not learned in the avatarial sense until they are actually learned and incorporated by the player, via the prosthetic extension. In terms of vicarious embodiment, therefore, the ‘learning’ of a new skill is not in principle any different from picking up a new gun – except, in most cases, a skill-capability will be more permanent and less flexible than a gun-capability.

Role playing emphasises character and narrative, and does not need any avatar. Nor does avatar-based play need role-playing. Avatars may be configurable and expandable throughout the game, but this dynamic aspect is often flexible as well as externalised in relation to character and narrative; weapons, items and equipment can be utilised and managed freely as they are collected through the course of the game, and they do not integrate with character development. In action-RPG hybrids, especially in games that do not rely on point and click interaction, like *Fable* (Lionhead Studios 2004) or *Deus Ex*, role playing and avatar-based play combine in elaborate ways. In other games, like *The Legend of Zelda* series, *Jet Force Gemini* (Rare 1999) or *Beyond Good & Evil* (Ubisoft Montpellier Studios 2003), role playing elements are more modestly implemented but still contribute significantly to the dynamics of avatar development. When combined with avatar-based play, role playing accentuates and elaborates the dynamic and configurable capabilities of the avatar, and integrates this aspect with character and narrative in more detailed and complex ways than what would otherwise be the case. Seen in isolation, however, as noted in chapter 5, role playing is a form of play – and form of fiction – that is independent from realistic agency; it is essentially concerned with character as expressed through numbers and statistics, as a configurable and playable *system*, not as a reified body that can be incorporated as second nature.

⁶³ ICO is an interesting example in this respect. The avatar in ICO is given virtually no expanded capabilities during the game, and there are no role playing elements that allow the player to configure and prioritise between different types of capabilities.

The role playing aspect is not reflected in the model above, which only deals with miniatureness and tangibility. If implemented in the model, we could imagine role playing as a third dimension, which reflects a concern with character and narrative independently of the principle of realistic agency that underpins the other two dimensions. As the placement of *Fable* in the model illustrates, character-based play does not exclude avatar-based play along the dimensions of tangibility and miniatureness. However it does add a new dimension and a different focus, which is concerned with exploring the possibility space of the game system more directly, freed from the implications of vicarious embodiment.

Chapter 7: 2D/3D

In the previous chapter I have discussed the basic characteristics of avatariar embodiment, and how avatar-based games are different from instruments, system simulators, hypermedia and role playing games. Avatariar embodiment is premised on a combination of prosthetic tangibility and fictional re-positioning, and it turns the game space into a gameworld.

In this chapter I will look at how avatar-based 3D differs from avatar-based 2D, and what this means for the notion of miniatureness. The emphasis will not be on the characteristics of three-dimensional graphics as such, but on the particular type of re-positioning that is made possible by the navigable point of view. This includes considering the major types of avatariar configurations that we find in 3D computer games, as well as the role and status of different kinds of hardware interfaces. My aim is not to debate if three-dimensional game spaces are better or richer than two-dimensional game spaces, but to point out some of the central differences in how they structure fictional participation. With the introduction of the 3D avatar, new kinds of spaces and experiences are opened up, while others are closed down or marginalised.

The extended avatar

Mario's world in *Donkey Kong* is a two-dimensional world, and a boxed-in world; what goes on in the world is what goes on within the frame of the screen. As an avatar, Mario extends our reach into, and inhabits, a flat world. If we say that this world is not really flat – just like the world of classical Disney films is not literally meant to be flat – this would be correct only in a metaphorical sense; as soon as we start doing something, through Mario, the metaphor breaks down, and we discover that the actual fictional world *is* flat. Part of the attraction of Mario's world, which we get to embody through the avatariar relation, is precisely its lack of the third dimension, its playable flatness.

The flat world of *Donkey Kong* is not a universe into which we are invited to project ourselves or jump into. On the contrary, the world is a framed surface, and this surface belongs squarely to the here-and-now of the actual playing space. 2D game fictions do not alter the spatial relationship between me as a player and my environments any more than a Monopoly board or a pinball machine does. There is a fictional world, but this world is constituted by my relation to a flat surface in front of me, and contained within my actual

space, as any other delimited sub-space would be (a desk, a whiteboard). Within my actual playing space, the boxed-in world of *Donkey Kong* relates to my body as a playable object. The cybernetic feedback loop between me and this framed sub-space demands my total attention and maximum effort, and is therefore potentially captivating. To the extent that I manage to conquer the machine, and allows the machine to conquer me, so that we together get into a seamless flow of focussed interaction, the relationship could best be described as some sort of trance, as hypnosis.

The world of the 2D avatar, therefore, is comparable to the ‘world’ of the instrument, as described by David Sudnow in *Pilgrim of the Microworld*. The instrument, considered as an ideal type of play, has no avatar, no entry point for fictional participation. In *Breakout* as well as in *Pac-Man*, because of their relatively weak avatarial extensions (the latter admittedly stronger than the former), the player is playing *with* rather than within the microworld of the game. Playing with (and against) the cybernetic instrument is in a certain sense a system-oriented activity, only it is not system-oriented in the same way that you would play *SimCity*. When challenging the instrument, your primary aim as a player is to incorporate and embody a pattern, or a dance, if you will. This process of appropriation, whether in old-school twitch games or in contemporary rhythm-action games, is focussed around your *own* body rather than a vicarious one.

While the avatar in *Donkey Kong*, like any avatar, does offer you a vicarious body through which your perception is altered or re-wired, the avatar itself does not incarnate a perceiving body-subject. As a perceptual prosthesis, it re-orientates, but never re-positions the body-subject of the player. Through the mediation of Mario we are to a certain extent encouraged to re-centre, to imagine ourselves as a subject within the world of the game, but this imagining is based on the mere extension and displacement of our locus of agency, via a puppet, to which any fictional subjectivity must be ascribed through mental simulation. In a phenomenological sense, the meaningful actions that we perform when playing with (or through) Mario are performed from outside the space that Mario inhabits; it is from this outside position – looking onto the magic surface in front of us – that we are able to see and hear what we are doing. Consequently, we cannot act *as* Mario other than through our imaginative re-positioning, through which it is possible for us to pretend that the ‘I’ that acts is a different one from the ‘I’ that perceives. Through mental simulation, we can disregard our own perceptual subject-position, and pretend that the miniature is not a miniature. This suspension

of disbelief is produced through imaginative *projection*, riding on the back of the prosthetic agency that the avatarial puppet affords.

However, as we know, because computer games absorb us in a flow of meaningful action, there will usually not be much (or any) room for this kind of make-believe. Under normal circumstances, the game space will demand that we relate to it as a miniature; we will not be inclined, for example, to explain our failure to jump a barrel by referring to the fact that Mario was turned the other way and could not see it coming; this response is of course possible, but it is not the kind of fictional participation that 2D avatars encourage. Mario is our proxy, our privileged plaything and extender of agency into a miniature world, and it is this remote relationship that grounds our participation with a fictional world. I will suggest that Mario is an objective or *extended* avatar – an avatar that we relate to, in a phenomenological sense, as an object among other objects.

The subjective avatar

In contrast, the 3D avatar, I want to suggest, is also a *subjective* avatar. The subjective avatar appropriates a navigable point of view as an apparatus of prosthetic perception, giving the player not just an extended fictional body, but also a re-centred perceptual subject-position.

The introduction of three-dimensional spaces in computer games during the early- and mid-nineties, and the significance of the navigable point of view, has so far not been much analysed in the field of computer game studies. One notable exception is Martti Lahti's article *As We Become Machines: Corporealized Pleasures in Video Games* (2003), which emphasises how the 'prosthetic vision' of 3D computer games has changed how players relate to computer game worlds. Lahti's conceptualisation of the player-avatar relationship is very different from the approach of Juul, Newman or Salen & Zimmerman; his concern is with the *corporeality* of player participation rather than with the functional or narrative significance (or lack of significance) of the avatar within the game structure. "Much of the development of video games", he argues, "has been driven by a desire for a corporeal immersion with technology, a will to envelop the player in technology and the environment of the game space" (Lahti 2003:159). Drawing on Erkki Huhtamo's analysis of the motion simulator capsule, which I will return to in chapter 8, Lahti observes how the screen itself has come to take the role as a prosthetic extension of the capacities of our body:

Thus, video game history is characterized by a significant shift in perspective relations between the player and the field of play, from the vertical omniscience of the God's-eye-view, through a ground-level, third-person perspective along the horizontal axis, to a fully subjective perspective where character and player are unified into a first-person movement through the virtual space. One effect of this unification is the creation of a stronger experiential homology between the fictional world of the game and the real world, where virtual space begins to seem continuous with the player's space rather than sharply delimited by the frame of the monitor as I have been arguing. Our sense of movement and relation to the screen has thus similarly changed. 3-D games (for example *Doom* or *Quake*) brought with them a sense of limitless space opening behind the screen. (Lahti 2003:161).

I will follow up Lahti's perspective, although with a shift of emphasis from corporeality to avatarhood, drawing on the notion of avatarial embodiment that I have outlined in the previous chapters. The navigable point of view establishes a perceptual simulation of continuous space; it makes us believe that we act through or into the screen, and that our own body moves within the simulated environment. This sense of continuity and self-movement is the central difference between the 2D and 3D avatar.

In phenomenological terms, whereas any perceptual extension does reorganise or 'rewire' our bodily space so that we start perceiving our environment differently, the 3D avatarial prosthesis also 'superimposes' a vicarious body onto the body-subject itself, setting up not just a different, but an *alternate* bodily space. This new primary space, as Lahti observes, is premised on an 'experiential homology' – a continuity between the space of the actual body-subject and the screen-projected space of the simulated body-subject. As in photography, cinema and perspectival painting, the frame of the screen can be perceptually related to as a transparent window rather than as the framed surface of a moving image. In the next chapter, I will return to the question of how the game-based and avatar-based variant of this particular visual regime compares to perspectival images in other media. What I want to address here is what this transparency means to the computer game avatar, and the various ways in which the relationship between transparent subjectivity and objective embodiment can be configured.

The primary aim of the subjective avatar is not, as Lahti seems to suggest, to unify player and character – which would be specific to the first-person perspective – but more generally to unify perception and action. The prosthetic point of view gives the player a simulated body-subject rather than an extended proxy or magic hand; it simulates (some important aspect of) the player's own natural perception. In a phenomenological sense, unlike Mario in *Donkey*

Kong (or the paddle in *Breakout*), the navigable point of view is not merely an object among other objects. In his analysis of natural perception, Merleau-Ponty's emphasises the non-objective (or transcendental) status of the moving body-subject:

I observe external objects with my body, I handle them, examine them, walk round them, but my body itself is a thing which I do not observe: in order to be able to do so, I should need the use of a second body which itself would be unobservable (Merleau-Ponty 2002[1962]:104).

The prosthetic point of view simulates this moving body-subject, and it forces us to perceive and act from a vicarious point of view. At the same time, for this prosthesis to become a vicarious *body*, it also needs to present itself extensionally, as that which we can relate to as an object among other objects in the fictional world (as when, in natural perception, we are studying our own hand, for example). An *avatarial* point of view, in other words, is more than merely a navigable or a prosthetic point of view; it implies some kind of objective presence in the simulated environment. Any subjective avatar includes, in one way or another, an objective presence, an extended avatar.

The subjective avatar of computer games simulates self-motion⁶⁴, and it simulates our body's dual nature as both body-subject and objective body. Unlike a purely objective avatar, the subjective avatar can never be, in Merleau-Ponty's words, 'completely constituted' as an object, in so far that it is "that by which there are objects" (Merleau-Ponty 2002[1962]:105). Subjective avatars simulate natural embodiment in the sense that they unify perception and action. When the player appropriates the prosthetic point of view, moving and perceiving come together in one vicarious body. The avatarial point of view navigates the world, looking (and listening) for opportunities and dangers, investigating objects, peeking around corners, scanning the horizon. Vicarious action follows from vicarious perception, and vice versa; the 'I' that acts is the 'I' that perceives. In contrast, while the extended avatar in *Donkey Kong* does offer the player a vicarious subject-position, it does not enable the player to perceptually inhabit a screen-mediated synthetic world.

⁶⁴ This aspect of visual simulation is referred to, in more technical terms, as *vection*. See Chapter 8 for more on this concept. For an explanation of the concept of vection, see Prothero (1998). Prothero's study is mainly concerned with the relationship between vection and motion sickness or 'simulator sickness' in simulated 3D environments.

It must be emphasised that the avatarial point of view is not dependent on a first-person perspective. In computer games, the relationship between prosthetic perception and the extended avatar may be articulated or configured in a number of ways. In most cases, the point is not to simulate the ‘configuration’ of our real bodies, but to simulate the configuration of *some kind of body* – some kind of vicarious embodiment that resonates with the dual nature of our natural body in a fairly stable and predictable (and hence playable) fashion. In *Super Mario 64* (Nintendo 1996) and *Tomb Raider* (Core Design 1996), which are early and genre-defining games of the 3D action adventure, the navigable point of view works most of the time as a computer-controlled ‘follow-cam’ that keeps the extended avatar in view. It is as if the camera and the extended avatar are hooked up to each other with an invisible string, and the player is pulling the camera along via the extended avatar. At the same time, the player also has the opportunity to control the point of view directly in an alternate ‘look around’ mode. In neither case can the camera be detached from its umbilical connection to the extended avatar. We may call this a *dual-locus* configuration – or ‘nunchako’ configuration – of the avatar. The dual-locus avatar allows the prosthetic point of view to be controlled either directly or indirectly, via the extended avatar. Following Merleau-Ponty, we could say that the camera takes the role of the ‘second body which would itself be unobservable’. This body receives its objective presence mainly from the extended avatar, who carries most of the burden, as it were, of objective embodiment. The competent player pulls (or pushes) the tangible ‘second body’ along, via the direct control of Mario, who is, in a sense, wearing his eyes on a string.

Acknowledging the role of the avatarial camera in computer games implies that the fictional status of screen overlays – menu interfaces, health bars, weapons and inventory information, mission indicators, maps, and so on – does not need to be seen as a potential limitation or a challenge to fictional participation and subjective re-centring. An avatarial point of view will always have a minimal objective extension or presence within the world that it mediates – even when it is not integrated or ‘corporealized’ as a first-person perspective, and even if we consider it independently of its ‘hookup’ to an extended avatar like Mario or Lara Croft; it moves in space the way objects do (it does not cut through time and space like a film camera), and it has a minimum of solidity (it cannot move through windows, for example). Information and interface overlays or ‘HUDs’ (Heads Up Display), or any other signs (blood spills, raindrops) that draw attention to the screen itself as surface and action-space rather than as

merely a transparent view, serve to confirm and articulate the objective presence of the avatarial point of view.

In light of Walton's theory of fictional participation, *any* 3D navigable point of view would have the potential to realise this objective status, because any fictionally transparent 'window' is always going to have – as a matter of fictional truth – a reverse side, as it were, a *fictional screen* that faces towards fictional space just like the actual screen faces towards actual space. In computer games, unlike in conventional narrative cinema, this fictional screen is indirectly recognised through the objective status of the avatarial point of view. When, for example, in the third-person adventure *Kameo: Elements of Power* (Rare 2005), the screen gets visibly splattered with green troll blood, this does not challenge any fourth wall or 'transgress' any boundaries of fictional space, because the avatarial point of view was never banned from the fictional world in the first place. Similarly, drawing attention to the surface of the screen through information overlays does not in itself challenge or undermine the constitution of the 3D avatar and the avatar's gameworld.

The notion of the subjective avatar is to a certain extent a matter of degree, and is not exclusive to three-dimensional spaces. Two-dimensional environments may also provide a travelling, fluent and indirectly controllable frame of view, even if the angle of perspective is fixed. This does provide a minimum sense of subjective positioning and subjective self-motion in relation to a simulated environment. The earliest variant is the side-scrolling space shooter, pioneered by the arcade classic *Defender* (Williams 1980), although the simplicity and relative emptiness of the environment (as well as the suspended weightlessness of the avatar) makes the simulation of horizontal movement ambiguous. In comparison, the side-scrolling frame of view in *Super Mario Bros.* (Nintendo 2004[1985]) is more unambiguously scrolling across a landscape, and this subjective horizontal movement gives a sense of travel and adventure that is lacking in the earlier *Donkey Kong* or *Mario Bros.* (Nintendo 1983). In *Super Mario Bros.*, the world is no longer framed or boxed-in as in a traditional arcade game, but extends beyond the boundaries of a navigable frame of view; Mario goes travelling, across a scrolling panorama⁶⁵.

⁶⁵ *Super Mario Bros* did not pioneer the side-scrolling platforming format. This was introduced by the 'Tarzan-game' *Pitfall!* for the Atari 2600 in 1982. Moreover, the side-scrolling frame of view in *Super Mario Bros.* has a significant limitation which reduces the possibilities of exploration and adventure: the frame cannot move backwards.

The top-down variant of the navigable frame of view, as found *The Legend of Zelda: A Link to the Past* (Nintendo 2003[1991]) – the third game in the *Legend of Zelda* series – goes one step further towards a subjective player-avatar relationship in computer games. *A Link to the Past* allows the player to actually navigate the frame of view rather than just pushing or ‘scrolling’ it on a predetermined track as in *Super Mario Bros.* and similar platform adventures. The player explores the world in different directions through navigating, as it were, a proto-version of the 3D ‘nunchako’ avatar⁶⁶.

With the navigable frame of view we can, in a limited sense, in Merleau-Ponty’s terminology, “observe external objects with my body” by visually scanning or panning the environment in different directions via the extended avatar. Still, the world that is constituted in this way is two-dimensional; the more we move and act, the more securely do we establish the world as flat, as a ‘world map’. 2D navigable frame of view does not attempt to simulate the re-location of the body-subject, and does not establish spatial continuity between play-space and fictional space.

The *isometric* perspective, as found in role-playing games like *Baldur’s Gate* (Bioware 1998) or *Planescape: Torment* (Black Isles Studios 1999), as well as in real-time strategy titles like the *Warcraft* series (Blizzard 1994), goes one step further towards a fully subjective point of view. The navigable isometric point of view reveals a three-dimensional topography, while keeping a withdrawn and fixed-angle birds-eye perspective that is perfect for tactical and strategic play – and which requires less processing power than navigable 3D. However, because the player can not use the frame of view to navigate three-dimensional space (nothing can ever be ‘behind’ the frame of view), the potential spatial continuity between the player’s space and the projected space is blocked. Instead the player relates to the simulated

⁶⁶ The scrolling top-down frame of view is also a standard format in 2D action shooters and racing games, although, as with *Defender*, these are much more ambiguous (and less adventurous) with respect to movement or travel. The navigable frame of view in *A Link to the Past* must also be distinguished from the static frame of view in the first game in the series, *The Legend of Zelda*, which is more similar to the traditional grid-structured screen transitions that we find in avatar-based games from *Adventure* (Warren Robinett 1980) to *Prince of Persia* (Brøderbund Software 1990). The difference these games *The Legend of Zelda* is that the latter switches from one screen to the next in a kind of ‘wipe’ transition, which creates a stronger continuity between the screens. *Metroid* (Nintendo 2005[1986]) – Nintendo’s third genre-defining action adventure besides *Super Mario Bros.* and *The Legend of Zelda* – combines grid-structured screen transitions with a sideways scrolling frame of view within (or across) each screen. *Zelda II: The Adventure of Link* (Nintendo 2004[1987]) strayed from the *Zelda* series’ top-down formula, with action and combat sections taking place in a side-scrolling platformer format. The *Legend of Zelda* series went 3D with *The Legend of Zelda: Ocarina of Time* (Nintendo 1998).

environment as some sort of (topographic) map, a semi-miniature that will always be perceptually positioned as a sub-space in front of the player.

In *Tomb Raider* or *GoldenEye 007* (Rare 1997), through the visual simulation of movement through continuous space, the 3D avatar captures the player's body in a way that can not be imagined otherwise; ultimately, the unbalance between simulated bodily space and actual bodily space may make the player sick. For most players, only first-person perspective avatars (First Person Shooters as well as others) do actually have the potential to induce motion sickness. This is due to the avatar's extra narrow field of vision, combined with the flexibility and speed with which the player is required to navigate the point of view. In principle, third-person games carry the same potential, as do any games or other 3D-applications with a navigable camera. However, the 'follow-cam' of the dual-locus configuration is usually too withdrawn and too slow to be able to create any noticeable physical effects in the player.

The avatarial configuration

In avatar-based 3D, the relationship between the player, the subjective point of view and the objective avatar can be configured in different ways. The first-person avatar, as established by pioneers like *Ultima Underworld*, *Wolfenstein 3D* (id Software 1992) and *Doom*, is characterised by a strong *integration* between the objective and the subjective dimension; the navigable point of view is controlled directly, and the visible objective avatar is mounted onto the frame of vision as a pair of hands or a weapon. The properties that provide the prosthetic camera with an objective presence within the gameworld are integrated with the subjective avatar's primary capacity to move, perceive and navigate; whereas any avatarial point of view would have a basic material solidity within the simulated environment (which a purely prosthetic point of view does not need to have), the integrated body of the first-person avatar puts flesh and bone, as it were, on this minimal objectivity. The first-person avatar has a particular weight, it has a set of properties and capabilities that make the avatar and the gameworld playable – moving, jumping, crouching, shooting, taking damage, triggering mechanisms and so on – and it is recognised as an agent in the fictional world in the same way as an extended avatar would be. In other words, the first-person point of view retains the full presence of objective avatarhood within itself. It also locks the player into a focussed tunnel vision that is optimised for precise shooting action, gives a strong sense of speed and disorientation, and encourages a persistent awareness of threat. This 'camera-body' is highly integrated, highly restrictive and radically situated.

The ‘over the shoulder’ point of view in games like *Max Payne* (Remedy 2001) or *Hitman 2: Silent Assassin* (IO Interactive 2002) presents a looser variant of the integrated first-person configuration. This configuration detaches the extended avatar from the camera, as a playable character or avatar-character, but keeps the camera behind the extended avatar at all times, always moving and turning together with it in a fixed relationship. In physical terms, it is as if the camera is attached to the neck of the character, not on a flexible string but directly on a sturdy pole. This configuration works well for fast shooter action, as the player will always be targeting enemies from a point of view directly behind the extended avatar. The semi first-person point of view is not all that different from a standard First Person Shooter configuration. It keeps the camera pulled back to give more overview, to give room for a more elaborate extended avatar, and to give some room for character description during play⁶⁷. This character still works very much like an extended gun, even if the actual gun itself does not have the same dominating objective presence as it has in an FPS. In the FPS, the gun, and not least the *sound* of the gun, is indeed the central playable character in the game, always loud and spectacularly in-your-face⁶⁸.

A full dual-locus configuration, as found in *ICO* (SCEI 2002) or *Prince of Persia: Sands of Time* (Ubisoft Montreal Studios 2003), unlike the semi first-person configuration, allows the player to move the camera 360 degrees around the extended avatar. In between the semi first-person and full dual-locus alternatives there a number of possible configurations that give various degrees of flexibility to the camera-character relationship. The original *Tomb Raider*, notably, is relatively restricted in how the player is allowed to control the camera; its avatarial configuration is actually closer to the semi-FPS setup than it is to the 360 degree camera that we find in later games like *ICO*.

⁶⁷ The close similarity between a semi-FPS setup and a standard FPS means that swapping between the two alternatives during play is relatively frictionless. In *Hitman 2: Silent Assassin* (IO Interactive 2002), the player can change to full first-person at any time, and even play the entire game in (a relatively clunky and inefficient) FPS mode.

⁶⁸ It is fundamentally ambiguous, I would argue, whether, in a semi-FPS configuration, the player controls the extended avatar directly or indirectly. In a physical analogy, we could say that the objective avatar in *Max Payne*, rather than being mounted directly on the camera as in an FPS, is instead being pushed along the ground by the navigable camera, which is under direct control by the player but which is being ‘dragged down’, as it were, by the avatar-character. This ‘reversed’ perceptual interpretation is impossible to do if the camera is relatively independent from the extended avatar.

Prosthetic perception in the action adventure was not ‘liberated’ until the current generation of consoles (PS2, Xbox, Gamecube), which has implemented as standard a second analogue stick that can be dedicated to camera control in dual-locus configurations. This flexible dual-locus/dual-stick configuration gives a better visual grasp of the capabilities and appearances of the extended avatar. If we compare *Tomb Raider* to *PoP: The Sands of Time*, the latter is arguably more similar to a 2D configuration in the way it combines visual overview with a strong emphasis on the characteristics of the extended avatar. This new flexibility is to a certain extent a ‘return to form’ that makes the world of the avatar somewhat less immediate and less claustrophobic – and, we could add, somewhat more miniature. The player’s perception is still captured by the prosthetic point of view, but this ‘body’ is no longer tied as closely to the extended avatar as in *Tomb Raider*.

It should be noted that a strong emphasis on the extended avatar does not necessarily imply that the avatarial configuration emphasises fast action or acrobatics. *ICO* is strongly focussed around the characteristics and behaviours of the extended avatars, but these avatars are primarily geared towards relatively slow-paced physical navigation and environmental puzzle solving rather than fast-paced combat⁶⁹. The distinct expressiveness of *Ico* and *Yorda* does not come from spectacular movements or exaggerated characterization, but from subtle nuances in character animation, particularly in the way they interact with each other.

As noted in the introduction to this chapter, the specific significance of the 3D avatar does not follow automatically from the implementation of three-dimensional game spaces; it is not 3D in itself that matters, but 3D-generated forms of embodiment. Through the avatarial configuration, it is possible to make three-dimensional spaces playable while downplaying or almost abandoning the role of the avatarial point of view. In games that encourage multi-player co-operative play without resorting to a split-screen solution, the relative distance and ‘neutrality’ of point of view is an absolute necessity; with a standard avatarial camera, players would be given very little space to play, uncomfortably locked together like Siamese twins. *Lego Star Wars* (Traveler's Tales 2005), which is optimised for co-operative single-screen play, also illustrates on a more general level the possibilities that emerge from de-emphasising the role of the avatarial camera. Players move in three dimensions, but the computer-

⁶⁹ *ICO* has one central avatar, but the player can also form a kind of ‘associative avatarhood’ with the second character, princess Yorda, through leading her by the hand, pulling her up ledges and so on. Also, after completing the game, two players can play co-operatively, the second player controlling Yorda.

controlled point of view is kept pulled back all the time, mostly following the extended avatars through a kind of sideways ‘tracking’ rather than chasing them along the depth axis while the action is going on. This kind of mildly subjective (or co-operatively subjective) point of view resembles the sidescrolling frame of view of 2D action adventures as well as the isometric perspective of party-based role-playing games. The pulled-back approach constitutes a less exclusive and less imposing – and in one sense more playable – subject-positioning than what you find in other 3D action adventures. The semi-3D navigable camera also gives more room to play out the various expressions and capabilities of the (highly malleable and destructible) environments and extended avatars of the *Lego Star Wars* universe.

Relative independence

Dual-locus configurations imply a relative independence between the subjective and the objective dimension of the avatar, and a relative independence between action and perception. The player does act and perceive through the navigable camera, but in addition the player can also act through the extended avatar in relative independence from the actions of the prosthetic camera. In this respect, the 3D extended avatar is similar to the 2D avatar. Relative independence allows for a vicarious body that is less rigid, more malleable and more complex in its capabilities and appearances than the integrated avatar. Dual-locus configurations do not provide the same thrill (or anxiety) of focussed tunnel vision – and are less able to facilitate fast and precise aiming – but they open up for a broader variety of interactions and challenges. The player is given more overview, and has more alternatives in how to interact with the environment through the extended avatar – typically in acrobatic ways, as illustrated by *Super Mario 64* and other platform-adventure games. For example, in *Super Mario 64*, Mario is able to climb a tree or a pole, get up in a handstand at the top, and go directly into a tall spectacular jump. First-person avatars, in contrast, give relatively little room for acrobatics, as this would easily produce intolerable – and unplayable – disorientation and vertigo for the player.

Relative independence also means that the properties of humanoid or otherwise animated extended avatars are given more attention and significance also as *characters* that the player controls, and whom the player may identify with in various ways. Quite often, as for example in *Jet Force Gemini* (Rare 1999), variations and differentiations in the capabilities and limitations of the extended avatar are expressed as different playable characters; Juno, Vela

and Lupus (boy, girl and their dog) are different variants of the same avatarial relationship, each offering a unique ability that allows the player to perform different actions and reach different areas in the game. A similar kind of differentiation and variation could of course also have been implemented through a first-person avatar, but then the characters' unique appearances and personalities could not have become a part of the avatarial relationship in the same way. One of the strengths of extended avatars like Mario, Link or Ico is that during play, they can more easily draw attention to character – and by implication, to story – than what merely a pair of waving hands or the barrel of a gun can do. The objective appearances and behaviours of the avatar as a character are particularly accentuated in full dual-locus and dual-stick configurations, where the player can move the camera 360 degrees around the extended avatar. At the same time, as noted above, sometimes the barrel of a gun may be the central 'character' than the player wants to focus on.

The first-person configuration is more radically prosthetic than the dual-locus configuration; on one hand, it allows faster, more fine-tuned and more flexible control of the avatarial camera than what is possible with the more unwieldy 'nunchako' setup; on the other hand, it has no relative independence in relation to the player – no relative freedom to act on its own accord, no freedom to compromise, undermine or loosen up the avatarial relationship.

Dual-locus avatars are more flexible in this respect. This flexibility applies to the extended avatar as well as to the avatarial point of view, both in relation to each other and in relation to the player. The avatarial camera retains the prosthetic relationship to the player, while the extended avatar can move and act in relative independence from the player's actions. In *Beyond Good & Evil* and *The Legend of Zelda: Ocarina of Time* (Nintendo 1998) for example, Jade or Link jump automatically when they are close to an edge; this is something the player quickly gets used to (and which may be a welcome alternative to common convention), as there is generally a relative independence or 'slack' between the player's and the extended avatar's actions anyway. This space for independent action also gives more opportunities for the development of character, because it allows for more elaborate and extended sequences of movement and posture, which may be triggered by a single press of a button. With a first-person avatar, however, similar forms of 'automatic' or independent action – which may include, for example, jumping forwards or sideways, climbing ladders or even walking up to another character to engage in conversation – would neither escape nor loosen up the avatarial relationship, and nor would it be able to convey anything about

character; in a first-person configuration, there is only one, unified avatarial prosthesis. If this starts moving on its own accord, it simply means that the avatar, and the player, is *being moved* – is being taken for a ride.

I will return to this ‘ride’ aspect of the navigable camera in chapter 8. The main point here is that the first-person avatar does not acknowledge any relative independence between action and perception; with first person avatars, it is either full avatarial integrity, or no avatarial relationship at all – take it or leave it. The dual-locus avatar, on the other hand, has more flexibility not just in terms of how the extended avatar is able ‘roam’ within the parameters of the avatarial relationship as a whole, but also in terms of how the *camera* is able to act independently – even in directly unpredictable and unreliable ways. When not controlled directly by the player, the camera does not merely follow the extended avatar passively, in a fixed relationship, but is operated by the computer in a more or less intelligent fashion, with an aim to present the extended avatar and the environment from angles that is adequate for the task at hand. In *Super Mario 64*, this camera, when set to its most independent modus, is even given a personified ‘camera operator’ within the diegetic world of the game, the ‘Lakitu brothers’, who are, presumably, broadcasting Mario’s adventure as some sort of televised contest.

The relatively independent behaviours of intelligent ‘Lakitu’ cameras loosen up the integrity of the avatar, potentially challenging the distinction between on one hand the avatarial point of view, which is prosthetic and has an objective presence, and on the other hand a *filmic* camera, which moves and cuts through space on its own accord, and which does not have any extensional body in game space. In *Super Mario 64*, *Prince of Persia: Sands of Time* and similar variants of the dual-locus configuration, the semi-independent camera keeps the umbilical string to the extended avatar intact, does not move in disembodied jumps or cuts, and avoids (at least ideally) unpredictable or obstructive behaviour⁷⁰. The survival horror genre, however, is a notable exception to the general rule of predictability and control in avatarial configurations. The genre-defining *Alone in the Dark* (Infogrames 1992) and *Resident Evil* (Capcom 1996) combine a 3D extended avatar with pre-defined camera positions, with the camera cutting from one position to the next as the player moves along.

⁷⁰ An exception to the rule of fluency (although not to the rule of consistency and predictability), in *Super Mario 64*, is when the extended avatar is moving through doors. In these cases, the camera does not follow in a continuous movements, but instead fades out and fades in again at the other side of the door.

Whereas this configuration frames the action from a filmic angle of view, it also makes it noticeably harder to control the extended avatar, and gives the player a perceptual ‘prosthesis’ that is suitably restrictive and unreliable – in keeping with the horror atmosphere and the generally disempowering imperative of the genre. Rather than aiming to provide the player with optimal (and fluent) perceptual control, the independent and rigid behaviour of the camera aims instead to obstruct, challenge and destabilise the player-avatar relationship.

To conclude, we may see the highly independent point of view in *Resident Evil* – which moves with the extended avatar in filmic cuts rather than as a tangible and coherent prosthetic extension – as the extreme dual-locus variant of 3D avatar, and the uncompromising integrity of the first-person avatar as the extreme variant at the other end of the spectrum. As generic types, they represent different ideals and principles for avatars in three-dimensional gameworlds.

3D Sound space

Martti Lahti’s concept of ‘prosthetic vision’, while drawing attention to the avatars’ significance of the navigable point of view in computer games, leaves out the role of sound in prosthetic perception. Through the modelling of three-dimensional sound environments, the alternate space of the subjective avatar is defined in terms of navigable *hearing* as well as navigable vision; the subjective avatar has ears as well as eyes. Game designer Stephan Schütze explains:

Three-dimensional (3D) sounds in computer games are sounds that are placed within the virtual world and a 3D audio engine governs their output. The 3D engine calculates how the sound will be heard in relation to the virtual listener. In most cases the listener position will be attached to the game camera. As the camera moves around the game world, the 3D engine outputs what the camera would hear in that location. Thus, as the player is viewing the game world through the game camera, they hear the world in a manner equivalent to real-world expectations. (Schütze 2003:173).

These ‘real-world expectations’ are based in our bodies’ natural integration of seeing and hearing. Consequently, in games of the dual-locus configuration, it is the navigable point of

view that should be wearing the ears, as it were, not the extended avatar – as is also the case in most contemporary action adventures⁷¹.

Moreover, the fact that sound environments can be navigable in themselves makes it possible to leave out any screen-based visual representation altogether, and still have a playable three-dimensional game environment, as has been demonstrated by the so-called ‘audio games’ that have been developed especially with visually impaired players in mind⁷². The same logic, however, works also the other way around; screen-based 3D environments do not require sound to be navigable and playable.

Nor do navigable soundscapes, as long as they are integrated with a visual 3D environment, need to actually *distribute* directional sound in physical space through stereo or surround sound devices (the latter which is usually referred to as ‘positional sound’). Via the screen-based 3D avatar, the player can experience an environment of sound objects purely in terms of the sound’s characteristics and amplitude, as this simulates distance, reverberation, absorptions and occlusions relative to the player’s position. It is possible, in other words, to navigate a the screen-based soundscape in mono, even if it would be harder to tell exactly which directions the sounds were coming from (a problem that sometimes also occurs, we could add, in real life situations). Distributed or positional sound obviously adds a new dimension to tactical play, and it may enrich the experience of being immersed in a soundscape, but spatially distributed output is not essential to the simulation of inhabiting a sound environment through an avatar.

What positional sound does, however, is exploiting and consolidating the integrity of alternate bodily space; as players, we instinctively accept that sounds from a screen-projected universe are emitting from beyond the screen. It would be much harder to accept distributed off-screen sound in for example *Pac-Man* (Midway 1980); it would at least be a very different (and possibly interesting) type of experience. The genre that definitely makes most use of

⁷¹ Partly due to time constraints, I have not been able to find any example in which a dual-locus avatariar setup places the listening position on the extended avatar rather than on the camera. However, such a consistent split between hearing and seeing would provide an interesting case of dual-locus subjective perception. We could imagine this strategy being chosen for reasons of diegetic consistency – the idea being that the player should be able to listen through the *character* rather than through the subjective point of view – but on the other hand it would definitely be less realistic in the sense that it goes against the integrity of natural perception, as well as against, I would argue, the principle of the subjective avatar as a mode of fictional participation.

⁷² For more information on audio games, including a list of downloadable games, see <http://www.audiogames.net/>

positional sound is the First Person Shooter, with its slightly paranoid and restlessly narrow field of vision. The discrepancy between visual and auditory perceptual scope adds an important tactical element, and it solidifies the autonomy of the action-space. More generally, simulated sound environments are central to the establishing of a sense of threat and horror; the first-person avatar, constantly facing potential destruction from any direction, has tunnel vision but not tunnel hearing.

Continuous interfaces

On video games consoles, control pads with analogue sticks established their dominance after being introduced by the Nintendo 64 console in 1996. The 360 degree continuous movement enabled by the analogue stick provided a precision and fluidity that was lacking from the digital 8-directional (or 4-directional) digital pad, and this advantage proved to be much more significant in 3D space than in 2D space. The analogue stick not only expanded the range and subtlety of possible action in three-dimensional environments, but it also responded more adequately to the spatial continuity of the new perceptual regime. When acting into continuous space, an avatarial connection that is only capable of mediating movement in discrete directions and increments becomes an unnecessary restriction, and it also forces a layer of abstraction onto the player's embodied participation in the game space⁷³.

On today's consoles, the dual-stick configuration of Sony's 'DualShock' controllers – which were first launched in 1997 and later adopted as a standard also by its competitors – adds to the 3D avatar an extra dimension of realistic agency by separating locomotion from looking and turning. This configuration mirrors the keyboard-and-mouse interface that was introduced by *Quake* (id Software 1996) and which has become the configuration of choice on PC-based shooters. In first-person configurations, the left analogue stick (or keyboard) controls the avatar's locomotion, whereas the right stick (or mouse) controls the avatar's movement around its own axis (looking and turning). In dual-locus avatarial configurations, the right stick (or mouse) is typically used for controlling the camera, whereas the left stick (or keyboard) controls the extended avatar. Operated in combination, the dual-stick or mouselook

⁷³ Because Sony initially provided the Playstation with d-pad control input only, *Tomb Raider* follows precisely – for better or for worse – this somewhat alienating logic of abstract movement. Although mostly abandoned after the introduction of analogue stick controllers, abstract movement in three-dimensional space has not entirely disappeared from contemporary games – as exemplified by, notably, the avant-garde arcade-adventure game *Killer 7* (Capcom 2005a).

setup offers to the habituated player a flexible, intuitive and reasonably precise control of motion and perception in three-dimensional simulated environments.

As explained in chapter 6, the avatariar prosthesis does not require mimetic gestures as part of the physical interface. Any kind of consistent movement can be integrated or ‘absorbed’ by the avatar, and incorporated by the player as second nature. At the same time, the continuity of alternative bodily space, unlike the miniature sub-space of the 2D avatar, also opens up a possibility for *continuous interfaces*, according to which we are able to act intuitively through the screen as a transparent window, based on pre-established perceptual habit. Classical continuous interfaces would be the lightgun, the steering wheel or the flight stick. Contemporary variants may rely on various kinds of motion-sensing (or tilt-sensing) equipment – which is a technology that will come built into the hardware interface of the upcoming Nintendo Wii.

From the point of view of fictional participation, continuous hardware interfaces imply that mimetic gestures become part of the simulation. Continuous interfaces are in this sense also fictionalised interfaces. However, continuous physical interactions are not to be confused with *gestural simulations*, or gestural games of make-believe, as described in chapter 4; they are not independent mimetic gestures that would in some way be in dialogue with the events on the screen, but are integral to model-based make-believe, integral to the acting into a screen-projected simulated environment.

Continuous interaction is accommodated by the 3D avatar, which is premised on the simulation of continuous space. However, as pointed out in chapter 6, mimetic gestures must either be limited to a *metonymic* function – as exemplified by the shoulder or ‘trigger’ buttons on modern controller pads, which in a limited sense may give the player the feel of handling a handgun – or they must be otherwise strictly limited and disciplined in the service of the screen-projected vicarious body. Continuous interfaces in avatar-based games can therefore not be directly compared to the continuous interfaces of Virtual Reality installations. In avatar-based play, continuous interaction is not a way of projecting oneself directly into a simulated world, but is filtered through and subordinated to the demands of the avatariar prosthesis; continuous interaction goes in the service of the avatar, not the other way around. The dominant imperative is vicarious embodiment, not virtual embodiment. In other words: it is not just the player who must incorporate the hardware interface as a prosthesis – whether

supported by pre-established habit or not – but also the avatar who must accommodate a particular set of pre-established habits, incorporating the continuous physical actions that the player performs.

Mimetic gestures that are *not* subordinated to the avatar may be seen as either irrelevant, or as establishing separate channel for continuous fictional participation independently of the avatar, VR-style. – Or, as the third alternative, they may be meaningful as part of a gestural game of make-believe, which is a practice of imitation, performed in dialogue with the model-based simulation of the gameworld.

Through the spatial continuity that they establish, 3D avatars have the capacity to provoke irrelevant, yet intuitive physical actions and responses, as many will have observed either in their own play or by observing others; players ‘steer’ in racing games by twisting and turning the controller pad itself, or they instinctively lean over to peak around corners in First Person Shooters. These perceptually irrelevant and in this sense ‘misunderstood’ actions and reactions testify to the *illusion* of 3D navigable spaces; players react to the continuity that is established by the navigable point of view, which tricks the player into responding as if there was no actual physical interface, and if there was no avatarial relation.

Martti Lahti reads this phenomenon as a general characteristic of the corporealized ‘cybernetic loop’ between the player and the computer, and as a symptom of the desire to blur the distinction between player and avatar (Lahti 2003:163). However, while this interpretation does address the unique nature of avatar-based 3D as distinct from two-dimensional game spaces, it fails to distinguish, I would argue, between corporeal immersion on a general level – which would be a ‘delirium of virtual mobility’⁷⁴ that applies equally whether we are actually in control of our vicarious body or not, and whether we are playing a game or not – and the more specific principle of avatarial embodiment. Misunderstood continuous interaction, I will suggest, is a mark of what we may call an *immature* avatarial relationship. This is a perceptually continuous and tangible relationship in which the player has yet not been (or does not want to be) properly trained and disciplined, has not yet incorporated the vicarious body as second nature, and has therefore not yet adequately ‘de-learned’ the inclinations of pre-established bodily habit. The competent player, on the other hand,

⁷⁴ (Lahti 2003:163)

intuitively channels every action and every movement through the avatar, rather than attempting to throw himself or herself directly into screen-mediated space. The competent player, disciplined by the avatar, does not respond to the illusion⁷⁵.

Through various types of motion-sensing or motion-detecting technology, continuous interaction into three-dimensional simulated spaces does not need the principle of the avatar. Bypassing or downplaying the avatar gives more freedom to incorporate continuous interaction independently of avatarial constraints and demands; it allows more space for mimetic gestures that are interesting and fun in themselves, and which may also be more easily accessible. The motion-capturing *EyeToy* technology for the Playstation 2 avoids the restrictions of avatar-based play by projecting an image of the player's own body on the screen. With the introduction of the Nintendo Wii console we will see a greater variety of continuous interfaces that bypass or challenge the principle of the avatar, as well as probably also new ways of attempting to incorporate metonymic gestures into high-investment avatarial relationships.

Gestural make-believe may emerge from the particular dynamics of a given playing situation, but it will also be, we must presume, aided and encouraged by immature and physically laborious avatarial relationships. Gestural make-believe is about playing along, engaging in mimetic dialogue with what goes on in projected space; when playing GTAIII with friends, for example, we may adopt a suitably gangsta' style of talking, along with the appropriate bodily postures. In some cases, this kind of dialogue is also embedded in or encouraged by the hardware interface itself, as would be the case with the Resident Evil 4 'Chainsaw Controller' for the Gamecube, which is shaped like a (blood-stained) chainsaw but which functions just like a regular Gamecube controller⁷⁶. In contrast, handling the steering wheel in a racing game like *Gran Turismo* (Polyphony Digital 1998) does not encourage gestural make-believe (unless very immaturely performed), because it is integral to the perceptual interaction of play; the player's driving is no more an act of 'imitation' or 'dialogue' than the player's looking and hearing within the game space.

⁷⁵ This does not mean, of course, that competent players cannot engage in various forms of gestural simulation while they play. However, competent players do not misunderstand in terms of how they should be able to act into the screen-projected simulated environment. A competent FPS player, for example, is not going to involuntarily lean over to peek around corners, or attempt to physically duck a bullet.

⁷⁶ For an illustrative image of the RE4 Chainsaw Controller, see http://www.eurogamer.net/article.php?article_id=57928 (accessed 15 April 2006).

Finally, 2D interfaces may also have a gestural fictional significance, in so far as they require physical actions that also simulate something independently from the how they are acting onto the surface of the screen. A classical example of a fictionalised interface in 2D gaming can be found in the popular top-down arcade racing game *Super Sprint* (Atari Games 1986), which was fully equipped with steering wheel, gearstick and pedals. This interface adds a new dimension of fictional participation – a gestural simulation that acts in dialogue with the flat fictional world that the avatar inhabits.

Mouselook

As the example of the shoulder ‘triggers’ on console pads illustrates, metonymic interfaces are a matter of degree, and in some cases a matter of interpretation. The contemporary console interface, I would argue, has a stronger continuous resonance with the 3D avatar than the dominant PC-based interface. In games of the action adventure category, the analogue sticks are hardly superior to the keyboard and mouse interface in terms of precision and functionality – depending, to a certain extent, on whether we are talking about first-person or dual-locus avatars – but they structure our physical interaction in a way that is more continuous (or at least less discontinuous) with simulated subjective space. The mouse interface is more ‘continuous’, we could say, with two-dimensional space, and is therefore perfect for on-screen action; the mouse translates our movements on a physical surface – in a ‘mystical transformation’, in Sudnow’s terminology – into movements on the screen surface. In the ‘mouselook’ interface that was (somewhat hesitatingly) established with *Quake*, this transformation from surface onto surface is de-learned and re-incorporated into looking and turning in three dimensions. In other words: a physical interface that is discontinuous and counterintuitive in terms of pre-established habit nevertheless becomes second nature, via the principle of the avatar.

Still, I would argue that there will always be in the mouse-based interface a remnant, or a memory, as it were, of surface action, of point and click, and that it therefore retains an ambiguity in terms of perceptual interaction⁷⁷. This is especially the case in First Person Shooters like *Quake*, where fluent and precise movement across the surface of the image enables a faster and more efficient avatarial relationship. At the same time, high-powered

⁷⁷ A far less moderate variant of such surface-oriented physical action would be, quite simply, a direct touch-screen interface, which would arguably be a paradox if applied to avatar-based 3D environments.

‘surface action’ also reflects, to a certain extent, a relative independence from avatarial constraints; via the mouse-controlled point of view, centred in the crosshairs on the screen, the competent player can turn 180 degrees in an instant, and aim anywhere with pixel perfection in a split second, almost without friction – almost as if the avatar had no objective presence within in the simulated environment. A thumb-operated analogue stick, in contrast, is not the natural or optimal choice for navigating crosshairs or a cursor on a framed surface (– as any mouse-less laptop user can verify), and is therefore considerably less ambiguous with respect to the construction of space. With the right-hand analogue stick, the player actually has to ‘travel’ the distance of a 180 degree turn, with the limitations on speed and accuracy that embodied presence can be expected to produce. The player’s inefficient actions via the right-hand stick are therefore not so much hooked up to the crosshairs directly as to the simulated vicarious body of the avatar, a body which – in the case of shooters – is centred around the presence of the navigable gun. We could say that, whereas the PC player pulls the gun around with the crosshairs, the console player pushes the crosshairs around with the gun⁷⁸.

Rumble

As a standard element of the contemporary avatarial hardware interface, the significance of tactile ‘force-feedback’ vibration technology should also be acknowledged. The idea of force feedback – introduced by Nintendo in 1997 as a an accessory ‘rumble pak’ that fitted into the socket on the N64 controller⁷⁹ – is to give the player an extra sense of tangibility and physicality through vibrations that are synchronised with events on the screen. These (usually short) bursts of vibration give tactile response to the player’s hands when the avatar is subjected to rough contact or damage, when the gun is being fired, when the floor under the avatar’s feet is vibrating and so on. This possibility to give physical feedback is most successfully exploited in racing games and shooters, as a way to accentuate and enhance the aggressive physicality of the avatar (the gun, the vehicle). Tactile feedback does not *create*

⁷⁸ According to the same logic, the *inverted* mouse interface would have to be placed somewhere in between the gun-directed analogue stick and the crosshairs-directed (non-inverted) mouse. Playing inverted keeps the speed and accuracy of surface navigation, while still establishing a continuous relationship to the avatar by simulating the leaning forward to look down, and leaning backward to look up. This parameter of physical simulation would of course also apply to the analogue stick interface. Moreover, I would argue, in both interfaces, the continuity implied by the inverted axis (pulling up, pressing down) has more significance with longer guns – in other words: the non-inverted axis may qualify as continuous when shooting with a pistol, but takes on a flavour of surface action when operating, say, the barrel of a tank.

⁷⁹ Immersion introduced their ‘force feedback’ technology for PC controller pads shortly prior to Nintendo’s launch of the ‘rumble pak’, but it was definitely the latter that made the bigger impact on the market.

the sense of tangibility, but is rather implied by it and confirms it; or as Martti Lahti observes, “[Tactile feedback] literalizes the implied bodily sensations conveyed through visual and sonic effects” (Lahti 2003:162).

This is why a highly unsophisticated and generic ‘rumble’ sensation works just fine, in spite of its indiscriminating simplicity; the perceptual significance of each rumble is defined by the simulated action or event as a perceptually meaningful whole, not by the distinct quality or shape of the vibration itself⁸⁰. In particular, the rumble function responds naturally to the presence of imposing *sounds* in the simulated environment; the generic vibration of the controller pad simulates the sound waves’ physical impact through continuous space. This close perceptual relationship between sound vibration and tactile vibration is key to the distinctive feel of force feedback in First Person Shooters.

The perceptual role of tactile feedback in the FPS is premised on the 3D avatar’s simulated continuity of bodily space; it plays on and consolidates the integrity of the simulated body-subject. In the FPS as well as in racing games, integrity and continuity is accentuated by tunnel vision and fast movement along the depth axis. Tactile feedback is therefore easily appropriated by the player as second nature and therefore invisible and not paid attention to; once you get used to rumble, something feels wrong when it is taken away; the controller pad feels dead in your hands⁸¹.

We may of course also imagine a ‘rumble’ function being implemented in 2D environments – for example in arcade shooters like *Robotron: 2084* (Williams 1982) – but the general rule as stated above would still apply: tactile feedback consolidates or ‘literalises’ a sense of tangibility that is already there. In 2D environments, this tangibility constitutes a flat microworld, coming alive in front of the player on a magically framed surface. 2D force

⁸⁰ – That said, for the purpose of first-person shooting, some variants and instances of force-feedback may admittedly appear more dissatisfyingly ‘woollen’ than others.

⁸¹ At the moment of writing, Sony has announced that the new PS3 controller will not include any force-feedback functionality at all, instead replacing it with a tilt controller function. This is a significant departure, I would argue, in hardware interface conventions for console games. It remains to be seen whether this is actually going to be a success, or if Sony will be forced to produce a second version of the controller pad that re-introduces the force feedback. In light of the general argument that I am making in this chapter, the lack of force feedback may not be a dramatic loss, but it will affect the experience in a negative way – in particular in racing games and shooters, in which players have gotten used to (although not necessarily paying much attention to) continuous tactile feedback. My guess is, therefore, that the PS3 console, in these two commercially important genres, will loose out to its competitors as far as multi-platform titles are concerned, unless the force-feedback is re-introduced.

feedback, in other words, would further consolidate the flatness and the miniatureness of the gameworld.

The 3D avatar defined

In the following I will conclude by summing up the specific characteristics of the 3D avatar, as these are rooted in the more general principles of the computer avatar that I have outlined in chapter 6.

The 3D avatar is a particular type of avatar, a *subjective* avatar, which mediates fictional embodiment in a more radical sense than the purely extended avatar of 2D gameworlds. Through the appropriation of the navigable point of view as an apparatus of prosthetic vision, hearing and movement, the 3D avatar rejects the miniatureness and flatness of the framed surface, and mediates embodied interaction through continuous space. This prosthetic continuity unifies perception and action, and constructs a vicarious body that reflects the dual nature of the body as both subject and object in the world that it inhabits. This simulated body-subject, which situates us perceptually and objectively within the gameworld, is the central prop in avatar-based 3D as a fictional form.

In contrast, the 2D extended avatar mediates embodied interaction into a miniature world; it is a puppet, an magic hand, which relies on mental simulation in order to mediate for the player a fictional subject-position. This act of mental re-centring is disconnected from how the player perceives and acts in the game space, and hence does not help the player to actually play the game.

In avatar-based 3D, the interdependencies between the avatariar point of view, the extended avatar and the player can be configured in a number of ways, from the maximum integrity of the first-person avatar in *GoldenEye 007* to the full dual-locus and dual-control avatar in *ICO*. Whereas the first-person avatar is radically situated and radically prosthetic, the dual-locus avatar allows a varying degree of relative independency between player, the extended avatar and the intelligent follow-cam. This makes avatariar embodiment looser and more flexible, and lends itself better to the elaboration of character and story during play.

The navigable (or scrollable) frame of view that can be found in 2D games like *Super Mario Bros.* or *The Legend of Zelda: A Link to the Past*, and the isometric perspective of *Diablo*, can

be seen as a proto-forms of the dual-locus configuration; even if they lack the perceptual continuity that negates the miniature, their dynamic point of view still provides a degree of unity between action and perception, between the 'I' that travels and the 'I' that perceives.

Unlike miniature spaces, the spatial continuity of the 3D prosthesis invites physical interaction through continuous hardware interfaces. For the same reason, whereas miniature surfaces encourage direct touch, the 3D navigable point of view strongly discourages it⁸². At the same time, because avatariation is about *vicarious* interaction rather than continuous interaction, avatar-based play is counterintuitive with respect to the spatial continuity of prosthetic vision; in a mature avatariation relationship, any mimetic gestures must be rigidly disciplined by and incorporated into the body of the avatar. Undisciplined continuous interaction, unless simply rendered irrelevant, will either set up a space for alternative continuous interaction – undermining or bypassing the avatar – or it may take on a new significance as part of a gestural simulation, which is performed in dialogue with what goes on in the gameworld. Fictionalised interfaces in 2D games, because miniature worlds do not establish spatial continuity, are by definition gestural and dialogical rather than continuous.

The modelling of three-dimensional sound objects and soundscapes contributes to the constitution of the vicarious body of the avatar; it integrates prosthetic vision and prosthetic hearing, and gives the avatar ears as well as eyes. In addition, the 3D avatar is also often given a certain degree of tactile perception through the implementation of force-feedback technology in the hardware interface, which confirms and consolidates the tangibility of the gameworld. Because tactile perception is channelled through and integrated with the perceptual apparatus of the avatar, mostly any unspecific rumble will do.

The currently dominant console controller interface, the dual analogue stick gamepad, is primarily tailored to avatar-based play in three-dimensional environments; it allows for precise, flexible and sustained avatariation control while also being able to incorporate a certain degree of metonymic continuity as well as certain degree of tactile feedback. The PC-based mouse interface, on the other hand – which is more general-purpose – creates an interesting

⁸² In this respect, it could also be argued that lightguns, though a seemingly perfect example of a continuous and 'realistic' 3D interface, are actually highly ambiguous in their relationship to the projected world of the avatar, as they operate – albeit indirectly – *on* the screen rather than through it, much like a touch-screen interface.

ambiguity with respect to the integrity of avatarial space (although in a moderate sense), not because it is non-continuous or arbitrary, but because it is continuous in relation to two-dimensional surfaces.

Self-contained fictions

The perceptual continuity of the 3D avatar appropriates play space in a way that the two-dimensional playable surface does not. When we play, whereas 2D worlds are being subsumed as a framed sub-space or a micro-space within the space of play, the 3D avatar does not recognise any space for fictional participation outside the projected world that it inhabits, and it does not recognise actions and responses (voluntary or involuntary) that do not act into projected space. This means that play space is subordinated to the integrity of the gameworld as a self-contained and playable ‘work world’. As argued in chapter 5, the principle of the work world is not compatible with the *automaton* as a model for fictional participation; when the world of the avatar is all there is, the player is given no position from which to engage in make-believe dialogue with the animated machine.

Playing *Super Mario 64* or *Half-Life* (Valve 1998), therefore, is all about discipline, about getting a grip on yourself; you learn to filter and extract your playful mastery and self-expression through the regime of the avatar. The stronger the perceptual simulation, and the stronger the avatarial discipline, the less space there is for off-screen fictional participation. In this sense, the 3D avatar is more restrictive than the 2D avatar. The world of the radically subjective avatar is, we might say, tangible yet untouchable.

At the same time, *Lego Star Wars* illustrates that 3D action adventures may still choose to de-emphasise the avatarial point of view, emphasising instead a more detached playability that approaches the miniatureness of 2D game spaces. This semi-2D approach also implies that the separation between the avatar’s gameworld and actual play space is far less rigid and more permeable – not just as a matter of ‘immature’ avatarial relationships, but as a result of the avatarial configuration itself, which almost allows you to touch the screen.

Finally, I want to add that the uncompromising integrity and restrictive embodiment of the 3D avatar also carries with it a built-in sense of threat and anxiety that framed miniature worlds cannot produce. As Chaim Gingold points out, the stable and authoritative ‘fourth wall’ that separates the miniature from the actual world provides the player with absolute control and

absolute comfort; the miniature garden is not a threatening place. It is confined in a snow globe, behind the screen. A horror version of *The Sims*, for example, would not be very horrifying, merely amusing; nor are there any chances of involuntary perceptual reactions, motion-sickness or other vertiginous pleasures. Microworlds are ‘‘miniature, malleable and safe’ (Gingold 2003:26). The world of the 3D is different, although some avatarial configurations are ‘safer’ than others. Strong perceptual re-orientation attacks the boundary between simulated world and corporeal reality. This co-opting of bodily space encourages a certain kind of seriousness, and accentuates the persistent threat of hostile environments.

Chapter 8: The avatarial camera

The 3D avatar represents a particular type of avatarhood as well as a particular type of computer-mediated visibility and spatiality. Through computer games, avatar-based 3D has emerged as a recognisable and fairly stable cultural form, and as a distinctive paradigm of human-computer interaction. In this chapter I will focus on the role of the avatarial camera, and contextualise the cinematic aspect of avatar-based 3D within a broader field of new media and new media discourse. The avatarial camera draws heavily on the perceptual habits and conventions of cinema and 3D animation, but is at the same time rooted in the principles of realistic agency and vicarious embodiment. Through the avatarial camera, established traditions and imperatives of cinematic realism and cinematic corporeality are being re-appropriated as a means to inhabit a gameworld.

Theoretically, a central point of departure in this chapter will be Lev Manovich's comparative study of digital aesthetics and digital genres in *The Language of New Media* (2001), a study that does pay some attention to the specific nature of visibility and interaction in contemporary 3D computer games, though admittedly in a generalised and tentative fashion. A central concern for Manovich is what he calls the 'cultural interfaces' of computer-based media. The cinematic camera that has been adopted as a standard convention of 3D computer animation is one such 'cultural interface'; it defines a language or a grammar for how "computers present and allow us to interact with cultural data" (Manovich 2001:70).

My discussion in this chapter is indebted to Manovich' analysis of the role of the cinematic camera in 3D computer animation, and his account of how 'synthetic realism' draws on and differs from the realism of live action cinema. Manovich' claim that navigable 3D environments should be understood as a distinct cultural form, which is related to a particular kind of (cinematic) cultural interface, is part of what has motivated my interest in avatar-based 3D. At the same time, avatar-based navigable space excludes forms and 'interfaces' that are included in Manovich' less game-specific and more software-oriented account. For example, a game like *Zoo Tycoon* (2001) definitely has navigable space, but does not rely on avatar-based spatial interaction, or at least does so to a very limited extent.

The simulated camera

3D computer animation, according to Manovich, is a central and defining cultural form of computer-based media. This cultural form has adopted from cinema the *mobile camera* as its general interface:

Originally developed as part of 3-D computer graphics technology for such applications as computer-aided design, flight simulators, and computer movie making, during 1980's and the 1990's the camera model became as much of an interface convention as scrollable windows or cut-and-paste operations. It became an accepted way of interacting any data represented in three dimensions—which in computer culture means literally anything and everything—the result of a physical simulation, an architectural site, the design of a new molecule, statistical data, the structure of a computer network, and so on. As computer culture gradually spatializes all representations and experiences, they are subjected to the camera's particular grammar of data access. Zoom, tilt, pan, and track—we now use these operations to interact with data spaces, models, objects, and bodies. (Manovich 2001:80).

It is this basic form of spatialisation that distinguishes *Quake*, *Super Mario 64* and *Tomb Raider* from their predecessors. Based on the mathematical modelling of spatial properties, the computer is able to simulate three-dimensional space as seen through a framed, dynamic point of view. This dynamic point of view is automatically generated and drawn as a two-dimensional moving image on a plane of projection, imitating the kind of visual perception that we are familiar with from the cinematic camera.

When adopting the cinematographic image as their main interface to the world of the game, computer games inscribe themselves into the historical tradition of the perspectival image, where, as explained by Leon Battista Alberti, Albrecht Dürer and Leonardo da Vinci, the canvas or the screen is seen as a transparent window onto the world⁸³. This way of looking at the world is automated by the photographic and cinematographic apparatus, and imported into contemporary computer games as a simulated camera. Through the mathematical models of projective geometry, this camera is able to draw the image of a three-dimensional object as it would appear from any direction.

Hence, in 3D computer animation, mathematically modelled environments become perceptually accessible to us in a way that is similar to how we are used to experiencing

⁸³ Alberti (1972), Damisch (1994).

physical environments: not as animated moving images, but as autonomous spaces and objects shot by a camera, projected through a camera lens onto a two-dimensional plane. The resulting image is distorted as compared to how the world appears to our eyes, but we have gotten used to looking at the world in this way, and accept it as realistic and natural. Visual realism in 3D animation, therefore, is premised on cinematic vision.

Synthetic realism

Perspectival plane projection has become, in Merleau-Ponty's terminology, a perceptual skill or habit in our culture. A broad theoretical tradition offers various historical and critical interpretations of how this 'scopic regime' in art and visual culture changes not just ways of seeing but also ways of thinking and understanding⁸⁴. In film studies more specifically, we can roughly distinguish between two opposing interpretations of the cinematic image. Andre Bazin (1967) emphasises the realism that follows from the camera's *indexical* relation to the world: because something has been in front of the camera, and has been captured by it, the cinema screen, like Alberti's window, allows us to perceive the world, in a basic phenomenological sense, directly and naturally. According to Bazin, filmmakers should accentuate and exploit this ontological transparency and indexicality rather than working against it by drawing attention to the artistic language of the image itself.

On the other hand, according to the perspective of so-called 'apparatus theory' in critical film studies, Bazin's ideal realism must be seen as no more than yet another historically and culturally contingent articulation of the natural. There is no 'realism' in the way the notion of 'Alberti's window' would lead us to believe; there is only – in Jean-Louis Comolli's terminology – a reality *effect*, a particular way of constructing and sustaining a code of 'natural' vision. The code for what counts as 'realistic' is produced by the (invisible) material and social conditions of film production, and the history of the development of this reality effect is discontinuous and uneven (Comolli 1980). In a similarly materialist (or anti-idealist) approach to the 'apparatus' of film production and film viewing, Jean-Louis Baudry (1986), drawing on Lacanian psychoanalysis and Louis Althusser's ideological critique, argues that the relationship between the camera, the screen and the viewer is an ideological relationship rather than an indexical or phenomenologically 'true' relationship. In the interpretation of

⁸⁴ A central text that has influenced this tradition is art historian Erwin Panofsky's essay *Perspective as Symbolic Form* (1991[1927]). See Kemp (1990), Bryson (1991), Damisch (1994) and Jay (1988).

Baudry and others, the screen is not conceptualised as a window, but as a mirror, into which the subject projects its own unified (and false) self⁸⁵.

Even if 3D graphics re-actualises the relationship between ideology, realism and the cinematic image, Lev Manovich argues, it does not merely reproduce the established codes and conventions cinema. What he calls the *synthetic realism* of computer-generated 3D environments has its own white spots and favoured reality effects; certain codes and markers have been privileged over others, depending on the particular challenges that have been faced by military and entertainment simulations. Manovich also emphasises that the images of 3D graphics, as compared to the cinematographic image, appear to us as *too* real unless they are consciously ‘degenerated’ to simulate things like limited depth of field or motion blur. It is therefore easier to produce a sense of utopian *hyperrealism* than traditional cinematic realism. This hyperrealism, Manovich argues, with particular reference to *Jurassic Park*, can be seen as a postmodern variant of socialist futuristic realism. Synthetic realism is a perfect and super-human vision:

It is the vision of a computer, a cyborg, an automatic missile. It is a realistic representation of human vision in the future when it will be augmented by computer graphics and cleansed of noise. It is the vision of a digital grid. *Synthetic computer-generated imagery is not an inferior representation of our reality, but a realistic representation of a different reality* (Manovich 2001).

Manovich sees this ‘different reality’ as an essential quality of synthetic realism; the 3D image is not just synthetically produced, but it also produces a synthetic reality. The notion of the ‘augmented’ super-human vision connects to theoretical ideas around the concepts of the post-human and the cyborg, which are reflected in Ted Friedman’s analysis of ‘cyborg consciousness’ as discussed in chapter 5 – only this time with an emphasis on visual (hyper)realism rather than on the incorporation of a computerised system through play.

On a more general level, Manovich analysis of the utopian dimension of synthetic realism also resonates with Umberto Eco’s and Jean Baudrillard’s broader discussion of the ‘hyperreal’ in contemporary (American) consumer culture. In the essay *Travels in*

⁸⁵ A similar psychoanalytic perspective, although in a stronger semiotic interpretation, is presented by the third main figure of the ‘apparatus’ theorists, Christian Metz. See Metz (1982). See Mulvey (1986) for an influential feminist approach.

Hyperreality (Eco 1986), Umberto Eco uses the idea of the hyperreal or ‘the absolute fake’ to describe the replica worlds of theme parks and tourist attractions, which are environments that are more exciting and also in a sense more real than what they replicate. Baudrillard’s notion of hyperrealism in “The Precession of Simulacra” (Baudrillard 1994) expresses a similar idea. More radically than Eco (and more ambiguously), Baudrillard argues that the distinction between the authentic and the replica in media-saturated consumer culture has collapsed altogether; there is no longer a distinction between the real and that which imitates the real, between the terrain and the map; when the copy replaces the original, we can longer talk of copies and originals.

The hyperrealism of synthetic realism can also, as suggested by Lister et al. (2003), be conceptualised as a form of *spectacular* realism. ‘Spectacular realism’ addresses the paradoxical nature of the computer-generated image; it presents a photographic image of something that was never photographed, a faked but still entirely convincing indexicality. The notion of the spectacularly real also highlights a set of dominant rhetorics and understandings that surround 3D animation and cinematic CGI effects, and situate these discourses in a broader historical context of spectacular entertainment⁸⁶.

3D animation has brought a new visual regime and a new concept of realism into computer games. Like cinema, the 3D avatar defines a subject-position that is perceptually imposed on the player. And like in cinema, this subject-position corresponds to a particular type of ‘apparatus’, if you will, that has been designed – and is continually being designed – to secure for the player a sense of realistic transparency. The central technological and aesthetic convention of this apparatus, in games as well as in digital cinema, is the computer-simulated camera, which ‘co-opts’ us into relating to screen-projected synthetic spaces as real spaces, and which emphasises and exaggerates this paradox through various strategies of the ‘hyperreal’. This common visual regime implies that the fictional worlds of games and films overlap much more strongly than they used to do. It also implies that avatar-based computer games, as they leave the flat surface of the microworld, resonate more directly with the full-

⁸⁶ For a historical study of technologies, practices and discourses of ‘spectacular’ entertainment in the pre-cinematic period, see Vanessa R. Schwartz’ *Spectacular Realities. Early Mass Culture in Fin-de-siècle Paris* (1998).

scale fascinations and attractions of ‘hyperreal’ modern environments like theme parks, tourist attractions or shopping malls⁸⁷.

As a way of situating the avatarial variant of the cinematic camera in relation to other computer-based media – including some computer games – I will look at how Jay David Bolter and Richard Grusin’s *Remediation: Understanding New Media* (1999) and Manovich’s *The Language of The New Media* define the role of cinematic transparency and illusion as part of our interactions with computer-mediated spaces.

Immediacy and hypermediacy

Bolter and Grusin’s perspective could be seen as the opposite of Brenda Laurel’s dramatic approach, as referred to in chapter 6. *Remediation* emphasises the computer’s capacity to adopt, re-combine and re-interpret established media forms rather than its capacity to simulate direct interaction. The central paradigm is not cinema, virtual reality or drama, but multi- or hypermedia.

‘Immediacy’ and ‘hypermediacy’, according to Bolter and Grusin, are two distinct logics through which the computer re-mediate other media. These general principles of mediation connect computer media to a historical lineage of visual culture that predates the digital as well as the modern. They express different cultural desires, which each in their way drives the formation of and interaction with visual representations. The desire for transparent immediacy is not about cinematic realism, but is directed at the disappearance of the interface altogether – the invisibility of the interface, of the medium, and of technology.

Virtual Reality, three-dimensional graphics, and graphical interface design are all seeking to make digital technology “transparent”. In this sense, a transparent interface would be one that erases itself, so that the user is no longer aware of confronting a medium, but instead stands in an immediate relationship to the contents of that medium. (Bolter and Grusin 1999:24).

Hypermediacy, on the other hand, is a ‘cultural counterbalance’ to the desire for immediacy:

⁸⁷ For a recent introduction to the literature on the sociology of tourism, including a discussion of the concepts of ‘theming’, ‘Disneyfication’ and ‘Macdonaldization’, see Rothwell (2004).

Where immediacy suggests a unified visual space, contemporary hypermediacy offers a heterogeneous space, in which representation is conceived of not as window on to the world, but rather as “windowed” itself—with windows that open on to other representations of other media (Bolter and Grusin 1999:34).

There is an important paradox, however, that Bolter and Grusin is keen to emphasise. The space for re-mediation is opened up by the logic of hypermediacy, which addresses our hyper-awareness of mediation and our hyper-awareness of the work of technology. This means that the relationship between transparency and hypermediacy is not a symmetrical one; hypermediacy may *include* representations that are transparent. It is the logic of hypermediacy that “...expresses the tension between regarding a visual space as mediated and as a “real” space that lies beyond mediation (Bolter and Grusin 1999:41). The concept of hypermediacy, in other words, represents the antithesis to our quest for the disappearance of the medium, but it also addresses the paradox that is created by the mediated-as-unmediated. In this sense, hypermediacy can be seen as a more general cultural ‘logic’ or language that underpins our culture’s fascinations with the hyperreal.

Bolter and Grusin’s concept of re-mediation is problematic with respect to computer games, as it tends to reduce game spaces to hypermedia spaces, and reduce play to a question of mediation. Nevertheless, the notion of ‘immediacy’ draws attention to a cultural desire that has entered into computer games – for better or worse – with the simulation of transparency and continuous space that the simulated camera offers. One could argue that the idea of the ‘disappearance of the medium’ is a contradiction in terms in computer games, where the basic imperative, irrespective of genre, is not to lose oneself but to assert oneself; to play, to struggle and to win. However, the paradox of hypermediacy that Bolter and Grusin points at – and which can be related to Gregory Bateson’s more general ‘paradox of play’ – does not compete with or suspend play at the expense of immersion; the desire for transparency and the hyperreal may be more rigid and more ‘monocular’, if you will, than the ideals of distanced playfulness that are expressed by game theorists and new media theorists alike, but it is still a paradox that carries play. This paradox is articulated primarily on the level of perception and embodiment, and is being utilised to create playgrounds that are different from what was available before the advent of the simulated camera. As I will return to below, Manovich’s ‘cyborgian vision’ is one element in these new kinds of playgrounds.

At the same time, the attraction of the 3D avatar is not merely a paradoxical quest for immediacy and illusion but also – and primarily – a challenge to take on and to master a vicarious and playable body. This challenge, and this attraction, is about more than the look; it cannot be reduced to ways of seeing, neither of the illusionistic nor of the cyborgian kind. We may here take cue from Eco, as I mentioned above; the avatar represents way to *travel* in hyperreality – and, more specifically, a particular type of embodied travel.

Virtual mobility and navigable space

In *Window Shopping. Cinema and the Postmodern* (1993), Anne Friedberg addresses the mobility of the perspectival image in cinema, with the main focus on the film *frame* rather than on the film screen; cinema, she argues, combines the virtual ‘gaze’ of the transparent (shopping) window with the mobile gaze of the flâneur. In this way, she argues, cinema presents a distinct paradigm of modern visuality, a ‘panoramic gaze’ rather than the ‘panoptic gaze’ that is described by Foucault⁸⁸. The panoramas and dioramas of the 18th and 19th century, culminating in the attractions of the 1900 Paris exposition, were pre-cinematic forms of a mobile and commodified panoramic gaze:

“protocinematic illusions such as the panorama and the diorama introduced a virtual mobility that was both spatial—bringing the country to the town dweller—and temporal—transporting the past to the present. The virtual tours that these new devices presented were, in a sense, apparatical extensions of the spatial flânerie through the arcades (Friedberg 1993:90).

The virtual mobility of the panoramic ‘window shopper’, in other words, is a temporal mobility as well as a spatial mobility. This ‘subjective timelessness’⁸⁹ is most easily achieved in cinema, where the spectator can, in Benjamin’s famous words, “calmly and adventurously go travelling” (Benjamin 1969:238). The fragmentation of space and time that is implied by the mobile gaze, Friedberg argues, is a development that has accelerated in postmodern culture:

Postmodernity is marked by the increasing centralization of features implicit (from the start) in cinema spectatorship: the production of a virtual elsewhere and elsewhen, and the commodification of a gaze that is mobilized in both time and space. (Friedberg 1993:179).

⁸⁸ Michel Foucault introduces the notion of the ‘panoptic gaze’ in *Discipline and Punish* (Foucault 1977).

⁸⁹ (Friedberg 1993:177)

In her more recent article “The Virtual Window” (2003), Friedberg extends upon the analysis of the mobile frame with a more focussed analysis of the role and meaning of the *window*, both concretely and in its virtual manifestations, as this has developed through the history of western visual and domestic culture. A crucial development in this history, she argues – echoing Bolter & Grusin’s model – has been the emergence of the windows-based visual interface of desktop computer interaction, which substitutes Alberti’s and Dürer’s monocular gaze with multiple perspectives within a single frame. This new regime of multiple windows, Friedberg argues, represents the “collapse of the single viewpoint” (2003:347), and implies the emergence of a new ‘post-perspectival’ or ‘post-Cartesian’ subjectivity, according to which “...we can be at two (or more) places at once, in two (or more) time frames in a fractured post-Cartesian cyber-time” (2003:348).

Even if Anne Friedberg’s account is mainly concerned with much broader cultural formations and developments than I am addressing here, her analysis is useful for highlighting the distinctive nature of avatar-mediated travel and mobility. We could say that she approaches a notion of ‘generalised’ avatarhood, as this applies to the history of cinema. The mobile frame of view defines a kind of travelling vicarious embodiment that is commodified, compensatory and liberating. It enables everyone to become a ‘flâneuse’ of modern life, not by strolling the streets like Baudelaire’s flâneur, or by conquering the seas like the modern explorer, but on the contrary by remaining immobile in front of the virtual window. Like the displays of the shopping arcades, the images on the cinema screen present a ready-packaged visual journey, a commodity to be consumed, a possibility to project oneself into the “elsewhere and elsewhere” while going nowhere.

This modern (or ‘postmodern’) experience resonates strongly also with computer games, and with the broad category of the action adventure particularly. What I have referred to as the ‘subjective avatar’ draws on and elaborates on the cultural and technological topos of the mobile frame of view, from the early side-scrolling panoramas of *Super Mario Bros.* and onwards. Also, with respect to the metaphor of ‘window shopping’, there is little doubt that most computer games focus their reward structure almost obsessively around the activities of collecting, conquering, gathering, looting, buying and upgrading. In singleplayer commercial games, the computer game experience is one to be ‘completed’, referring at once to a world that is travelled, a universe that is conquered, a commodity that is consumed, and a job that is

done. As has been argued by Kline (Kline, Dyer-Witheford, and Peuter 2003), Stallabrass (1993) and Garite (2003), the aesthetic of computer games reflects and expresses the commodification of capitalist culture in various ways, both as a practice of consumption and as a practice of modern work⁹⁰.

The navigable camera in avatar-based 3D, through the way it enables and forces a subjective and travelling point of view, embodies and accentuates these cultural resonances. When disciplined by the avatar, the player must allow herself or himself to be captured and immobilised in order to be able to travel and to conquer. At the same time, as I pointed out in chapter 7, we must distinguish between the navigable camera and the *avatarial* camera. The latter has also an objective presence within the simulated space, and its significance must be understood in a game-specific tradition of avatars as well as from a broader tradition of avatar-based play more generally. On the most basic level, we should note, the avatarial camera excludes the *temporal* mobility that Friedberg emphasises. The body of the avatar, unlike the more abstract ‘eye’ of the conventional film camera, can never move from A to B without travelling the distance. Whereas the camera, according to the conventions of film editing, is free to move in time as well as in space, the principle of the avatarial extension implies a time-bound and more corporeal form of vicarious embodiment⁹¹. Avatarial embodiment excludes, as shown in chapter 6, the ‘virtual window’ of interactive photostories like *Myst*, which is referred to as a paradigmatic example of transparent or immersive digital visuality by Friedberg as well as by Bolter & Grusin – and which is also a favoured object of analysis in theories of new media and electronic literature more generally.

Like Friedberg, Manovich also identifies a certain type of ‘avatarhood’ as a cultural form, but his analysis is concerned more specifically with the genres and conventions of computer-based media, including the role and significance of computer game aesthetics. 3D navigable space, he argues, stands beside the computer database as a ‘true cultural form’. Both

⁹⁰ For a critical analysis of the relationship between computer game consumption and work, see “The ideology of interactivity (or, video games and the Taylorization of leisure)” by Matt Garite (2003).

⁹¹ The relationship between embodiment and the cinematic camera is analysed in a phenomenological perspective by Vivian Sobchack in *The Address of the Eye: A Phenomenology of Film Experience* (1992). Compared to my own application of phenomenological theory to avatar-based computer games, Sobchack’s approach is much broader in scope, and is strongly motivated by general philosophical, existential and cultural concerns. Also, whereas Sobchack’s cinematic body is more of a transcendental concept, centred around the notion of the perceiving cinematic ‘eye’, my own analysis addresses the camera more specifically as part of a computer-simulated prosthetic relationship. For a general account of the phenomenological approach to film aesthetics, see Casebier (1991).

alternative forms represent “...general ways used by the culture to represent human experience, the world, and human existence in this world” (Manovich 2001:215). Computer games, moreover, are paradigmatic manifestations of the latter form. Manovich’ prime examples are *Myst* and *Doom*, both which are, “...genuinely original and historically unprecedented aesthetic forms” (2001:216). Even if they are different kinds of games in many ways, he argues, both are variants over the same basic formula, the same basic cultural form:

Both are spatial journeys. Navigation through 3-D space is an essential, if not the key, component of gameplay. *Doom* and *Myst* present the user with a space to be traversed, to be mapped out by moving through it. Both begin by dropping the player somewhere in this space. Before reaching the end of the game narrative, the player must visit most of it, uncovering its geometry and topology, learning its logics and secrets. In *Doom* and *Myst*—and in a great many other games—narrative and time itself are equated with movement through 3-D space, progression through rooms, levels, or words” (Manovich 2001:245).

This passage describes the central imperative of adventure that structures the player’s interaction with avatar-based singleplayer worlds, and connects this imperative to the inherent ‘bias’, if you will, of navigable 3D. The imperative to go adventurously travelling governs not only action adventure gameworlds like *The Legend of Zelda* or *Halo*, but also it is also a central element in the other large category of avatar-based play: racing games. In *Gran Turismo* (Polyphony Digital 1998) or *Rallisport Challenge 2* (Digital Illusions CE 2004), the various tracks that the player must unlock and conquer present not just new types of challenges and topographies but also new geographical locations and landscapes, with the added flavour of racing in different types of weather and on different times of the day (including, notably, racing under a low evening sun). This adventurous and touristy dimension of sport games have become much more important with the establishing of the 3D avatar as a new paradigm of interaction.

Navigable space as interface

At the same time, a generalised notion of ‘avatarial’ spatial navigation does not pay attention to the dimension of embodiment in games, or to the different kind of pleasures and attractions that games offer. You do not ‘travel’ in *Myst* in the same sense that you travel in *Doom*. We may follow Manovich (and other new media theorists) and consider ‘*Myst & Doom*’ as one single cultural category or genre, but at the same time we also need to acknowledge that they are, as computer game genres as well as in terms of what kind of player preferences they cater

to, almost like oil and water. As examples of visual and fictional ‘mobility’ or travel, the central difference between the two is not just that one is fast and the other slow, though that is not unimportant; whereas *Myst* is essentially a hypertext puzzle – a hypermedia-based ‘world’ – *Doom* presents a tangible and inhabitable simulated environment.

The *Myst* & *Doom* approach to computer game spatiality reflects a general neglect of the role of play and ‘gameness’ in computer games (as well as, more generally, a relative lack of interest in computer games as an art form), but it also reflects, I would argue, a lack of attention to the specific nature of embodiment and fictionality in computer games and in computer-simulated environments more broadly. This is a general tendency in theoretical studies of digital media. As in Bolter and Grusin’s *Remediation*, the emphasis tends to be on some form of interplay between, on one hand, hypermedia-based interaction (‘interactivity’), and on the other hand the total and transparent immersion that is expressed by the promise of Virtual Reality. In *The Language of the New Media*, Manovich chooses cinema as a dominant paradigm rather than Virtual Reality, emphasising the interplay between hypermedia and cinematic space rather than the interplay between hypermedia and sensory encapsulation. This re-orientation has been a decisive contribution to the field of new media studies, but it also constructs a dualist conceptual model that echoes the opposition between fiction and action that we find in much computer game theory of a ‘ludologist’ bent. In Manovich’ model, the ‘cultural form’ of 3D navigable space is reduced to a question of cinematic language.

However, Manovich does also point to the more specific nature the navigable simulated camera in contemporary games. After briefly reviewing some of the conventions of camera control in the new three-dimensional games that emerged during the mid- and late nineties, he concludes:

The incorporation of virtual/camera controls into the very hardware of game consoles is a truly historic event. Directing the virtual camera becomes as important as controlling the hero’s actions (...) In games such as this one [*Dungeon Keeper*], cinematic perception functions as the subject in its own right, suggesting the return of “The New Vision” movement of the 1920s (Maholy-Nagy) Rodchenko, Vertov, and others), which foregrounded the new mobility of the photo and film camera, and made unconventional points of view a key part of its poetics. (Manovich 2001:84-85)

Manovich’ observation that the controllable camera may be as central to play as the controllable character points in the direction of what I have called the avatarial camera, which

is indeed the kind of camera that “functions as a subject in its own right” – either directly, as in first-person 3D avatars, or indirectly, via the invisible string (or pole) that connects the subjective camera to the extended avatar. However, Manovich seems to interpret this ‘historic event’ as a sub-form of the cinematic interface, as an implementation of “the grammar of the kino-eye” (2001:85) – as a poetics of point-of-view. The navigable camera of computer games is being equalled with the navigable camera of interactive cinema.

Like Bolter and Grusin’s analysis of digital hypermediacy, Manovich analysis is primarily framed as a problem of cultural *interface*. Navigable 3D, accordingly, represents a cinematic or ‘immersive’ interface (or ‘language’) for accessing and interacting with information, with ‘cultural data’. In digital media, Manovich argues, the cinematic interface is mixed with and clashes with the ‘operations’ of software interfaces:

In general, cultural interfaces of the 1990’s try to walk an uneasy path between the richness of control provided in general-purpose HCI and the ‘immersive’ experience of traditional cultural objects such as books and movies (...) Cultural interfaces attempt to mediate between these two fundamentally different and ultimately incompatible approaches (Manovich 2001:90).

This ‘uneasy path’ between control and immersion must be negotiated, Manovich implies, in *any* kind of computer-based media, computer games included, irrespective of genres and principles of interaction. This general ‘law’ of digital media is emphasised in italics:

Along with surface versus depth, the opposition between information and ‘immersion’ can be thought of as a particular expression of the more general opposition characteristic of new media—between action and representation. (Manovich 2001:216).

All computer-based genres, accordingly, are characterised by some kind of negotiation or tension between these two opposites. Web sites, virtual worlds and computer games, Manovich observes, are based on the *oscillation* between action and representation: “What at one moment was a fictional universe becomes a set of buttons that demand action” (Manovich 2001:208). This oscillation, Manovich argues, marks an important cultural shift from the illusionism of traditional cinema as theorised by Bazin or apparatus theory:

In contrast to such totalizing realism, new media aesthetics has a surprising affinity to twentieth-century leftist avant-garde aesthetics. Playwright Bertold Brecht's strategy of revealing the conditions of an illusion's production, echoed by countless other leftist artists, has become embedded in hardware and software themselves [...] The periodic reappearance of the machinery, the continuous presence of the communication channel in the message, prevent the subject from falling into the dream world of illusion for very long, make her alternate between concentration and detachment. (Manovich 2001:207).

This is reminiscent of the 'immersion fallacy'-argument as discussed in chapter 3, only this time arguing from the point of view of digital aesthetics rather than by referring to the logic of play. The theory of the 'periodic reappearance of the machinery' asserts that the oscillations typically found in computer games – between real-time avatar control and menu operations, for example, or between play and cinematic cutscenes – are not merely a question of genre but are embedded in the aesthetic of computerised media as such.

From this perspective, the question of the avatar boils down to how it is able to negotiate cultural interfaces. However, it is interesting to see that Manovich seems to make one exception to the rule of periodic reappearance. "Games modeled after [military] simulators", he admits, perfectly blend "perception and action, cinematic realism and computer menus". Flight or racing simulators, as well as *Doom*, *Quake* and *Tomb Raider*, are not based on oscillation but on "the coexistence of the two states—which are also two states of the subject (perception and action) and two states of the screen (transparent and opaque)" (Manovich 2001:210).

The category of 'coexistence' that Manovich here identifies seems to correspond more or less directly to the category of avatar-based 3D. This 'art form', in Manovich' words, is indeed an exception to the general rule of action versus representation. However, if we consider avatar-based play as more than merely a particular interpretation of interface conventions (derived from the military simulator), as I have tried to show in the chapters above, Manovich observation that "...the roles of viewer and actant are blended perfectly" (2001:210) becomes a somewhat artificial construction; in embodied fiction, the separation between 'viewer' or 'actant' is irrelevant to begin with. This difference in perspective is more than merely a theoretical quibble; when the avatar is reduced to interface, it disappears from view. According to Manovich, we may successfully merge action and representation, "—but there is a prize to pay. The narrative is organized around a single and clearly defined goal—staying

alive” (2001:210). This is true as far as it goes, but it does not begin to consider the possibilities for play – as well as for artistic expression – that emerge from vicarious embodiment in a simulated world. There is considerable artistic, cultural and technological distance, for example, between military simulators and *Super Mario 64*.

What Manovich’ analysis implies, is that computer games in the ‘military simulator’-genre do not fit into the general model of hypermedia, which highlights the constant tensions and negotiations between instrumental ‘interactivity’ and the immersive capacities of the ‘remediated’ media elements. As Jim Bizzocchi and Robert F. Woodbury observes (2003), when the cursor function – or the hyper-mediator, as it were – becomes itself a part of the textual world that it allows us to interact with, ‘interface’ is subverted. This may be an artistically interesting strategy, but appears as a subversion or exception only from the point of view of interactive media, or, as in Manovich’ case, from the point of view of interactive cinema. The ‘unreliable’ cursor is a subversion that Mario established 25 years ago, but which yet, in comparison to interactive films and photostory-puzzlers of various kinds, failed to attract much academic attention on its own terms.

Realistic embodiment

Considered as cinematic ‘interface’ and as hypermedia, the navigable camera or ‘mobile frame’ enables us to access and navigate different places and different times. Appropriated by the principle of the avatar, however, the navigable camera defies the notion of ‘interface’. Or more precisely: it is an ‘interface’ only to itself (the interface is the message, as it were). The avatariar camera offers more than ‘travel’ in a metaphorical sense or in terms of access to ‘cultural data’; it is concretised and corporealized as a prosthetic extension of our embodied selves, and it gives us an objective presence (and destiny) within a screen-projected environment. At the same time, this extension is still a *cinematic* extension in the sense that it is premised on the perceptual familiarity of photographic visual realism.

In 3D animation, visual realism is based on simulated photographic indexicality; the computer draws an image as if there is no one actually ‘drawing’ anything, as if there is only a camera that captures what it sees. This construction of the camera itself, and the construction of cinematic space, is the central act of simulation in 3D animation, whether the simulator performs it in real time or not. In animated film, there are no animators that draw the images that correspond to the movements of the camera; instead, they build the three-dimensional

models and the animations that are to be drawn (rendered) by the simulated camera. In this sense, as Bazin states, “The photographic image is the object itself”; it generates the image of a synthetic reality, which exists independently of the image⁹².

Manovich’ ‘synthetic realism’, as discussed above, is based on this principle of photographic indexicality:

For what is faked, of course, is not reality but photographic reality, reality as seen by the camera lens. In other words, what computer graphics have (almost) achieved is not realism, but rather only *photorealism*—the ability to fake not our perceptual and bodily experience of reality but only its photographic image (Manovich 2001:200).

Manovich is correct to point out that the camera lens does not simulate the natural perception of our bodies. On the other hand, it is not just visual ‘photorealism’ that computer game avatars seek to construct, but – precisely – a “perceptual and bodily experience of reality”, in some form or another. Photographic visual realism, in a slightly paradoxical way, becomes part of a more general *perceptual realism*, a realistic simulation of embodiment⁹³. This simulation is realistic as well as ‘natural’ in the sense that perception and self-movement in united in one act, as argued in chapter 7; the ‘I’ that perceives is the ‘I’ that moves. As players, we are able to inhabit the environment through photographically mediated visual kinaesthesia; we re-position as body-subjects that move in relation to the screen-projected simulated environment.

⁹² “The photographic image is the object itself, the object freed from the conditions of time and space that govern it. No matter how fuzzy, distorted, or discolored, no matter how lacking in documentary value the image may be, it shares, by virtue of the very process of its becoming, the being of the model of which it is the reproduction; it is the model.” (Bazin 1967:14).

⁹³ A similar notion of ‘perceptual realism’ is also suggested by Stephen Prince (1996): “A perceptually realistic image is one which structurally corresponds to the viewer’s audiovisual experience of three-dimensional space. Perceptually realistic images correspond to this experience because film-makers build them to do so. Such images display a nested hierarchy of cues which organize the display of light, color, texture, movement, and sound in ways that correspond with the viewer’s own understanding of these phenomena in daily life. Perceptual realism, therefore, designates a relationship between the image or film and the spectator, and it can encompass both unreal images and those which are referentially realistic. Because of this, unreal images may be referentially fictional but perceptually realistic.”

The main difference between Prince’s ‘perceptual realism’ and my own is that Prince uses this concept to argue *against* the relevance of Bazin’s realist ontology, and against the notion of indexicality. My argument is that because the realism of ‘unreal images’ is based on the simulation of an indexical relationship, they are indeed ‘referentially’ realistic – in a Bazinian sense – as well as perceptually realistic. The ‘virtual’ or computer-generated camera, which Prince does not emphasise much in his article, is premised on computer-simulated indexicality.

At the most general level, this perceptual realism is based on a real-time navigable point of view within three-dimensional space, which is fluent enough to be able to simulate a physical ‘camera’, as tangible extension of our own body. In computer games, the technological and aesthetic development towards fully navigable and textured three-dimensional worlds has been a gradual one, from the abstract wireframes and limited range of movement in *Battlezone* (Atari 1980) to the entirely 3D-modelled avatar-based space in *Quake*⁹⁴. In contemporary games, the simulation of perceptually realistic worlds also includes the real-time calculation and rendering of light and shadow, complex textures and reflections, particles like smoke or dust, dynamic surfaces like hair and vegetation, and so on. This process of simulation is not a matter of eye-candy or merely ‘graphics’, but is at the core of a realistic simulation of vicarious embodiment within cinematic and synthetic space. There will always be, as Manovich points out, certain prioritized ‘icons of mimesis’ – water effects, for example – that reflect the uneven (and often inconsistent) attention to cinematic hyperrealism⁹⁵, but the general imperative is to approach as much as possible a perceptually realistic cinematic space.

This imperative also explains why the presence of the simulated camera *lens* is typically emphasised through the simulation of lens flare, which has become a common convention of avatar-based 3D. Also, as noted in chapter 7, the presence of the camera lens is often accentuated – particularly in first-person configurations but not exclusively so – by raindrops, snow, mud or blood hitting its surface (and often partly obscuring the view) in a way that is reminiscent of a documentary camera.

My avatar-centred interpretation of ‘realism’ in games is built on the more general notion of realistic agency, as discussed in chapter 5. The 3D avatar offers not only realistic agency and tangibility, but also realistically *situated* and embodied agency, via the cinematic prosthesis. As noted above, motion (or self-movement), because it is a fundamental capacity of perception, is a defining characteristic of this form of realistic interaction; visual detail and verisimilitude is not merely a matter of looking at, but a matter of moving around, of

⁹⁴ Even if the early classics like *Wolfenstein 3D*, *Doom*, *Star Wars: Dark Forces* (LucasArts 1994) and *Duke Nukem 3D* (3D Realms 1996) established the 3D avatar of the FPS genre, I would argue that it is the year 1996 that really marks the start of the general transition to 3D spaces in the history of computer games. *Quake* was the first FPS to offer a fully mathematically modelled, polygonal 3D space (earlier games had depended on 2D models to give the impression of three-dimensional space), and *Tomb Raider* and *Super Mario 64* established avatar-based 3D outside the (literally) narrow confines of the FPS genre. The latter two, along with *GoldenEye 007*, were also pioneers in developing the conventions of avatar-based 3D for consoles.

⁹⁵ Manovich (Manovich 2001:195).

exploring the nuances of the environment and the autonomy of everything that goes on the simulated world. The more detail, consistency and sophistication in the simulation of (often minute) complex behaviours, the more there is to grasp, to investigate, to test out, and the more nuances are added to the construction and definition of the vicarious body. In this perspective, issues like specular highlights, for example, matter more than their apparently marginal effects could lead us to believe; because they simulate the behaviour of light and surfaces in a perceptually more convincing way, they add another layer of significance to our moving about in gameworld.

Concretised abstraction versus cinematic naturalism

In the context of this ‘avatarial’ perceptual realism, the notion of ‘photorealism’ becomes somewhat ambiguous, as it typically implies not just the mere simulation of photographic indexicality, but also a commitment to cinematic *naturalism*, which attempts to simulate live action cinema⁹⁶. A realistic simulation of cinematic vision does not necessarily imply that the environments, objects and characters that the camera captures are realistic in any way. This is a distinction that applies not only to computer games. *Toy Story* (Lasseter 1995) does not portray anything that could conceivably take place in front of a camera. Dolls and toys are synthetic, and they do not move and talk as organic beings; mutated monsters or invading aliens may well do that for all we know, but not plastic toys. This explicitly *synthetic* quality does not affect the simulation of cinematic indexicality itself, which is secured by the simulation of the cinematic camera. But the synthetic world of *Toy Story* – like clay or puppet animation – would appear less photographically realistic if, for example, the figures did not cast any shadows. In other words, even if the worlds of 3D animation are, as Manovich as well as others have pointed out, ‘synthetic’ and ‘hyperreal’, we may still roughly distinguish between two types hyperrealism: on one hand those worlds that attempt to hide that they are synthetic, trying instead to imitate live action cinema, and on the other hand those that accentuate or exaggerate the synthetic⁹⁷. Both, however, are premised on the realistic simulation of photographic vision.

⁹⁶ A 3D image is generally considered photorealistic to the extent that it resembles the real world – or how the real world could possibly look like – as captured by a camera. Consequently, whereas the characters in *Final Fantasy: The Spirits Within* (Sakaguchi 2001) are referred to as ‘photorealistic’ (naturalistic), the characters in *Toy Story* are not.

⁹⁷ For a discussion of realism and hyperrealism in animation, see Paul Wells (1998). I am indebted to Seth Giddings for this reference.

In avatar-based 3D computer games, the distinction between realistic embodiment and cinematic naturalism – the latter which is a specific variant of the former – has a particular significance in relation to the gameworld that the player inhabits through the situated embodied agency of the avatar. As discussed in chapter 6, computer-simulated environments have the capacity to integrate the explicit rules of the game system through concretising them – making a world of rules into a gameworld, a world of playthings. The perceptual realism of the avatarial camera consolidates and expands this gameworld. On one hand, it creates an opportunity for less abstract and more naturalistic gameworlds, but on the other hand its cinematic indexicality also accommodates – and in a certain respect strengthens – the mechanisms of abstraction in computer games. What realistic embodiment makes possible, in effect, is a new type of ‘sculptural’ abstraction; objects and agents go full size (repressing or hiding the miniature), and we can perceive them and interact with them, from all directions, as solid, tangible and autonomous playthings, but they may yet appear in abstract shapes and behave in strange patterns – like sculptures come to life. This abstract sculptural quality of gameworlds is being accentuated or enhanced with increased perceptual realism, which concretises and solidifies abstract objects and shapes as unreal or hyperreal objects. The world of *Quake*, with its magically ‘floating’ weapons and resources, is more abstract in this sense than the minimalist wireframe world of *Battlezone*.

Super Mario 64, which took Mario’s platforming action adventure into a three-dimensional world, illustrates well the principle of concretised abstraction in games. The surreal Mushroom Kingdom becomes more surreal (and also, I would add, more threatening) when we are able to interact with it from a situated and perceptually realistic point of view. The primary function of this type of sculptural abstraction is to further integrate or concretise the elements that define Mario’s world as a gameworld; like in its 2D variants, the sculptural shapes of the landscape define a platforming world, and scores and resources float above the ground as tangible stars and coins. At the same time, when going from the flat miniature to realistically embodied environments, the game-based artificiality of playthings also becomes more apparent or imposing considered as an artistic abstraction. On the ‘Whomp’s Fortress’ level in *Super Mario 64*, the player must combat walking blocks of asphalt or ‘whomps’, who ‘pave our roads and streets’ without getting, apparently, the gratitude they deserve. Before the boss fight at the top of the fortress, the giant whomp will moan and complain over always

being stepped and stomped at, and declare that he is not going to just lay there and take it anymore⁹⁸.

Super Mario 64, released in 1996, was significant in defining a model for non-naturalistic perceptual realism in gameworlds, translating and solidifying the abstract worlds of its 2D predecessors into a new kind of playground and a new type of embodied fiction. Around the same period of time, *Tomb Raider* and *GoldenEye 007* staked out the alternative path towards cinematic naturalism in avatar-based 3D games, the former re-inventing (in the Indiana Jones mould) the slower and more ‘grownup’ platform-adventure that had been established by *Prince of Persia* (Brøderbund Software 1990). As I have discussed elsewhere (Klevjer 2006b), *GoldenEye 007* re-interpreted the already established FPS formula in the generic image of a James Bond adventure. *Goldeneye 007* abandoned a set of traditionally game-based abstract elements like the floating weapons, arcade-style combat interaction and consistently slow-moving projectiles. Also, in line with the new Hollywood-style fictional universe, maze-based navigational structures and challenges, which used to be a staple of the role-playing and adventure-based ‘dungeon crawlers’, were discarded for a more linear but still mildly explorative structure⁹⁹. *GoldenEye 007* was also notable for translating the FPS genre – for the first time – successfully onto a console platform.

Cinematic naturalism, in gameworlds as in other screen-projected synthetic worlds, is of course a matter of degree, and to a certain extent a matter of interpretation; as suggested by the film adaptation *Doom* (Bartkowiak 2005), for example, weapons may well be suspended in thin air also in a cinematically naturalistic universe¹⁰⁰. The strong emphasis on futuristic, fantastic and technologised environments in many 3D action adventures is a central strategy for integrating realistic agency with the imperatives of the game system, and contributes strongly to the upholding of a fairly consistent cinematic naturalism; compared to natural environments with trees (leaves), grass, dust and naturally open landscapes, technologised environments – a space ship, for example – will much more easily come across as

⁹⁸ The player defeats this boss by stomping on him.

⁹⁹ For a account of the development of the singleplayer FPS aesthetics from *Doom* to *Halo*, including a discussion of the trend towards cinematic ‘explorative linearity’, see my earlier *The Way of the Gun* (Klevjer 2006b).

¹⁰⁰ In the *Doom* film, the BFG is found rotating in thin air, albeit aided by some sort of technologically advanced display device.

cinematically naturalistic even if they may be highly simplistic and ‘abstract’ in appearance and behaviour (– who knows what a cryo sleep chamber *actually* looks like?).

The troublesome paradox of naturalistic game simulations is that the rule of the more general paradox of hyperrealism still applies: with stronger perceptual realism, simulated synthetic worlds will appear more convincingly synthetic. This may not be a problem for cinematic naturalism as long as the advances in the simulation of organic and intentional movement – in bodies, in faces, in vegetation, in crowds – can reasonably keep up with the advances in the simulation of cinematic vision. To use a very obvious example: if the enemies in *Quake*, in the way they move and act, were treated with the sophisticated rendering of light, shadow and texture of contemporary photographic realism, they would appear a lot more believable as synthetic agents, that is, as dolls¹⁰¹. In contemporary games that strive to be at the front of the race towards ever stronger cinematic naturalism, this built-in logic of hyperrealism poses a particular challenge with respect to facial animations, which in many cases have not kept up with the developments in photographic vision. As a result, some games that are apparently at the cutting edge of the development, feature characters who appear more synthetic and lifeless than characters in older games. In certain recent cases, as with, notably, *Peter Jackson’s King Kong* (Ubisoft Montpellier Studios/Ubisoft Montreal Studios 2005), player communities complain that the main characters look unpleasantly uncanny and corpse-like¹⁰².

Functional realism

The third layer of realism in avatar-based 3D gameworlds would be what I have referred to in chapter 5 in terms of Geoff King’s notion of ‘functional realism’ or authenticity, which addresses the realistic functioning of simulations *independently* of the (computer-based) principle of realistic agency. In avatar-based 3D, when functional realism is integrated and compatible with the perceptually realistic world of the avatar, these concerns will have strong

¹⁰¹ The extent to which agents and objects appear synthetic and doll-like or not, particularly in contemporary games, has to do with physics as well as animation. An illustrative example: simulated human agents that implement a so-called ‘ragdoll physics’ to generate impact- and death animations, have a strong tendency to appear as very convincing simulations of (precisely) ragdolls.

¹⁰² From a psychological point of view, part of the problem with respect to ‘hyperreal’ human characters can also be seen as one of a more general kind, which is independent of the relative ‘match’ between perceptual and naturalistic realism: characters generally become corpse-like and uncanny when they appear *almost* completely like humans. This is commonly referred to as the ‘uncanny valley’-principle, as formulated by Japanese roboticist Doctor Masahiro Mori. The uncanny valley, as explained by David Bryant, “—represents the point at which a person observing the creature or object in question sees something that is nearly human, but just enough off-kilter to seem eerie or disquieting”. (Bryant 2006). In this context, what my own argument implies is that the uncanny valley effect increases when the discrepancy between cinematic naturalism and cinematic perceptual realism increases.

impact on what kind of body the player is given and on what kind of play the world of the avatar affords – in terms of what kinds of physical capacities are available to the player, as well what mechanisms, principles and tactics of problem-solving define the space of possibility in the gameworld.

Secondly – although admittedly the exception rather than the rule in avatar-based games – functional realism may also be implemented by *not* integrating its demands with any kind of realistic embodiment. A good example of this variant would be the tactical-military ‘realism’ that is heeded (and duly marketed) in *Full Spectrum Warrior*. In his analysis, King points out that functional realism may not be compatible with what he refers to as ‘graphical realism’: enemies who are clearly visible as being exposed to fire are yet being defined by the game (through abstract means) as being, by definition, under full cover and hence cannot take any damage from the avatar’s current position (King 2005). The dynamics of combat that result from this abstract articulation of key elements of the game space is (in all likelihood, we must assume) more functionally realistic than the dynamics of combat in a First Person Shooter; it forces the player to employ tactics that are presumably more similar to the tactics that actual soldiers in combat use. In ‘mapping’ this dimension of authenticity onto the gameworld, the game design chooses to suspend or ‘bypass’, as it were, the world that the subjective avatar projects around itself. Through implementing a general type of game mechanics that is borrowed from the strategy game genre, *Full Spectrum Warrior* de-emphasises, or undermines, realistic embodiment, and plays up the attraction of functional (militaristic) realism.

Whether integrated with the realism of embodiment or not, the degree to which the design of a computer game is committed to some aspect of functional realism is generally a very strong generic marker. In the FPS genre, the role of functional realism has been conventionalised, and also to a certain extent institutionalised, through the establishing of the sub-genre of the ‘tactical’ or ‘squad-based’ militaristic FPS. In this sub-genre, many of the typical elements of the standard action adventure variant of the FPS are played down or almost entirely rejected, in favour of a more cautious, disciplined and quasi-professionalised style of simulated warfare and combat. See Klevjer (2006b) for a more detailed analysis of the relationship between these two variants of the FPS genre.

The paradigm of Virtual Reality

So far, I have emphasised how the basic principles of embodiment and realism in avatar-based 3D are different from other forms of ‘immediacy’ or realism in digital media. This does not mean, however, that new media theory does not pay attention to corporealized (and playable) immersive embodiment in simulated environments, or that it does not pay attention to realistic embodiment in simulated worlds – quite the contrary. In addition to the hypermedia model and Manovich’ cinematic ‘interfaces’, there is also a strong third paradigm, namely the ultimate transparency and ‘immediacy’ of Virtual Reality. This paradigm is in some ways closer to the principle of the avatar, but yet in another way it also articulates a desire for something entirely different.

VR can be thought of as a particular type of experimental medium, which uses Head Mounted Displays or other types of 360 degrees visual projections in combination with motion-tracking technologies (body sensors, data gloves, body suits, cameras) to give users the experience of being fully immersed and present in a computer-simulated environment. The promises of this medium have been described by pioneers and cyber-visionaries like Jaron Lanier (1989) and Howard Rheingold (1991), figures who have also contributed to the establishing of VR as a utopian (or dystopian) mythology of modern culture¹⁰³. At the same time, Virtual Reality is also seen as a productive metaphor or paradigm for thinking about mediation, interaction and immersion in digital media. In Bolter and Grusin’s *Remediation*, VR serves as the ultimate model for ‘immediacy’. In Janet Murray’s account of narrative in digital media, the *Star Trek*’s ‘Holodeck’ represents the (utopian) model of immersion against which other forms and principles of participation is being discussed. In Brenda Laurel’s *Computers as Theatre* (1993), VR is the ideal model for intuitive and dramatically structured human-computer interaction.

In the more narrowly VR-centred literature, which is typically more empirically and psychologically oriented, the central focus point is the notion of *presence*. This notion draws attention to a similar kind of invisibility or ‘immediacy’ that Bolter and Grusin emphasises, or, as Matthew Lombard and Theresa Ditton (1997) defines it, to the “perceptual illusion of nonmediation”. This type of VR-research aims to identify and analyse the different elements

¹⁰³ Other central publications on the technological, cultural and philosophical aspects of VR are Teixeira and Pimentel (1993), Heim (1998), Zhai (1998), and Grau (2003).

and factors that contribute to the user's sense of presence, considering systematically the range, fidelity and richness of sensory input as well as forms and degrees of interactivity, and testing out how the different factors impact on users' responses¹⁰⁴.

While VR-specific research may be useful also to computer game research in a number of ways, the strong focus on *degrees* of immediacy or 'presence' is of limited relevance to my study of avatar-based games as a generic form of interaction and fiction. More generally, I would argue that any unified concept for 'measuring' levels of engagement, according to which one could add together and weigh the impact of individual 'criteria' or factors, is problematic. Looking for 'presence' will too easily conflate or harmonise the different motivations for and modalities of participation into one common denominator, one single and rather vague 'substratum' that measures involvement. Does *Myst*, for example, produce more 'presence' than *Super Mario 64*?

Also, part of the reason why the emphasis on the sheer 'being there' is rather limiting for my purposes, is that it does not consider the dimension of fictionality. 'Presence' is a concept that draws attention to immediacy itself, not to immediacy *to whom*, and for what reason. This is a central difference between VR research and Marie-Laure Ryan's *Narrative as Virtual Reality*. Ryan, whose analysis of fictional embodiment has significantly influenced the theoretical basis of my own analysis, as discussed in chapters 2 and 3, uses 'Virtual Reality' not only as a metaphor of fictionality in a general sense, but also as the central model for what she refers to as 'total art', or 'participatory interactivity', which unifies the seemingly incompatible principles of immersion and interactivity. Whether future VR installations will in fact produce anything satisfying in any of those two respects or not, she argues, "...we can still use the idea of VR as a metaphor for the fullest artistic experience, since in the Platonic realm of ideas VR scores a double 10" (Ryan 2001:20). Inspired in part by Merleau-Ponty's phenomenology of the body, and also in some ways echoing Torben Grodal's uncompromising 'life'-analogy as discussed in chapter 3, Ryan uses VR to highlight the difference between hypermedia and the embodied nature of participation in VR as well as in 'RL' (Real Life):

¹⁰⁴ Central discussions on the relationship between presence and interactivity are Steuer (1992), Sheridan (1992), and Fencott (1999). For a discussion of the notion of presence as applied to 3D computer games, see McMahan (2003).

The main difference between VR and RL, on one hand, and textual environments, on the other, is the semiotic nature of interactivity. In a textual environment the user deals with signs, both as tools (the words or icons to click on) and as the target of the action (the text brought to the screen as the result of clicking), but in RL and VR all action passes through the body (Ryan 2001:284).

With reference to James Gibson's 'ecological' approach, Ryan emphasises the unique capacity of VR to situate the user as an embodied organism that inhabits an environment. The 'VR ecology', she argues '...turns space into data that literally flow out of the body' (Ryan 2001:71). Her description of embodied participation in VR environments could also apply to screen-projected avatar-based environments as we find them in computer games.

In the virtual environment, as in certain shamanistic rituals described by Mircea Eliade, the body stands at the centre of the world, and the world irradiates from it. The 'lag' that separates the user's movements from the updating of the display in today's imperfect VR systems should act as a reminder of the productive implication of the body in the phenomenal world. Through this generation of space in response to the movements of the body, VR technology offers a dramatization of phenomenological doctrine. (Ryan 2001:72).

Ryan's phenomenological interpretation demonstrates how VR as a phenomenon and as an ideal model can also throw light on avatar-based worlds, which do indeed 'irradiate' from the real-time and 'lag-free' embodiment of the avatar.

Still, however, Manovich is correct in assuming that the 'interface' of *Quake* or *Tomb Raider* is based on a different artistic and perceptual ideal than immersive VR. With respect to computer games and similar media forms, the paradigm of Virtual Reality needs to be distinguished from the paradigm of avatarial interaction.

Virtual Reality versus the avatar

The avatar and VR play on similar cultural attractions; both appeal to the desires of paradoxical immediacy and hyperreality, and both provide the participant with an alternative embodiment that is perceptually encapsulating. However, the alternative embodiment of VR, even if relying on similar mechanisms of prosthetic incorporation, is committed to a principle of natural embodiment rather than vicarious embodiment. The ideal VR embodiment, as expressed through the technologies and conventions of concrete VR installations, demands, as much as possible, *immediate* and *continuous* extensions of the body-subject.

In other words: merely pressing buttons with your fingertips will not do – no matter how second nature it may eventually may become, or to what extent these minute movements may be able to transform your perceptual self; what matters is the transformation of your natural, pre-established sense of embodiment. Consequently, VR installations strive for an invisible and continuous hardware interface: head-mounted displays or cave projections for visual and auditory perception, and various types of motion tracking interfaces for interaction. Anything less than total immersion is a compromise, a step on the way. This ideal differs from the imperative of avatar-based interaction in four central respects:

VR depends on *continuous* physical interaction; the body is the interface. Avatarial interfaces, in contrast, are typically non-continuous or arbitrary. Avatar-based interaction may also accommodate continuous interfaces, but these must be integrated or ‘filtered’ by the screen-projected vicarious body of the avatar. The dominant type of game interface, in stark contrast to the ‘body-interface’ of VR, mediates action only through the players’ hands (or more narrowly even: through the players’ fingertips), eyes and ears. The rest of the body’s actions are ignored as irrelevant – as phenomenologically non-existent, cut loose from the perceptual loop that secures the disciplining of the player under the avatar. From the point of view of the ‘fullest artistic experience’ of VR, this must seem like a harsh compromise, yet it is quite the contrary: the fingertip interface is not a compromise, but an attempt to optimise precision, consistency, range and diversity of fictional embodiment within the simulated world of the game. The idea is to make the player able to act fluently and intuitively via the prosthetic extension of the alternative body – as in VR – but *without* the physical body actually having to perform or in any way mimic the actions of the vicarious body. The fingertip interface is optimised for task-oriented and sustained embodiment; unlike the typical VR installation, high-investment computer game worlds seek to capture the player for days and weeks (or months), many of them structured in a way that encourages day-long continuous sessions.

In the ideal dream of VR, continuous interfaces and continuous physical interaction is an end in itself. Continuous interface is the guarantor of an immediate and instantly convincing experience. Embodiment is not something that is supposed to be produced through incorporation and disciplining, but it must be already complete and ‘full’ from the moment you enter virtual reality. In artistic installations, this dream or popular paradigm of Virtual Reality is typically transformed or subverted in various ways, but this dimension of alienation

is then a goal in itself; it is not to be overcome and done with as a means to get on with the tasks at hand¹⁰⁵. On the other hand, there is also of course a sense in which, in computer games, playing through avatars is also playing *with* avatars – some games are more self-conscious about vicarious embodiment than others – and in this respect there are contact points and overlaps between avatar-based play and artistic VR.

Secondly, whereas the avatar encapsulates the player merely in a perceptual sense, mediated through an absolute ‘disciplining’ that is channelled through the hardware interface (screen, speakers, controllers, force-feedback), VR always aims for total 360 degrees *sensory* immersion; a framed virtual ‘window’ will not do. Screen-projected visuals cannot accommodate natural perceptual interaction (looking and moving around, turning), and, most importantly, a framed projection plane also represents a vicarious body, namely the camera. In VR, the camera must disappear, and so must cinematic space. Like cinematic realism, VR also strives for maximum visual fidelity and granularity – both in terms of textures and movements and in terms of the overall resolution of the display itself – but the body that produces the hyperreal cannot be a camera; it must be a direct and invisible continuation of the physical body itself. The imperative of sensory immersion also implies, moreover, that the simulation of *touch*, as implemented through various haptic interface technologies, must be as differentiated and as broad in scope as possible. When playing through a standard computer game interface, in contrast, the exposed body of the avatar is funnelled into – or ‘passes through’, in Ryan’s words, the electro-umbilical hookup that connects to the player’s hands and fingers. In sensory immersive VR, without this mediation of an avatar, unspecified vibrations at your fingertips (one rumble fits all) would disrupt the sense of embodiment rather than confirm it.

Thirdly, rejecting the projection plane requires a *stereoscopic* visual interface, which attempts to simulate the depth effect that is produced by our natural (stereo) vision. Without

¹⁰⁵ Classical examples of total sensory ‘estrangement’, as it were, would be Char Davies’ *Ephémère* (1998) and *Osmose* (1995), which require the participant to come to grips with an initially awkward combination of movement, breath and balance (via Head Mounted Display and a motion-tracking vest) in order to navigate the translucent and largely abstract simulated environments.

stereoscopic vision, the associations of the monocular kino-eye would challenge and disturb the bid for natural embodiment¹⁰⁶.

Finally: VR is first-person point of view, by definition. Direct embodiment implies also a direct objective presence in simulated space; there is no compromise with an extended avatar which would be indirectly attached to our subjective body-subject like a semi-remote vehicle. If your point of view is detached from your body – or worse: if it starts moving around, unpredictably, on its own accord – the integrity of alternative embodiment is lost.

My argument is not that the four imperatives above will be manifested directly in any given VR installation; what I am describing is general paradigm that drives the medium of VR, but which may also be – like all dominant languages and imperatives – critically explored and subverted in artistic practices. In any case, VR installations cannot fulfil the dream of the Holodeck; they need to compromise drastically, and in this sense there will always be a ‘vicarious’ dimension of mediated, filtered or imperfect continuous embodiment. At the same time, avatar-based computer games do also, to different degrees, articulate ideals that are reminiscent of the dream of VR, as I will return to below. Also, as noted in the previous chapter, certain types of contemporary (and upcoming) console game interfaces bypass – entirely or in part – the principle of the avatar, in a bet to offer other kinds of experiences, and we may imagine that one possible direction for such strategies would be to follow the route of installation-based VR.

Nevertheless, I argue that the ideal of Virtual Reality is generally at odds with the ideal of avatar-based play. The strong dominance of the VR paradigm in new media theory is partly to blame for why the avatar is overlooked other than either as a ‘playable character’ or as a functional mediator of agency. Marie-Laure Ryan’s reference to action that is ‘passing through the body’ means action that is bypassing the avatar. From this perspective, avatars become merely a necessary restriction, a temporary hurdle on the way to a sensation of ‘direct encounter with reality’ (Ryan 2001:284). In the ‘fullest’ artistic experience of VR, concretised forms of incarnated embodiment must disappear along with the medium. Consequently, in her discussion of computer games, Ryan pays very little attention to the role of avatars. She does

¹⁰⁶ My point here is not that cinematic vision can never be stereoscopic (because it can be, in certain ‘spectacular’ instances like Imax etc), but that stereoscopic imagery is not, by habit, associated with cinematic vision.

address the mediation of the ‘character’ that the player controls, but only, as noted in chapter 3, in its purely instrumental function, of which the cursor would be the ‘minimal form’¹⁰⁷.

It also seems that the strong emphasis on the VR-model for alternative embodiment, at the expense of the game-based alternative, is rooted in an over-emphasis on the idea of sensory encapsulation, and an under-appreciation of perceptual encapsulation. The assumption seems to be that continuous interfaces and sensory immersion is a premise for allowing the body-subject to be entirely captured by – and to act intuitively within – synthetically simulated environments.

The 3D avatar is not the poor man’s VR. The paradigm of avatar-based interaction has emerged as a mechanism of play, of learning and of mastery – as a way to embody not just any kind of world but a gameworld, which lays out for the player a job to be done, a challenge to be taken. In this context, vicarious embodiment and non-continuous fingertip-interfaces secure a certain kind of high-investment and sustained engagement with virtual worlds that VR installations could never provide, as their continuous interfaces imply that we become much more limited by the capacities of our own bodies. So at least in games, then, the Platonic ideal of VR definitely does not score a double 10. However, there is also a case to be made for the avatar from a more general and artistic point of view; vicarious embodiment is not just immensely cheaper, but it is also dramatically more flexible, opening up a possibility-space towards which there is limited freedom to explore in the commercial games market. In contrast to VR, the whole idea is to produce as much imaginative corporeality as possible via incremental but yet precise and flexible inputs. In this sense, avatars give you more embodiment for your bucks.

Panoramic versus vehicular vision

Unlike the dream of VR, avatar-based 3D is explicitly vicarious, it exploits the perceptual incorporation of non-continuous interfaces, and it gives more flexibility with respect to how alternative embodiment is configured and how you can play with it. In the following, I will look more closely at what we might call the corporeality of the avatarial camera, which distinguishes avatar-based play from VR-play in three-dimensional virtual environments.

¹⁰⁷ “In third-person games, such as the Mario Brothers games for the Nintendo Play Stations, the user controls a tiny graphic of his character. The minimal form of this representation is the abstract shape of the cursor.” (Ryan 2001:309).

As I have shown in chapter 7, there are many types of ‘cameras’ in games, and many ways of navigating them, from the scrolling frame of view in *Super Mario Bros* or the grid-based ‘wipe’ in *The Legend of Zelda* to the fully integrated subjective cameras in First Person Shooters. The former two can be said to have ‘cinematic’ vision only in an extended or metaphorical sense, as a mere frame of view does not necessarily simulate photographic indexicality. What I want to suggest in the following, is that we may distinguish between two main types of navigable vision in avatar-based games, which can be seen as emerging from two distinct traditions of the visual representation of space – different traditions of ‘mobile windows’, in Friedberg’s terminology.

In “Imaging Gameplay – The Design and Construction of Spatial Worlds” (2005), Bernadette Flynn distinguishes between panoramic space, isometric space and ‘3D space’ in computer games. She places the scrolling frame of view of *Defender* or *Super Mario Bros* into the historical lineage of traditional Japanese and Chinese scroll paintings. She also emphasises, like Friedberg in her analysis of the mobile frame of view in cinema, the continuity from the western panoramic tradition from the late 18th century, drawing attention to the invention of the immobile panoramic spectator through the cylindrical and rotating panoramas or ‘dioramas’ that was introduced by Daguerre in 1822:¹⁰⁸

The rolling panoramas moving past the immobile viewer marked a separation between the body and the eye. Critical here is a shift in emphasis to the eye away from the physical movement or performative actions of the viewer. (Flynn 2005:6).

In Flynn’s account, whereas isometric perspective (as typically found in strategy games as well as in *The Sims*) represents a similar conception of navigation and a similar conception of space as the two-dimensional ‘panoramic’ perspective, 3D space, rooted in the Cartesian space of renaissance perspective, introduces a new and ‘empty’ visual conception of space. In computer games, this type of space exaggerates the discrepancy between the immobile spectator and the (sometimes extreme) mobility of the playable body that is offered by the game.

¹⁰⁸ Flynn does not specify in her brief article which particular kinds of ‘moving panoramas’ or ‘rolling panoramas’ she refers to, but we must assume that she mainly refers to the diorama as invented by Daguerre and similar devices that followed in the pre-cinematic period. For a description of Daguerre’s *Diorama*, and how it differed from earlier circular panoramas, see Friedberg (1993:25-29).

Framed by the visual logic behind linear perspective of a receding interior and a defining horizon line the player enters space as a penetration into the frame. Exaggerated depth perspective emphasises the interior as a type of frontier. The structuring of 3D presupposes a fixed point of view from an immobile onlooker. In *Splinter Cell* this is oddly reversed with the player operating as a highly mobile physically articulate body. (Flynn 2005:12).

We see that whereas Friedberg's analysis above sees the cinematic camera in a direct lineage from the 'panoramic gaze' of the early panoramas and dioramas, Flynn's game-centred analysis makes a central distinction between the panoramic tradition and the 'penetrating' logic of the camera games like *Splinter Cell* (Ubisoft Montreal Studios 2002); both types of navigable space are premised on the immobility of the 'traveller', but the former is not associated with the look of the renaissance linear perspective. In line with my analysis of the avatarial point of view in chapter 7, I agree with Flynn that this is an important distinction to make. At the same time, however, I would argue that the navigable camera of avatar-based 3D has its own distinct lineage of visual mobility, namely the tradition of the *motion ride*. The motion ride tradition emerges from the same pre-cinematic tradition of spectacular 'gazes' that Friedberg and Flynn refers to, but emphasises the movement along the depth axis rather than lateral movement across scrolling panoramas.

Unlike moving panoramas, the motion ride is a cinematic form; it depends on the cinematic apparatus to create the perception of being transported forward through space at high speed. The paradigmatic form for this type of 'virtual mobility' in the history of cinema is the so-called 'Phantom Ride' film that is known from England as far back as 1898, and which enjoyed great popularity during the first decade of the 20th century. Phantom Rides were filmed from the front of a speeding train, and then projected for the audience as a re-creation of the sensation of the ride¹⁰⁹. A subsequent and more elaborate version of this type of motion ride were the 'Hale's Tours' in USA, based on an imaginative invention by Georg Hale and Fred Gifford from 1904, and launched as a commercial installation in 1905. Like the earlier cinematic spectacles that were shown at the 1900 Paris exposition – the Cinéorama and the Maréorama – Hale's Tours combined cinematic projection with a physical re-construction of the vehicle itself. Patented as the 'Pleasure Railway', Hale and Gifford's invention placed the audience on board a stationary but rocking railway car, in front of a projected 'phantom' film

¹⁰⁹ See Raymond Fielding (1983:119).

that had been photographed from the front of a train or a trolley. A moving belt beneath the car simulated the sound of passing along the railroad tracks. Raymond Fielding explains:

Except for the lack of color, the illusion was quite convincing; all the more so because of the way in which the moving image of the tracks slipped away under the forward edge of the coach. According to a trade paper account, the illusion was so good that when trolley rides through the cities were shown, members of the audience frequently yelled at pedestrians to get out of the way or be run down. (Fielding 1983:123-124).

In today's entertainment industry, the 'motion simulator' (or 'motion ride') capsule follows the same basic principle as Hale's Tours, although in a technologically more sophisticated form, and relying on computer-generated 3D graphics rather than live action film. The contemporary motion simulator capsule, like Hale's train cars, simulate high-speed rides rather than panoramic strolls. Hydraulically controlled movements of either the seats, the floor or the whole capsule are synchronised to the images of the 3D high-speed ride film that is projected in front of the passengers. As Erkki Huhtamo observes in his analysis of this phenomenon, the motion simulator may serve as the ultimate model for a range of similar attractions – the rollercoaster, the theme park ride, the Imax 'ride' film – that all seek to encapsulate the body and set it in motion. At the same time, however, Huhtamo ascribes the *physicality* of the experience to the mechanical movements of the capsule or seats rather than to the qualities of the cinematic image itself:

Besides the customary cinematic effect of the dematerialization of the body, the physicality of the body is emphasized. This is mainly the effect of the moving seats. The synchronized movement of the seats is actually a *physical* extension of the virtual movement of the screen, adding to it a material—even a tactile—dimension. The essence of the motion simulator is based on this double operation, which merges sheer physical vertigo and virtual voyaging. (Huhtamo 1995:172).

While Huhtamo here rightly points out that 'the physicality of the body is emphasised', I think that he overplays the significance of mechanical movement to the simulation of motion. The main element in the simulation of motion, as Bernadette Flynn also points out, is "the separation between the body and the eye", that is: the *simulation* of a moving body via projected moving images. As noted above, this simulation is radically weaker and much more ambiguous in traditional narrative cinema, in which we could say that embodiment is, in a certain sense, 'dematerialised' through the omniscient and de-corporealizing effects of film

editing, according to which the ‘kino-eye’ can cut freely through time and space¹¹⁰. In motion rides, in contrast, there is no escape from the vertiginous corporeality of the camera-body. When there are also mechanically induced movements – which are, of course, not simulated but actual movements – these consolidate and strengthen the basic simulation of the moving camera. If we compare with standard computer game hardware interfaces, as discussed in chapter 7, the hydraulic movements of the motion simulator can be seen as a hugely expanded variant of gamepad force-feedback or ‘rumble’.

In more technical terms, the effect created by the cinematic language of the motion ride is *vection*: the visually induced perception of self-motion. Whereas panoramic (or isometric) screen-projected space is based on rotational (or circular)vection, the 3D space of the motion ride is based on translational (or linear)vection – self-motion along the depth axis of the image¹¹¹. Translationalvection, moreover, is less dependent on sensorial immersion, and gives a stronger sensation of physical motion than rotationalvection; it takes the spectator for a ride¹¹². The cinematic ‘eye’ of motion rides and avatar-based 3D is, I will suggest, neither ‘dematerialized’ nor ‘panoramic’, but *vehicular*; its archetypical model is the camera that is mounted on a speeding train¹¹³. According to a vehicular visual regime, the participant is encapsulated and captured by visually simulated self-motion, and this perception is strengthened by the fact that the vehicle itself (the train, the racing car, the helicopter) is always visible as framing the field of view¹¹⁴. The player of *Quake* or *Splinter Cell*, according to this logic of visual spatiality, like Hale and Gifford’s audience, is trapped and seated.

The particular significance of vehicular corporeality within the overall aesthetic of a game is a matter of genre. Whereas racing games – particularly arcade-style racing games like *Burnout* (Criterion 2001) – are all about the speed and the power of the vehicle, action adventures like

¹¹⁰ It should be added here, however, that the phenomenological approach that is advocated by Casebier (1991) and Sobchack (1992) does not accept the notion of the ‘dematerialized’ embodiment that Huhtamo here refers to.

¹¹¹ For explanation of the concept ofvection, see Prothero (1998). Prothero’s study is mainly concerned with the relationship betweenvection and motion sickness or ‘simulator sickness’ in simulated 3D environments.

¹¹² David Bordwell (1977) considers the phenomenon of self-movement in cinema. For a discussion of translational versus circularvection induced by 3D images, see Mohler, Thompson, Riecke and Bülthoff (2005).

¹¹³ The principle ofvection also implies that Huhtamo, in my view, overstates the difference between motion simulator capsules and the ride films of the *Cinerama* in the 50s or in contemporary *Imax* cinemas; these kinds of ‘movie rides’ also induce in the viewer the experience of being on board a vehicle or some kind of enormous ship that moves through space.

¹¹⁴ In their recent study “Measuringvection in a Large Screen Virtual Environment” (2005), Mohler et al., based on their empirical findings, suggest that the inclusion of a static referential frame will indeed strengthen and enhance translationalvection, whereas its presence or absence produced no apparent differences in reported circularvection.

ICO or *Prince of Persia: Sands of Time* (2003) emphasise panoramic (including full circular) movements as much as vehicular ‘travelling shots’ along the depth axis. A large group of action adventures, from *Super Mario 64* or *Jet Force Gemini* to the more recent *Beyond Good & Evil* or *Lego Star Wars*, have special sections along the way that are dedicated to racing action. This strategy is particularly common in contemporary platform- or ‘multi-adventure’ games like the *Ratchet and Clank* series (Insomniac 2002) or the *Sly Cooper* series (Sucker Punch 2002) – a genre that almost without exception makes sure to exploit the possibility for vehicular thrills that follow with avatar-based 3D.

Vehicular vision in avatar-based 3D is also consolidated by the way in which activities on the fictional screen are often allowed to structure and dominate the gameworld. Various types of information overlays and interfaces like health and weapons indicators, quick menus, maps and surveillance data allow the player to access and configure the avatar’s functionalities during play, provide continuous instructions or hints on tasks and missions, and generally keep track of the state of the gameworld. As noted in chapter 7, drawing attention to the fictional screen as a structured surface does not conflict with the constitution of a fictional world as a whole. Instead, onscreen interaction contributes to the articulation of an information-dependent and machinic avatar, who’s ‘inner life’, as it were, is accessible and configurable through a data interface.

Negative agency

The vehicular immobilisation of the motion ride is not essentially different from the immobilisation or the ‘entrapment’ that is implied by any perspectival image. When we look at a portrait in a gallery, for example, our body will always remain fixed in relation to the projected space of the painting; we may move around in the room, but the person on the portrait will always look straight at us; we move, yet we do not move. With a screen-projected moving point of view, the basic relationship is exactly the same, only reversed. As Friedberg says, we are immobilised, yet we move. Or more precisely: we *are being* moved, just like we are being ‘locked down’ by a perspectival portrait. This implies that, with the fast forward movements of the motion ride, the sense of *agency* that follows with the constitution of a vicarious (self-moving) body-subject is being unavoidably addressed. The experience of being ‘taken’ for a ride implies agency in a very immediate but also negative sense: we *should* be able to move, but cannot. Hence, embodied agency is not the result of any actual response or impact from our actions (it is not, as it were, a matter of ‘interactivity’ or ‘dramatic

agency'), but it follows from the forceful visual re-positioning of our perceptions. Via the simulation of self-motion in relation to an environment, an alternate body-subject is forced upon us, in a similar manner as when we are taken for a ride in some kind of vehicle. Mark Seltzer writes:

“The Railway, like the elevator, or like (in its recreational form) the Ferris wheel, puts still stilled bodies in motion. What these mobile technologies make possible, in different forms, are the thrill and panic of agency at once extended and suspended”. Seltzer (1992), quoted in Huhtamo (1995).

It is this ‘suspension’ of a forced sense of agency, this vehicular entrapment, that is being simulated by the mobile cinematic camera and which is re-appropriated by the 3D avatar – but which is excluded from or downplayed by the panoramic visuality of scrolling 2D game spaces and isometric game spaces. On the other hand, a game like *Lego Star Wars*, as argued in chapter 7, even if projecting a three-dimensional game space, does not really emphasise much the functioning of the 3D avatar. This illustrates not only that there are gradual transitions between the panoramic and the vehicular, but also that there are built-in tradeoffs, ambiguities and tensions in the visual construction of space in avatar-based games. From a cultural point of view, as Flynn points out, there is a strong tendency that the ‘vehicular’ types of games are more popular in the Western markets, whereas the Japanese market is much more strongly rooted in the panoramic tradition. Typically, First Person Shooters, with their aggressively ‘penetrating’ and fast-forward tunnel vision, are not much enjoyed among Japanese players.

The accentuated yet repressed agency of the motion ride must be distinguished from the notion of the cinematic ‘ride’ more generally, which points to the increased use of the travelling point of view that follows with the ‘virtual’ or computer-simulated camera, either in 3D animation film or in the hybrid spaces of CGI-enhanced live action film¹¹⁵. Another important factor in the development towards an ever more dynamic or ‘liberated’ camera has

¹¹⁵ A number of theorists have discussed the aesthetic and cultural significance of the travelling camera in film and television, including the relationship between mainstream film and the spectacular ‘ride film’ tradition. See King (2000), Bukatman (2003), and Balides (2003). Margaret Morse (1998) discusses the role of the travel shot in television graphics. Some film theorists also argue there has been a recent shift in Hollywood cinema (or a return) towards aesthetic forms that more resemble the ‘Cinema of Attractions’ of early film, as this has been described by Gunning (1990). Andrew Darley (2000) argues that new spectacle cinema represents a shift away from prior modes of spectator experience based on an interpretive model towards a stronger emphasis on the intensities of direct sensual stimulation.

been the ‘Steadicam’ technology. Stanley Kubrick’s *The Shining* (1980) is a notable example of how the Steadicam makes an impact on cinematography¹¹⁶. However, in terms of fictional participation, cinematic travelling shots or ‘fly-throughs’ do not necessarily imply a *subjective* camera. The motion ride tradition, in contrast, is rooted in the idea of the subjective camera; the spectator is given a subject-position also in a fictional sense, a definite location and a manifested body within the projected space – a particular *corporeality* rather than just a sense of embodiment. The motion ride camera-vehicle is given an objective presence within the space that it traverses; unlike the typically non-determinate travelling cameras of conventional fiction film (including the contemporary digitalised Hollywood spectacle), it cannot fly or drive through windows, for example, and it needs to relate to the laws of physics in some way, as these are generally perceived by the spectator. This objective subject-positioning and corporeality implies that the negative or ‘repressed’ agency that is being addressed is also explicitly articulated as *fictional* agency; our fictional self is trapped in a vehicle.

In terms of fictional re-positioning and negative agency, motion simulators and avatar-based 3D games share a common relationship to the subjective camera that we know from narrative film. One particular example that has inspired several ‘avatarial’ adaptations is the documentary-style and blood-stained subjective camera lens that figures in the opening scenes of *Saving Private Ryan* (Spielberg 1998)¹¹⁷. Another notable example of ‘cross-media avatarhood’ – although in the reverse direction – is Gus Van Sant’s chase cam sequences in *Elephant* (2003); the long and unbroken over-the-shoulder subjective shots are strikingly similar to avatarial cameras as we know them from computer games. Indeed the opening drunk-driving scene could have been taken almost directly out of *Grand Theft Auto III* (DMA Design 2001), not just in the way the camera relates to the car, but also in the way the car behaves and the sound of the engine. *Elephant*’s artistic re-interpretation of the dual-locus 3D avatar is a central element in the film’s stylistic repertoire, and it establishes a sense of space and location that has similarities with the worlds of computer games.

¹¹⁶ For an historical account of the use of the Steadicam in cinema, and how it has impacted on film aesthetics, see Serena Ferrara (2000).

¹¹⁷ The Omaha beach landing scene was directly re-created in *Medal of Honor: Allied Assault* (2002), which is also a strong inspiration for the Stalingrad level of *Call of Duty* (Infinity Ward 2003). A cartoonish spoof version of the Omaha beach landing scene can be seen (or played through) in *Conker’s Bad Fur Day* (Rare 2001).

Vertiginous machines

How should we interpret the role of vehicular corporeality in avatar-based 3D? As noted above, this would depend on the overall significance of the avatarial camera, which is a matter of genre, but it also depend on how we choose to interpret the negative agency or entrapment that is implied by the mobile camera. To the extent that we give priority to this aspect of the player-avatar relationship, avatar-based 3D (and the first-person variant in particular) becomes primarily a matter of machinic and *vertiginous* pleasure. In his analysis of the central forms of play in culture, as I have referred in previous chapters, Roger Caillois gives an interesting description of what he sees as an essentially pre-modern and highly un-civilised generic mix of vertiginous and mimetic play:

Games involving glass, special effects, and ghosts all lead to the same result – the creation of a fictional world in desired contrast with the ordinary life that is dominated by the conventional species and from which demons have been banished. The disconcerting reflections that multiply and distort the shape of one’s body, the hybrid fauna, legendary monsters, nightmarish detectives, the grafts of an accursed surgery, the sickly horror of embryonic gropings, larvae, vampires, automatons, and Martians (for everything that is strange or disturbing is of use here), supplement on another level the wholly physical thrill by which the vertiginous machines momentarily distorts one’s sensory stability. (Caillois 2001[1961]:135).

Caillois here draws a link between vertiginous vehicles and a particular type of pre-modern fictional world, based on his more general thesis that the combination of ‘mimicry’ and ‘vertigo’ represents in modern society a residue of primitive and ritualistic practices that have been expelled by the civilising process. As I have discussed at more length elsewhere (Klevjer 2003, 2006a), this association between sensorially spectacular entertainment and the primitive and the *grotesque* finds broader support in psychology and anthropology as well as in literary and film theory. Due in large part to the influences of Edmund Freud and Mikhail Bakhtin, bodily and sensory vulgarity and excess has come to be associated, in one way or another, with the forces of the pre-modern, the medieval or with the bourgeois unconscious. However, this association is usually made without – or even explicitly in opposition to – Caillois negative normative evaluation of “everything that is strange or disturbing”.

The vehicular tradition of cinematic vision in avatar-based games also calls attention to the notion of the *cyborg*, which has been widely employed as a theoretical model in the analysis

of computer game interaction. Martti Lahti argues that the player-avatar relationship in 3D action-based games constructs a ‘hybrid condition resonant with the cyborg’ (Lahti 2003:164). Inspired by, among others, Huhtamo’s analysis of the ‘encapsulation’ of the motion simulator, he highlights the significance of ‘surrogate’ and machinic corporeality in computer games.

Indeed, I will argue that video games epitomize a new cyborgian relationship with entertainment technologies, linking our everyday social space and computer technologies to virtual spaces and futuristic technologies (...) Games—in particular fighting, shooting, and racing games—are a symptomatic site of a confusion or a transgression of boundaries between the body and technology that characterizes contemporary culture. (Lahti 2003:158).

This avatar-based notion of the cyborg is distinctly different from Ted Friedman’s notion of cyborgian consciousness, which addresses the cybernetic feedback loop between the player and the game system. For Lahti, it is the corporeality of the avatar that is at the heart of the ‘cyborgian’ feedback loop, not the systemic operations and imperatives of game structure. This is an important correction to Friedman’s ‘demystifying’ approach, and it draws attention to the vertiginous pleasures that follow specifically with the prosthetic camera. On the other hand, I would also argue that there is a built-in ambiguity in avatar-based play with respect to how it articulates our relationship to technology, and which the notion of the cyborg may lead us to overlook. Because avatars mediate a *vicarious* corporeality on behalf of the player, they may serve to confirm the boundary between self and technology (and between self and environment) as much as they transgress it. While the relationship between the player and the body of the avatar may be seen as a corporealization of a technologically augmented self, this alternative body-subject does not necessarily facilitate a ‘meeting of minds’ between the player and the computer. The vehicular avatar, even when explicitly technologised as a futuristic or fantastic machine-body of some sort, gets in-between the player and the cybernetic machine, as a replacement for rather than as a manifestation of cyborg consciousness. For the same reason, the idea I have been advocating that certain types of computer game avatars embody a kind of primitivistic or grotesque sensibility of play requires more critical scrutiny; the world of the avatar may be grotesque and ‘subversive’ in some sense, but the body of the avatar is intact, sovereign and self-contained¹¹⁸.

¹¹⁸ For my own earlier discussion of the role of ‘cyborgian’ play, imagery and narrative in First Person Shooters, see Klevjer (2003; Klevjer 2006a).

More generally, the motion ride model may lead us to overplay the significance of vertigo in avatar-based 3D. The model draws more attention to the immediate and the spectacular than to the habituated nature of a mature player-avatar relationship. Even if the two traditions come together in the 3D avatar, we need to distinguish between on one hand the ‘vertiginous machine’ of vehicular embodiment – which is not a computerised form – and the other hand the avatar-based cybernetic interaction between the player and the computer. The central imperative of avatar-based play is to grow into the world of the game, to become at home in the environment, through the successful disciplining of the avatar, and to be able to focus on the tasks at hand. In a roller coaster or a theme park ride, in contrast, the whole idea is to *not* get habituated – to *not* incorporate your alternative embodiment as second nature; there are no tasks at hand, and it is usually only meant to last for a few minutes anyway.

In other words, the notion of the vertiginous, as an analytical concept to describe avatar-based 3D in general, or the FPS genre in particular, tends to emphasise the immature avatarial relationship over the competent one. This is a significant limitation, which is not adequately taken into account in my own earlier analysis of the FPS (Klevjer 2003), and which generally follows from a theoretical approach to games that focus on the ‘spectacular’ and the sense-assaulting. Still, as I have argued above, the motion simulator paradigm is valuable for highlighting the vehicular dimension that follows with the avatarial camera. The vertiginous dimension may become habituated and contained, as it were, as part of the perceptual incorporation of avatarial embodiment, but the sensation of the vehicle will remain an integral part of corporealized mastery and control – especially, of course, in racing games or racing sections of games. One of the central attractions of ‘hardcore’ or high-investment games like *Gran Turismo* (Polyphony Digital 1998) is indeed the degree to which they combine speed and spectacle with a demand for absolute and finely tuned perceptual habituation and control.

Steadicam

In this respect, *Gran Turismo* is not so unlike the FPS genre, which combines a certain amount of explorative adventure with a strong sense of vehicular force, speed and aggression. As explained in chapter 7, the first-person perspective emphasises the *integrity* of the avatar, as there is no – or at least very little – relative separation between the I that perceives and the I that acts.

There are, however, first-person avatars in the action adventure genre that are distinctly different from the dominant FPS model, and which offer a different sense of vehicular corporality. One early example that illustrates some of the possibilities even within the relatively rigid first-person configuration is *Jumping Flash* (SCEI 1995), an action-platformer for the Playstation console in which the player takes on the capabilities (and frustrations) of a mechanical rabbit. In this game, vertical and vertiginous movements and jumps are just as pronounced as horizontal movement. Another game worth mentioning is *Metroid Prime*, which translated the *Metroid* series into avatar-based 3D. *Metroid Prime* defines its own variant of the first-person action-explorer in relative independence from the established FPS formula, and offers a more arcade-inspired, more complex more dynamic avatar. This avatar gives the player a sense of mechanical physicality and tangible encapsulation that is arguably unparalleled in the action adventure genre.

The FPS, still, is by far the most popular and widely known form of the first-person avatar. Its distinctive characteristics have also been technologically, economically and institutionally hardwired into our culture, through the exchange and licensing of the so-called ‘engines’ of software code that define the basic features of a generic FPS world. Moreover, the leading FPS games have also become particularly influential as ready-mades for hobbyist and artistic game production or ‘modding’¹¹⁹.

It is useful, I will suggest, to distinguish between the First Person Shooter and what we might call the ‘First Person Walker’, the latter category most typically (or extremely) exemplified by the Jurassic Park game *Trespasser* (DreamWorks Interactive 1998). This game de-emphasises the weapon’s function and presence quite radically as compared to what is the case in the traditional FPS genre, and it pioneered a configuration of the avatar that strives towards a more ‘natural’ sense of corporeality; walking and moving is a lot more cumbersome and unstable, even the most basic actions (like opening a door or lifting a crate) must be meticulously performed using separate functions for extending and using your arm, and the objective presence of the avatar is a lot more fully ‘fleshed out’, as it were, with the arms and hands being a visible and central part of the action-space of the game. The motivation seems to be a commitment to the idea that the camera should operate as the avatar’s *eyes*, carried by a (naturally simulated) body. The effect is highly alienating, and playing the game is a

¹¹⁹ For a discussion of modding and modding culture, see Sotamaa (2003).

struggle that goes far beyond the learning process that is needed in an FPS. The excessively unwieldy, slow and clumsy configuration strongly emphasises the vulnerability of the avatar, while at the same time making a reasonable degree of control and mastery almost impossible¹²⁰.

No other games have, to my knowledge, followed up the extreme strategy of *Trespasser*, but the game may still serve as a model for a type of first-person avatars that, to a greater or lesser degree, play down the vehicular at the expense of fluent control and navigation, have a stronger emphasis on melee combat at the expense of gunplay, and in some sense attempt to hide or ‘naturalise’ the avatarial camera by simulating a set of capacities that reflect more of the limitations of our natural bodies. Examples of games that, to a greater or lesser extent, follow this route are *Breakout*, *Condemned* (Monolith 2005) and *Peter Jackson’s King Kong*, as well as, albeit in a more hybrid form, *The Chronicles of Riddick: Escape from Butcher Bay* (Starbreeze Studios/Tigon Studios 2004). *Peter Jackson’s King Kong*, like *Trespasser* before it, is also notable for striving towards a more natural or ‘direct’ sense of visual perception than computer games usually do, by avoiding the ‘HUD’ layer of on-screen information.

Compared to the dominant FPS tradition, the *Trespasser* variant is a relatively marginal group. Although elements of ‘naturalisation’, as it were, may be present also in the FPS genre, and although there are interesting hybrids like *The Chronicles of Riddick*, these elements and hybridisations only serve to highlight and place into contrast the machinic character of the FPS avatar. In *Quake*, *Half-Life* or *Halo*, the avatar is configured to be the optimal combat machine. The integrated camera-gun can neither be said to ‘run’ nor ‘walk’ but is rather *floating* effortlessly around the game space, much like a Steadicam. The aim of the gun, as a standard convention, is always placed at the centre of the screen, so that it cannot be controlled independently of the vehicular body; it is instead fixed onto it as a static limb that points the way¹²¹. This avatarial configuration gives the strongest possible integration of looking and acting, of vision and destruction¹²².

¹²⁰ It is also interesting to observe that in *Trespasser*, as in the equally unconventional *Metroid Prime*, but unlike in the majority of First Person Shooters, the avatar-character is a woman.

¹²¹ Admittedly, a number of console games, like *Timesplitters*, do implement an aiming function, which allows the player to aim, to a certain extent, *within* the frame rather than just *with* the frame. They have also, following the lead of console pioneers *GoldenEye 007* and *Medal of Honor* (DreamWorks Interactive 1999), used an optional auto-aim function to compensate for the lack of speed and precision that follows from the analogue-stick interface. However during the recent years both these functions seem to have been largely abandoned,

The FPS can also be distinguished from a naturalised first-person approach by the way in which it draws attention to rather than trying to hide the fictional screen as part of its vehicular corporeality. Unlike *Trespasser* or *Peter Jackson's King Kong*, the typical FPS emphasises its steadicam corporeality through lens flare, weather effects and so on, and through the implementation of often quite elaborate HUD systems. One could argue, admittedly, that these elements primarily have to do with the first-person avatar's integration of camera and *character*; in many games, as in *Red Faction* (Volition 2001) or *Halo*, the first-person protagonist wears some kind of visor or suit or other type of transparent equipment that explains the use of overlays, sun flares and weather effects. On the other hand, many other FPS games, like the *Medal of Honor* series (DreamWorks Interactive 1999) or *Timesplitters* series (Free Radical Design 2000), display similar effects without providing any particular explanation for it. Nor do they really need to; cinematic and vehicular corporeality is integral the FPS regardless of how this corporeality is explained (or not explained) within the narrative space of the game.

The comparison between the FPS and the *Trespasser* tradition illustrates that even if onscreen interaction does not matter to fictional participation as such, and does not undermine the autonomy of the gameworld on a general level, it may still matter to what *particular* type of corporeality the avatar is supposed to mediate; it makes a lot of sense to avoid or minimise the presence of a HUD if what one is aiming for is a sense of naked or vulnerable vicarious corporeality.

The filmic camera

The dual-locus configuration of the 3D avatar, as explained in chapter 7, loosens up the integrity of avatariaral embodiment by allowing for a relative independence between the avatariaral camera, the extended avatar and the player. Whereas the avatariaral camera gives the player a cinematic, vehicular and rather inflexible perceptual access to the gameworld, which immobilises and takes the fictional body-subject for a ride, the extended avatar of games like *Sly 2: Band of Thieves* or *Splinter Cell*, as Flynn observes in the quote above, is in comparison a highly 'physically articulate body'. With extended avatars, we can challenge

possibly because of the trend-setting success of *Halo*, which stuck to the standard fixed configuration, and which solved the problem of accuracy through a cleverly 'invisible' auto-aim function.

¹²² See Klevjer (2006b).

and explore the environments in ways that we cannot do with integrated first-person avatars. The dual-locus avatar also has more freedom to articulate character, and to indulge in performances that are relatively independent from the actions of the player.

At the same time, the dual-locus avatarial camera is also less vehicular and less intact than the first-person variant. The relative independence of the computer-controlled follow-cam – when not controlled directly by the player – implies that its role as a prosthetic extension is already compromised. With dual-locus avatars there is, in other words, an overlap or a grey area between the *avatarial* camera, which is committed to prosthetic embodiment, and the *filmic* camera, which acts independently from the player. This grey area can be exploited to follow strategies that do not merely seek to give the player the most optimal or convenient view, but which instead emphasise dramatic angles and cinematographically crafted special shots. These filmic strategies may be counterproductive or even directly obstructive to the player's need for control and overview in challenging situations.

As noted in chapter 7, the survival horror genre has specialised in the use of pre-determined angles of view – where the camera follows through pre-defined positions and movements (trackings, pans, tilts) rather than dynamically adjusting to extended avatar's position – or similar variants of filmic and 'uncooperative' cameras. The genre-leading *Silent Hill* series uses a combination of follow-cam and pre-defined cinematic camera work to create a player-avatar relationship that sacrifices control and predictability for perceptual unease and cinematic horror. In *Project Zero II: Crimson Butterfly* (Temco 2004), the camera follows behaviours that closely reproduce framings and scenes that are familiar from horror cinema – often in combination with triggered events in the gameworld (ghosts gliding past between the camera and the avatar-character). These kinds of hybridising strategies generally have a strong impact on avatarial embodiment and corporeality. By exploring the space between the avatarial and the filmic camera, the unreliable prosthesis makes the avatarial relationship itself less coherent, less well-defined and more slippery¹²³. The survival horror genre also illustrates how dual-locus configurations give room for a more diverse and flexible interplay between avatar-based play and cinematic sequences; because the camera is already given a relatively independent role as part of the avatarial configuration, the transitions between play and non-playable cutscenes are more fluent than in games with more integrated avatars.

¹²³ In the innovative *Eternal Darkness* (Silicon Knights 2002), this imperative is expressed very directly; one of its so-called 'insanity effects' is to skew the camera slightly to the left during the heat of the battle.

Cinematic space as gameworld

In this chapter I have discussed the significance of the avatarial camera in light of other and overlapping cultural forms. Through the prosthetic perceptual apparatus of the avatarial camera, computer gameworlds are made playable through the lens of cinematic vision. This new visual regime brings with it established cultural expectations of transparent immediacy and spectacular hyperrealism, and taps into existing traditions of virtual mobility and adventurous travel. On the other hand, the avatarial camera is much more than merely a navigable camera, and avatar-based interaction goes beyond the notion of navigable space; the avatar is neither a cinematic tool nor a mobile visual interface, but an incarnated body-subject that belongs to and is exposed to the world that it inhabits. The 3D avatar, therefore, is not interactive cinema, and it does not respond to a conceptual model that is primarily concerned with the interplay between representation and action, or between immersion and interactivity. The quest for immediacy and realism that is manifested by avatar-based 3D is primarily a quest for realistic embodiment; computer games' appropriation of cinematic visual hyperrealism aims to further concretise and flesh out what has been the central imperative of the computer game avatar since *Spacewar!*: the desire for realistic agency in a fictional world of moving images.

The quest for realistic embodiment through simulated photographic indexicality is not the same as a quest for cinematic naturalism, although that is also a part of it. The central drive behind cinematic realism in games is what I have referred to in chapter 5 as concretisation, which turns a game system into an inhabitable world of playthings, into a gameworld. The avatar's appropriation of cinematic space has dramatically accelerated the development towards a new corporealization of gameness, epitomised by the sculptural abstractions of *Super Mario 64*. This development towards inhabitable and organic gameworlds may be seen as a ludic parallel to the dream of Virtual Reality, yet the two are distinct and incompatible; whereas VR strives for immediate and continuous embodiment, avatar-based interaction seeks vicarious and playable embodiment.

A central implication of these diverging imperatives is that avatar-based play, unlike Virtual Reality, embraces a vehicular corporealization that follows with the appropriation of the simulated camera, and which has been a part of cinema since the beginning – albeit as a side-track (literally) to the established mainstream. The vehicular camera has a unique capacity to

address our bodies' sense of movement and agency, and the tradition of phantom rides and motion simulators feeds directly into a computer game tradition of fast, high-powered and techno-fetishist competitive action. At the same time, avatarial corporeality in computer games is far from uniformly machinic, but needs to balance and negotiate the vehicular dimension with other and partly conflicting aspects of avatarial interaction. Across the generic landscape of the contemporary 3D avatar, this negotiation goes on between vehicular and panoramic vision, between the habituated and the vertiginous, between the machinic and the naturalised, between the extended avatar and the subjective avatar, and between the avatarial and the filmic camera.

Conclusion

The aim of this study has been to describe what the avatar is, how it structures our play and our participation with a fictional world, and how avatar-based singleplayer computer games are different from other kinds of singleplayer games; the avatar exploits the concretising realism of the computer as a simulating machine, and situates us in a gameworld via prosthetic and fictional embodiment.

More specifically, I have looked at what it is that makes avatar-based 3D different from other kinds of avatars, and different from other kinds of 3D – in games as well as in other media. Indeed the 3D revolution, which transformed the aesthetic of computer games during the mid-nineties, was mainly about navigable and inhabitable spaces, about the role of the avatar. Three-dimensional simulated environments emerged from a desire for a particular kind of embodiment and a particular kind of corporealization of computer game play. The implications of this new realism and new corporeality of gameworlds have not been given enough attention in the study of computer game aesthetics.

As a generic form of computer game play, and as a cultural form more broadly, the avatar re-invents older forms of avatar-based mimetic play, and re-invents older forms of game play and game spaces. At the same time, avatarsial embodiment presents a distinct – although hardly very new – modality of human-computer interaction, and a generic form of digital media and digital art. Still, avatar-based 3D has so far not caught the same attention from theorists and artists of new media as Virtual Reality and hypermedia. Part of the reason for this could be that avatar-based interaction has emerged from the centre of commercial computer game culture, and has become a dominant and almost invisible generic form of mainstream entertainment. In the awareness of new media theorists and visionaries, avatarsial embodiment has somehow gotten lost in the enthusiasm for VR, hypertext, digital cinema and *Myst*. Nevertheless, the artworks that have most centrally defined virtual spatiality and embodiment since the early nineties have not been *Myst* or VR installations but *Doom*, *Super Mario 64* and *Grand Theft Auto III*.

With respect to computer game theory, the avatar-centred approach is also meant as a contribution to our way of thinking about fiction and immersion – and by implication, about narrative – in games. The concept of fiction that I am suggesting emphasises the objective and

shared (and non-diegetic) nature of fiction, as well as the central role of subjective re-positioning in the establishing of fictionally actual worlds. Combining a theory of make-believe with a phenomenological perspective on vicarious embodiment, I have drawn attention to the role of the avatar as a prosthetic bridge to the fictional world.

The relatively narrow focus on avatar-based play, and on the particular mechanisms of avatar-based 3D, is also meant as a contribution to the theoretical conceptualisation of genre in computer games. In my analysis I have tried to show that avatar-based play, and the various ways in which the player-avatar relationship is being configured, is a central generic variable in game play and game fiction. This means that I have also used the notion of the avatar to describe other forms and modalities that make up the generic terrain of games today. These other and partly contrasting and conflicting forms have been described, as it were, through the lens of the avatar: system simulators, hypermedia games, instrument play, automatons, role playing and non-avatar-based physical interfaces. At the same time, some of the more general theoretical ideas that I have applied to the analysis of the avatar – fictionality and subject-positioning, model-based and gestural simulation, realistic agency and tangibility, miniatureness and spatial continuity – could also be productive in a broader and less avatar-centred investigation of computer game aesthetics.

A number of important questions and issues that relate to avatar-based computer game play have not been addressed in this study; the goal has been to describe the basic principles and mechanisms that define the avatar as a form. This raises a number of questions that have to do with what kinds of things we are actually doing and experiencing in avatar-based gameworlds. One central task for further study would be to look more specifically at different types and categories of avatars – how they have developed historically, and how avatars develop (or do not develop) throughout a game in different genres. This would include a closer investigation of the function of role playing and role playing elements in avatar-based play, which is a dimension that I have considered as separate from the basic configuration of the avatar, but which is yet an important and genre-defining element in a broad range of games (not least sport and racing). Also, the structural characteristics of singleplayer gameworlds have not been analysed beyond a general account of how the notion of the gameworld relates to avatarial embodiment. Further studies in this direction would need to

address the central role of the quest and various types of quest structures, a topic that has already been addressed by a number of studies in the field¹²⁴.

The role of narrative has not been directly discussed in this study, other than, we could say, in a negative sense; fictional participation through avatarial embodiment is not dependent on storytelling and a storyline, and the notion of the *diegesis* should be held separate from the notion of fictionality and the notion of the gameworld. At the same time, different forms and techniques of narration often play a crucial role in the description and characterisation of gameworlds (particularly in action adventure games but also, to a lesser extent, in racing and sport games) and the player's progress through the game is usually contextualised as a coherent linear story, a narrative adventure, with a beginning, a middle and an end. A dedicated study of the relationships between avatar-based play and avatar-based formats of storytelling would be an obvious next step in the analysis, particularly with respect to the contemporary 3D action adventure. The fusions, overlaps and tensions between embodied and story-based fictional participation in singleplayer computer games is a complex and diverse area of study. Studying this interplay would centrally involve the role of dramatic scripting and other forms of dramatic structuring of characters and events in the gameworld, and it would involve addressing the interactions and interdependencies between avatarial embodiment and the language of the filmic camera.

¹²⁴ See Tronstad (2001), Tosca (2003) and Aarseth (2005a).

Bibliography

- 3D Realms. 1996. *Duke Nukem 3D* (PC DOS). Published by Eidos Interactive. UK release.
2015. 2002. *Medal of Honor: Allied Assault* (PC Windows). Published by Electronic Arts. UK release.
- Alberti, Leon Battista. 1972. De pictura. In *On Painting and On Sculpture. The Latin Texts of De Pictura and De Statua*, edited by C. Grayson. London: Phaidon.
- Amusement Vision. 2002. *Super Monkey Ball* (GameCube). Published by SEGA. UK release.
- Atari. 1980. *Battlezone* (Arcade). Published by Atari.
- Atari. 1983. *Star Wars* (Arcade). Published by Atari.
- Atari Games. 1986. *Super Sprint* (Arcade). Published by Atari Games.
- Balides, Constance. 2003. Immersion in the Virtual Ornament: Contemporary "Movie Ride" Films. In *Rethinking Media Change. The Aesthetics of Transition*, edited by D. Thorburn and H. Jenkins. Cambridge, Mass.: MIT Press.
- Bartkowiak, Andrzej. 2005. *Doom*. USA: Universal Pictures.
- Bateson, Gregory. 1972. *Steps to an ecology of mind: collected essays in anthropology, psychiatry, evolution, and epistemology*. London: Intertext Books.
- Baudrillard, Jean. 1994. *Simulacra and Simulation*. Translated by S. F. Glaser. Ann Arbor: The University of Michigan Press.
- Baudry, Jean-Louis. 1986. Ideological Effects of the Basic Cinematographic Apparatus. In *Narrative, Apparatus, Ideology. A Film Theory Reader*, edited by P. Rosen. New York: Colombia University Press.
- Bazin, André. 1967. The Ontology of the Photographic Image. In *What is Cinema*, edited by H. Gray. Los Angeles: University of California Press.
- Benjamin, Walter. 1969. The Work of Art in the Age of Mechanical Reproduction. In *Illuminations*, edited by H. Arendt. New York: Schocken.
- Bethesda Softworks. 2002. *The Elder Scrolls III: Morrowind* (Xbox). Published by Ubi Soft. UK release.
- Bioware. 1998. *Baldur's Gate* (PC Windows). Published by Interplay. UK release.
- Bioware. 2002. *Neverwinter Nights* (PC Windows). Published by Infogrames. UK release.
- Bizzocchi, Jim, and Robert F. Woodbury. 2003. A case study in the design of interactive narrative: The subversion of the interface. *Simulation & Gaming* 34 (4):550-568.
- Black Isles Studios. 1999. *Planescape: Torment* (PC Windows). Published by Interplay. UK release.
- Blizzard. 1994. *Warcraft: Orcs & Humans* (PC DOS). Published by Blizzard. UK release.
- Blizzard. 1996. *Diablo* (PC Windows). Published by Blizzard. UK release.
- Blue Fang Games. 2001. *Zoo Tycoon* (PC Windows). Published by Microsoft Game Studios. US release.
- Bolter, Jay David. 1991. *Writing Space: the computer, hypertext and the history of writing*. Baltimore: Johns Hopkins University Press.
- Bolter, Jay David, and Richard Grusin. 1999. *Remediation: Understanding New Media*. Cambridge, Massachusetts: MIT Press.
- Bordwell, David. 1977. Camera movement and cinematic space. *Ciné-Tracts* 1 (2):19-25. Also available at <http://www.modjournal.brown.edu/Cinetracts/CT02.pdf>.
- Bordwell, David. 1985. *Narration in the Fiction Film*. London: Routledge.
- Bordwell, David, and Kristin Thompson. 1993. *Film Art: An Introduction. International edition*. 4 ed. New York: McGraw-Hill. Original edition, 1979.

- Bryant, Dave. 2006. The Uncanny Valley: Why are monster-movie zombies so horrifying and talking animals so fascinating? [online]. *Glimpses*. David Bryant [cited 2 April 2006]. Available from <http://www.arclight.net/~pdb/nonfiction/uncanny-valley.html>.
- Bryson, Norman. 1991. *Vision and Painting: The Logic of the Gaze*. New Haven, Conn.: Yale University Press.
- Brøderbund Software. 1990. *Prince of Persia* (PC DOS). Published by Brøderbund Software. US release.
- Bukatman, Scott. 2003. *Matters of Gravity: Special Effects and Supermen in the 20th Century*. London: Duke University Press.
- Bungie. 2001. *Halo: Combat Evolved* (Xbox). Published by Microsoft Game Studios. UK release.
- Caillois, Roger. 2001. *Man, Play and Games*. Translated by M. Barash. Chicago: University of Illinois Press. Original edition, 1961.
- Capcom. 1996. *Resident Evil* (Playstation). Published by Virgin Interactive Entertainment. UK release.
- Capcom. 2005a. *Killer 7* (Playstation 2). Published by Capcom. UK release.
- Capcom. 2005b. *Resident Evil 4* (GameCube). Published by Capcom Entertainment. UK release.
- Casebier, Allan. 1991. *Film and Phenomenology: Toward a Realist Theory of Cinematic Representation*. New York: Cambridge University Press.
- Comolli, Jean-Louis. 1980. Machines of the Visible. In *The Cinematic Apparatus*, edited by T. d. Lauretis and S. Heath. London: Macmillan Press.
- Core Design. 1996. *Tomb Raider* (Playstation). Published by Eidos Interactive. UK release.
- Criterion. 2001. *Burnout* (Playstation 2). Published by Acclaim. UK release.
- Criterion. 2006. *Black* (Xbox). Published by Electronic Arts. UK release.
- Csikszentmihalyi, Mihaly. 2000. *Beyond Boredom and Anxiety: The Experience of Play in Work and Games*. San Fransisco: Jossey-Bass Publishers. Original edition, 1975.
- Cyan Worlds. 1993. *Myst* (PC Windows 3.x). Published by Brøderbund Software. US release.
- Damisch, Hubert. 1994. *The Origin of Perspective*. Translated by J. Goodman. Cambridge, Mass.: MIT Press.
- Darley, Andrew. 2000. *Visual Digital Culture. Surface Play and Spectacle in New Media Genres*. London: Routledge.
- Digital Extremes/Epic. 1998. *Unreal* (PC Windows). Published by GT Interactive. US release.
- Digital Illusions CE. 2004. *Rallisport Challenge 2* (Xbox). Published by Microsoft Game Studios. UK release.
- DMA Design. 1992. *Lemmings* (PC Windows). Published by Psygnosis. US release.
- DMA Design. 2001. *Grand Theft Auto III* (Playstation 2). Published by Take Two Interactive Software. UK release.
- Dovey, Jon, and Helen Kennedy. 2006. *Games Cultures: Computer Games as New Media*. Milton Keynes: Open University Press.
- DreamWorks Interactive. 1998. *Trespasser* (PC Windows). Published by Electronic Arts. UK release.
- DreamWorks Interactive. 1999. *Medal of Honor* (Playstation). Published by Electronic Arts. UK release.
- Dreyfus, Hubert L. 1996. The Current Relevance of Merleau-Ponty's Phenomenology of Embodiment [online]. *The Electronic Journal of Analytic Philosophy* Spring 1996 (4) [cited 04.03 2006]. Available from <http://ejap.louisiana.edu/EJAP/1996.spring/dreyfus.1996.spring.html>.
- EA Canada. 2000. *SSX* (Playstation 2). Published by Electronic Arts. UK release.

- EA Canada. 2005a. *FIFA 06* (Xbox). Published by Electronic Arts. UK release.
- EA Canada. 2005b. *NBA Live 06* (Playstation 2). Published by Electronic Arts. UK release.
- EC Interactive. 2005. *Breakout* (Game Boy Advance). Published by ZOO Digital Publishing. UK release. Breakout/Centipede/Warlords version. Original Version, 1978.
- EC Interactive. 2005. *Centipede* (Game Boy Advance). Published by ZOO Digital Publishing. UK release. Breakout/Centipede/Warlords version. Original Version, 1980.
- Eco, Umberto. 1976. *A Theory of Semiotics*. Bloomington: Indiana University Press.
- Eco, Umberto. 1986. *Travels in Hyperreality*. Translated by W. Weaver. London: A Harvest Book/Harcourt.
- Eku interactive. 1999. *Berlin Connection* (PC Windows). Published by Eku interactive. DE release.
- Elias, Norbert, and Eric Dunning. 1986. *Quest for Excitement. Sport and Leisure in the Civilizing Process*. Oxford: Basil Blackwell.
- Extended Play. 1993. *FIFA International Soccer* (Sega Mega Drive). Published by Electronic Arts. UK release.
- Fencott, Clive. 1999. Presence and the Content of Virtual Environments. Paper presented at 2nd International Workshop on Presence, at University of Essex. Also available at <http://web.onyxnet.co.uk/Fencott-onyxnet.co.uk/pres99/pres99.htm>.
- Ferrara, Serena. 2000. *Steadicam : Techniques and aesthetics*. Boston: Focal Press.
- Ferry Halim. 2000. *Milk the Cow* (Online). Published by www.orisinal.com.
- Fielding, Raymond. 1983. Hale's tours. Ultrarealism in the Pre-1910 Motion Picture'. In *Film Before Griffith*, edited by J. L. Fell. Berkeley: University of California Press.
- Flynn, Bernadette. 2005. Imaging Gameplay - The Design and Construction of Spatial Worlds. Paper presented at IMAGINARY WORLDS. Image and Space International Symposium, 14 October, at University of Technology, Sidney.
- Foucault, Michel. 1977. *Discipline and punish: the birth of the prison*. Translated by A. Sheridan. London: Allen Lane.
- Frasca, Gonzalo. 1999. Ludology meets Narratology: Similitude and differences between (video)games and narrativ [online]. www.ludology.org [cited 18 March 2006]. Available from <http://www.ludology.org/articles/ludology.htm>.
- Frasca, Gonzalo. 2001. Video Games of the Oppressed: Video Games as a Means for Critical Thinking and Debate. Master's Thesis, School of Literature, Communication and Culture, Georgia Institute of Technology, Atlanta. Also available at <http://www.ludology.org/articles/thesis/>.
- Frasca, Gonzalo. 2003. Simulation versus Narrative: Introduction to Ludology. In *The Video Game Theory Reader*, edited by M. J. P. Wolf and B. Perron. London: Routledge.
- Frasca, Gonzalo. 2004. Videogames of the Oppressed: Critical Thinking, Education, Tolerance, and other Trivial Issues. In *First Person. New Media as Story, Performance and Game*, edited by N. Wardrup-Fruin and P. Harrigan. Cambridge, Massachusetts: MIT Press.
- Free Radical Design. 2000. *Timesplitters* (Playstation 2). Published by Eidos Interactive. UK release.
- Friedberg, Anne. 1993. *Window Shopping. Cinema and the Postmodern*. Berkeley: University of California Press.
- Friedberg, Anne. 2003. The Virtual Window. In *Rethinking Media Change. The Aesthetics of Transition*, edited by D. Thorburn and H. Jenkins. Cambridge, Mass.: MIT Press.
- Friedman, Ted. 2002. Making Sense of Software: Computer Games as Interactive Textuality [online]. Game Research [cited 26 July 2005]. Available from http://www.game-research.com/art_making_sense_of_software.asp.

- FTL Games. 1989. *Dungeon Master* (PC DOS). Published by FTL Games. US release. Original Version, 1987.
- Fuller, Mary, and Henry Jenkins. 1995. Nintendo and New World Travel Writing: A Dialogue. In *Cybersociety: Computer-Mediated Communication and Community*, edited by S. Jones. Thousand Oaks: Sage. Also available at http://www.stanford.edu/class/history34q/readings/Cyberspace/FullerJenkins_Nintendo.html.
- Gabler, Kyle, Kyle Gray, Matt Kucic, and Shalin Shodhan. 2005. How to Prototype a Game in Under 7 Days: Tips and Tricks from 4 Grad Students Who Made Over 50 Games in 1 Semester [online]. *Gamasutra*. CMP Game Group [cited 16 April 2006]. Available from http://www.gamasutra.com/features/20051026/gabler_03.shtml#.
- Garite, Matt. 2003. The Ideology of Interactivity (or Video Games and Taylorization of Leisure). In *Level Up. Digital Games Research Conference*, edited by M. Copier and J. Raessens. Utrecht: Utrecht University. Also available at http://digra.org/dl/display_html?chid=05150.15436.
- Gearbox Software. 2005. *Brothers in Arms: Road to Hill 30* (Xbox). Published by Ubisoft Entertainment. UK release.
- Genette, Gérard. 1980. *Narrative Discourse*. Oxford: Basil Blackwell.
- Gibson, James J. 1986. *The Ecological Approach to Visual Perception*. Edited by R. E. Shaw, W. M. Mace and M. E. Turvey, *Resources for Ecological Psychology*. London: Lawrence Erlbaums Associates. Original edition, 1979.
- Giddings, Seth. 2006. Walkthrough: videogames and technocultural form. Ph.D dissertation, School of Cultural Studies, University of the West of England, Bristol.
- Gingold, Chaim. 2003. Miniature Gardens & Magic Crayons: Games, Spaces, & Worlds. Master's Thesis, School of Literature, Communication and Culture, Georgia Institute of Technology, Atlanta. Also available at <http://www.slackworks.com/~cog/writing/thesis/toc.php>.
- Goffman, Erving. 1974. *Goffman, Erving. 1974. Frame Analysis: An Essay on the Organization of Experience*. New York: Harper & Row.
- Graetz, Martin. 2006. The origin of Spacewar [online]. [cited 2 April 2006]. Available from <http://www.wheels.org/spacewar/creative/SpacewarOrigin.html>.
- Grau, Oliver. 2003. *Virtual Art: From Illusion to Immersion*. Translated by G. Custance. Cambridge, Mass: MIT Press.
- Gregory Yob. 2006. *Hunt the Wumpus* (BASIC/PC DOS). Published by Michels stoneage games revival. Available from <http://www.michls.de/troedel/bascomp.html>. Original Version, 1973.
- Grey Matter. 2001. *Return to Castle Wolfenstein* (PC Windows). Published by Activision. US release.
- Grodal, Torben. 2003. Stories for Eye, Ear, and Muscles: Video Games, Media, and Embodied experiences. In *The Video Game Theory Reader*, edited by M. J. P. Wolf and B. Perron. London: Routledge.
- Gunning, Tom. 1990. Cinema of Attractions: Early Film, its Spectator and the Avant-Garde. In *Early Cinema: space - frame - narrative*, edited by T. Elsaesser. London: BFI Publishing.
- Guttman, Allen. 1978. *From Ritual to Record. The Nature of Modern Sport*. New York: Columbia University Press.
- Haraway, Donna J. 1991. A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century. In *Simians, Cyborgs and Women: The Reinvention of Nature*, edited by D. J. Haraway. New York: Routledge.

- Hayles, N. Katherine. 1999. *How we Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: University of Chicago Press.
- Heim, Michael. 1998. *Virtual Realism*. New York: Oxford University Press.
- Huhtamo, Erkki. 1995. Encapsulated Bodies in Motion: Simulators and the Quest for Total Immersion. In *Critical Issues in Electronic Media*, edited by S. Penny. New York: State University of New York Press.
- Huizinga, Johan. 1955. *Homo ludens: A study of the play element in culture*. Boston: Beacon Press. Original edition, 1950.
- id Software. 1992. *Wolfenstein 3D* (PC DOS). Published by Apogee Software. US release.
- id Software. 1993. *Doom* (PC DOS). Published by id Software. US release.
- id Software. 1996. *Quake* (PC DOS). Published by id Software. UK release.
- Infinity Ward. 2003. *Call of Duty* (PC Windows). Published by Activision. UK release.
- Infocom. 2005. Zork [online]. Java applet version. SourceForge [cited 12 January 2006]. Available from <http://www.xs4all.nl/~pot/infocom/zork1.html>. Original version, 1981.
- Infogrames. 1992. *Alone in the Dark* (PC DOS). Published by Infogrames. UK release.
- Insomniac. 2002. *Ratchet & Clank* (Playstation 2). Published by SCEA. UK release.
- Interplay Productions. 1987. *The Bard's Tale [Tales of the Unknown, Volume I: The Bard's Tale]* (PC DOS). Published by Electronic Arts. US release.
- IO Interactive. 2002. *Hitman 2: Silent Assassin* (Xbox). Published by Eidos Interactive. UK release.
- Ion Storm. 2000. *Deus Ex* (PC Windows). Published by Eidos Interactive. UK release.
- Jay, Martin. 1988. Scopic Regimes of Modernity. In *Vision and Visuality*, edited by H. Foster. Seattle: Bay Press.
- Juul, Jesper. 1998. A Clash between Game and Narrative. Paper presented at Digital Arts and Culture conference, November, at University of Bergen. Also available at http://www.jesperjuul.net/text/clash_between_game_and_narrative.html.
- Juul, Jesper. 2003a. The Game, the Player, the World: Looking for a Heart of Gameness. Paper presented at Level Up: Digital Games Research Conference, at Utrecht. Also available at <http://www.jesperjuul.net/text/gameplayerworld/>.
- Juul, Jesper. 2003b. Half-Real. Videogames between real rules and fictional worlds. Ph.D. dissertation, IT University of Copenhagen, Copenhagen.
- Juul, Jesper. 2004. Introduction to Game Time. In *First Person. New Media as Story, Performance and Game*, edited by N. Wardrup-Fruin and P. Harrigan. Cambridge, Massachusetts: MIT Press. Also available at <http://www.electronicbookreview.com/thread/firstperson/teleport>.
- Juul, Jesper. 2005. *Half-Real: Video Games between Real Rules and Fictional Worlds*. Cambridge, Massachusetts: MIT Press.
- Kemp, Martin. 1990. *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat*. New Haven, Conn.: Yale University Press.
- King, Geoff. 2000. *Spectacular Narratives. Hollywood in the Age of the Blockbuster*. London: I.B. Tauris.
- King, Geoff. 2005. Play, Modality and Claims of Realism in Full Spectrum Warrior [online]. *Aesthetics of Play Conference Proceedings* [cited 12 May 2006]. Available from <http://www.aestheticsofplay.org/king.php>.
- Kirkpatrick, Graeme. 2004. *Critical Technology. A Social Theory of Personal Computing*. Aldershot: Ashgate.
- Klastrup, Lisbeth. 2003. A Poetics of Virtual Worlds [online]. Melbourne DAC 2003 online proceedings [cited 28 July 2005]. Available from <http://hypertext.rmit.edu.au/dac/papers/klastrup.pdf>.

- Klevjer, Rune. 2002. In Defence of Cutscenes. In *Computer Games and Digital Cultures Conference Proceedings*, edited by F. Mäyrä. Tampere: Tampere University Press. Also available at <http://www.uib.no/people/smkrk/>.
- Klevjer, Rune. 2003. Gladiator, worker, operative: The hero of the First Person Shooter Adventure. In *Level Up. Digital Games Research Conference*, edited by M. Copier and J. Raessens. Utrecht: Utrecht University. Also available at <http://www.uib.no/people/smkrk/>.
- Klevjer, Rune. 2005. Genre Blindness [online]. *DIGRA Hard Core Columns*. DIGRA [cited 1 April 2006]. Available from <http://www.digra.org/hardcore/hc11>.
- Klevjer, Rune. 2006a. Danzando con il Grottesco Moderno. Guerra, lavoro, gioco e rituale nei First Person Shooter run-and-gun (Dancing with the Modern Grotesque: War, work, play and ritual in the run-and-gun First Person Shooter). In *Gli strumenti del videogioicare. Logiche, estetiche e (v)ideologie*, edited by M. Bittanti. Milano: Costa & Nolan. Also available at <http://www.uib.no/people/smkrk/docs/dancing.htm> [English version].
- Klevjer, Rune. 2006b. La via della pistola. L'estetica dei first person shooter in single player (The Way of the Gun: The aesthetic of the single-player First Person Shooter). In *Doom. Giocare in prima persona*, edited by M. Bittanti and S. Morris. Milano: Costa & Nolan. Also available at <http://www.uib.no/people/smkrk/docs/wayofthegun.htm> [English version].
- Kline, Stephen, Nick Dyer-Witheford, and Greig de Peuter. 2003. *Digital Play. The Interaction of Technology, Culture, and Marketing*. London: McGill-Queen's University Press.
- Konami. 2003. *Dancing Stage MegaMix* (Playstation 2). Published by Konami. UK release.
- Konami. 2005. *Metal Gear Solid 3: Snake Eater* (Playstation 2). Published by Konami. UK release.
- Kubrick, Stanley. 1980. *The Shining*. USA: Warner Bros. Pictures.
- Kücklich, Julian. 2002. The Study of Computer Games as a Second-Order Cybernetic System. In *Computer Games and Digital Cultures Conference Proceedings*, edited by F. Mäyrä. Tampere: Tampere University Press. Also available at <http://www.uib.no/people/smkrk/>.
- Kücklich, Julian. 2003. The playability of text vs. the readability of games: towards a holistic theory of fictionality. In *Level Up. Digital Games Research Conference*, edited by M. Copier and J. Raessens. Utrecht: Utrecht University.
- Lahti, Martti. 2003. As We Become Machines: Corporealized Pleasures in Video Games. In *The Video Game Theory Reader*, edited by M. J. P. Wolf and B. Perron. London: Routledge.
- Landow, George P. 1992. *Hypertext: The convergence of contemporary critical theory and technology*. Baltimore: Johns Hopkins University Press.
- Lanier, Jaron. 1989. Virtual Reality: A Status Report. In *Cyberarts: Exploring Art and Technology*, edited by L. Jacobson. San Francisco: Miller Freeman.
- Lasseter, John. 1995. *Toy Story*. USA: Disney.
- Laurel, Brenda. 1993. *Computers as Theatre*. New York: Addison-Wesley.
- Linderoth, Jonas. 2005. Animated game pieces. Avatars as roles, tools and props [online]. *Aesthetics of Play Conference Proceedings* [cited 12 May 2006]. Available from <http://www.aestheticsofplay.org/king.php>.
- Lionhead Studios. 2004. *Fable* (Xbox). Published by Microsoft Game Studios. UK release.
- Lister, Martin, Iain Grant, Jonathan Dovey, and Seth Giddings. 2003. *New Media: A Critical Introduction*. London: Routledge.

- Lombard, Matthew, and Theresa Ditton. 1997. At the Heart of It All: The Concept of Presence [online]. *Journal of Computer-Mediated Communication* 3 (2) [cited 17 June 2006]. Available from <http://jcmc.indiana.edu/vol3/issue2/lombard.html>.
- LucasArts. 1994. *Star Wars: Dark Forces* (PC DOS). Published by LucasArts. US release.
- LucasArts. 1998. *Grim Fandango* (PC Windows). Published by LucasArts. UK release.
- Lucasfilm Games. 1987. *Habitat* (Commodore 64). Published by Quantum Link.
- Lucasfilm Games. 1990. *The Secret of Monkey Island* (PC DOS). Published by Lucasfilm Games. US release.
- Manovich, Lev. 2001. *The Language of New Media*. Cambridge, Massachusetts: MIT Press.
- Maxis Software. 1989. *SimCity* (PC DOS). Published by Brøderbund Software. US release.
- Maxis Software. 2000. *The Sims* (PC Windows). Published by Electronic Arts. UK release.
- McMahan, Alison. 2003. Immersion, Engagement and Presence: A Method for Analysing 3-D Video Games. In *The Video Game Theory Reader*, edited by M. J. P. Wolf and B. Perron. London: Routledge.
- Merleau-Ponty, Maurice. 1965. *The Structure of Behaviour*. Translated by A. Fisher. London: Methuen.
- Merleau-Ponty, Maurice. 2002. *Phenomenology of Perception*. London: Routledge Classics. Original edition, 1962.
- Metz, Christian. 1982. *The imaginary signifier : psychoanalysis and the cinema*. Bloomington: Indiana University Press.
- MicroProse. 1991. *Sid Meier's Civilization* (PC DOS). Published by Microprose. US release.
- Midway. 1980. *Pac-Man* Published by Midway.
- Mohler, Betty J., William B. Thompson, Bernhard Riecke, and Heinrich H. Bülthoff. 2005. Measuring Vection in a Large Screen Virtual Environment. In *Proceedings of the 2nd Symposium on Applied Perception in Graphics and Visualization*. New York: ACM Press. Also available at <http://www.cs.utah.edu/~bmohler/publications/Mohler-APGV05.pdf>.
- Monolith. 2005. *Condemned* (Xbox 360). Published by SEGA. UK release.
- Morse, Margaret. 1998. *Virtualities: Television, Media Art, And Cyberculture*. Bloomington: Indiana University Press.
- Mulvey, Laura. 1986. Visual Pleasure and Narrative Cinema. In *Narrative, Apparatus, Ideology. A Film Theory Reader*, edited by P. Rosen. New York: Columbia University Press.
- Murray, Janet H. 1997. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. New York: The Free Press.
- Murray, Janet H. 2004. From Game-Story to Cyberdrama. In *First Person. New Media as Story, Performance and Game*, edited by N. Wardrup-Fruin and P. Harrigan. Cambridge, Massachusetts: MIT Press.
- Muse Software. 1984. *Castle Wolfenstein* (PC DOS). Published by Muse Software. US release.
- Neversoft. 1999. *Tony Hawk's Pro Skater* (Playstation). Published by Activision. UK release.
- Newman, James. 2002. The Myth of the Ergodic Videogame. Some thoughts on player-character relationships in videogames [online]. *Game Studies* 2 (1) [cited 25 July 2005]. Available from <http://www.gamestudies.org/0102/newman/>.
- Nintendo. 1981. *Donkey Kong* (Arcade). Published by Nintendo.
- Nintendo. 1983. *Mario Bros.* (Arcade). Published by Nintendo.
- Nintendo. 1996. *Super Mario 64* (Nintendo 64). Published by Nintendo. UK release.
- Nintendo. 1998. *The Legend of Zelda: Ocarina of Time* (Nintendo 64). Published by Nintendo. UK release.

- Nintendo. 2003. *The Legend of Zelda: A Link to the Past* (Gameboy Advance). Published by Nintendo. NES Classics series. Original Version, 1991.
- Nintendo. 2004. *Animal Crossing* (GameCube). Published by Nintendo. UK release.
- Nintendo. 2004. *The Legend of Zelda* (Game Boy Advance). Published by Nintendo. NES Classics version. Original Version, 1986.
- Nintendo. 2004. *Super Mario Bros.* (Game Boy Advance). Published by Nintendo. UK release. NES Classics Series. Original Version, 1985.
- Nintendo. 2004. *Zelda II: The Adventure of Link* (Gameboy Advance). Published by Nintendo. UK release. NES Classics series. Original Version, 1987.
- Nintendo. 2005. *Metroid* (Gameboy Advance, NES Classics series). Published by Nintendo. UK release. Original Version, 1986.
- Nintendo. 2005. *Nintendogs* (Nintendo DS). Published by Nintendo.
- Norman, Donald. 1988. *The psychology of everyday things*. New York: Basic Books.
- Origin. 1985. *Ultima IV: Quest of the Avatar* (DOS). Published by Origin. UK release.
- Origin. 1992. *Ultima Underworld: The Stygian Abyss* (PC DOS). Published by Origin.
- Pandemic Studios. 2004. *Full Spectrum Warrior* (Xbox). Published by THQ. UK release.
- Panofsky, Erwin. 1991. *Perspective as Symbolic Form*. Translated by C. S. Wood. New York: Zone Books. Original edition, 1927.
- Papert, Seymour. 1980. *Mindstorms: Children, Computers and Powerful Ideas*. Brighton: The Harvester Press.
- Pargman, Daniel. 2003. Word and code, code as world [online]. *Digital Arts and Culture 2003 online proceedings* [cited 17 September 2003]. Available from <http://hypertext.rmit.edu.au/dac/papers/>.
- Pavel, Thomas. 1986. *Fictional Worlds*. Londond: Harvard University Press.
- Perron, Bernard. 2003. From Gamers to Players and Gameplayers: The Example of Interactive Movies. In *The Video Game Theory Reader*, edited by M. J. P. Wolf and B. Perron. London: Routledge.
- Plantinga, Carl R. 1997. *Rhetoric and Representation in Nonfiction Film*. Cambridge: Cambridge University Press.
- Plato. 1941. *The Republic of Plato*. Translated by F. M. Cornford. London: Oxford University Press.
- Point of View. 1999. *Ready 2 Rumble Boxing* (Playstation). Published by Midway Games. UK release.
- Polyphony Digital. 1998. *Gran Turismo* (Playstation). Published by SCEE. UK release.
- Prince, Stephen. 1996. True Lies: perceptual realism, digital images, and film theory. *Film Quarterly* 49 (3):27-38. Also available at <http://communication.ucsd.edu/tlg/123/prince.html>.
- Procedural Arts. 2005. *Façade* (PC Windows). Published by Procedural Arts. Available from <http://www.interactivestory.net/>
- Prothero, Jerrold D. 1998. The Role of Rest Frames in Vection, Presence and Motion Sickness, Human Interface Technology Lab, University of Washington, Seattle. Also available at <http://www.hitl.washington.edu/publications/r-98-11/r-98-11.pdf>.
- Quantic Dream. 2005. *Fahrenheit* (Playstation 2). Published by Atari. UK release.
- Rare. 1997. *GoldenEye 007* (Nintendo 64). Published by Nintendo. UK release.
- Rare. 1999. *Jet Force Gemini* (Nintendo 64). Published by Rare. UK release.
- Rare. 2001. *Conker's Bad Fur Day* (Nintendo 64). Published by Rare. UK release.
- Rare. 2005. *Kameo: Elements of Power* (Xbox 360). Published by Microsoft Game Studios. UK release.
- Remedy. 2001. *Max Payne* (Xbox). Published by Rockstar. UK release.
- Retro Studios. 2003. *Metroid Prime* (GameCube). Published by Nintendo. UK release.

- Rheingold, Howard. 1991. *Virtual Reality*. New York: Simon & Schuster.
- Rick Merrill/David Ahl. 2006. *Hammurabi* (PC DOS, BASIC version 1978). Published by Michels stoneage games revival. Available from <http://www.michls.de/troedel/bascomp.html>. Original Version, 1969.
- Ricoeur, Paul. 1984-1988. *Time and Narrative*. Translated by K. McLaughlin and D. Pellauer. Chicago: University of Chicago Press.
- Rothwell, Geoffrey Scott. 2004. The Routes of Bermudian Society: The Theming of Bermudian Society as a Tourist Destination [online]. University of Maryland [cited 12 June 2006]. Available from <https://drum.umd.edu/dspace/handle/1903/1769>.
- Russel/Graetz/Wiitanen. 2006. *Spacewar!* (Java version (online)). Published by Silverman/Silverman/Gerasimov. Available from <http://lcs.www.media.mit.edu/groups/el/projects/spacewar/>. Original Version, 1962.
- Ryan, Marie-Laure. 1992. Possible Worlds in Recent Literary Theory. *Style* 26 (4):528-553.
- Ryan, Marie-Laure. 1995. Virtual reality and art appreciation. *Semiotica* 103 (3/4):349-367.
- Ryan, Marie-Laure. 2001. *Narrative as Virtual Reality. Immersion and Interactivity in Literature and Electronic Media*. Baltimore: The Johns Hopkins University Press.
- Sakaguchi, Hironobu. 2001. *Final Fantasy: The Spirits Within*. USA/Japan: Sony Pictures Entertainment.
- Salen, Katie, and Eric Zimmerman. 2004. *Rules of Play: Game Design Fundamentals*. Cambridge, Massachusetts: MIT Press.
- Sant, Gus Van. 2003. *Elephant*. USA: Fine Line Features.
- SCEI. 1995. *Jumping Flash* (Playstation). Published by SCEE. UK release.
- SCEI. 2002. *ICO* (Playstation 2). Published by SCEE. UK release.
- Schneiderman, Ben. 1982. The Future of Interactive Systems and the Emergence of Direct Manipulation. *Behavior and Information Technology* 1 (3):237-256.
- Schwartz, Vanessa R. 1998. *Spectacular Realities. Early Mass Culture in Fin-de-Siècle Paris*. Los Angeles: University of California Press.
- Schütze, Stephan. 2003. The Creation of an Audio Environment as Part of a Computer Game World: The design for Jurassic Park - Operation Genesis on the XBOX™ as a broad concept for surround installation creation. *Organised Sound* 8 (2):171-180.
- Seltzer, Mark. 1992. *Bodies and Machines*. New York: Routledge.
- Sheridan, Thomas B. 1992. Musings on Telepresence and Virtual Presence. *Presence: Teleoperators and Virtual Environments* 1 (1):120-125.
- Sierra On-Line. 1984. *King's Quest* (PC DOS). Published by Sierra On-Line. US release.
- Silicon Knights. 2002. *Eternal Darkness: Sanity's Requiem* (GameCube). Published by Nintendo. UK release.
- Sir-tech Software. 1981. *Wizardry: Proving Grounds of the Mad Overlord* (Apple II). Published by Sir-tech Software. US release.
- Smith, Roger D. 1999. Simulation: The Engine Behind the Virtual World. *eMatter* 1, *Simulation 2000* series (12). Also available at <http://www.modelbenders.com/papers/sim2000/SimulationEngine.PDF>.
- Sobchack, Vivian. 1992. *The Address of the Eye: A Phenomenology of Film Experience*. Princeton: Princeton University Press.
- Sotamaa, Olli. 2003. Computer Game Modding, Intermediality and Participatory Culture. Paper presented at New Media? New Theories? New Methods?, at Sonderborg, Denmark. Also available at http://old.imv.au.dk/eng/academic/pdf_files/Sotamaa.pdf.
- Spielberg, Steven. 1998. *Saving Private Ryan*. USA: DreamWorks.
- Stallabrass, Julian. 1993. Just Gaming: Allegory and Economy in Computer Games. *New Left Review* (198):83-106.

- Starbreeze Studios/Tigon Studios. 2004. *The Chronicles of Riddick: Escape from Butcher Bay* (Xbox). Published by Sierra Entertainment. UK release.
- Steuer, Jonathan. 1992. Defining Virtual Reality: Dimensions Determining Telepresence. *Journal of Communication* 42 (4):73-93.
- Sucker Punch. 2002. *Sly Cooper and the Thievius Raccoonus* (Playstation 2). Published by SCEE. UK release.
- Sucker Punch Productions. 2004. *Sly 2 Band of Thieves* Published by Sony Computer Entertainment Europe. UK release.
- Sudnow, David. 1983. *Pilgrim in the Microworld. Eye, Mind and the Essence of Video Skill*. New York: Warner Books.
- Temco. 1998. *Dead or Alive* (Playstation). Published by Temco. UK release.
- Temco. 2004. *Project Zero II: Crimson Butterfly* (Playstation 2). Published by Ubisoft. UK release.
- Texeira, Kevin, and Ken Pimentel. 1993. *Virtual Reality: Through the New Looking-Glass*. New York: Intel/Windcrest.
- Todorov, Tzvetan. 1975. *The Fantastic. A Structural Approach to Literary Genre*. New York: Cornell University Press.
- Tosca, Susana. 2003. The Quest Problem in Computer Games. Paper presented at Technologies for Interactive Digital Storytelling and Entertainment, Darmstadt. Also available at <http://www.itu.dk/people/tosca/quest.htm>.
- Traveler's Tales. 2005. *Lego Star Wars: The Video Game* (PS2). Published by Giant Interactive Entertainment Ltd. UK release.
- Tronstad, Ragnhild. 2001. Semiotic and nonsemiotic MUD performance. Paper presented at COSIGN, Amsterdam. Also available at <http://www.cosignconference.org/cosign2001/papers/Tronstad.pdf>.
- Turkle, Sherry. 1984. *The Second Self: Computers and the Human Spirit*. New York: Simon & Schuster.
- Ubisoft Montpellier Studios. 2003. *Beyond Good & Evil* (Playstation 2). Published by Ubisoft. UK release.
- Ubisoft Montpellier Studios/Ubisoft Montreal Studios. 2005. *Peter Jackson's King Kong: The Official Game of the the Movie* (Xbox 360). Published by Ubisoft. UK release.
- Ubisoft Montreal Studios. 2002. *Splinter Cell* (Xbox). Published by Ubisoft. UK release.
- Ubisoft Montreal Studios. 2003. *Prince of Persia: Sands of Time* (PS2). Published by Ubisoft. UK release.
- Valve. 1998. *Half-Life* (PC Windows). Published by Sierra On-Line. UK release.
- Valve. 2004. *Half-Life 2* (PC Windows). Published by Valve. Steam release.
- Volition. 2001. *Red Faction* (Playstation 2). Published by THQ. UK release.
- Walker, Jill. 2003. Performing Fictions: Interaction and Depiction [online]. *Digital Arts and Culture 2003 online proceedings* [cited 17 September 2003]. Available from <http://hypertext.rmit.edu.au/dac/papers/>.
- Walton, Kendall L. 1990. *Mimesis as Make-Believe*. London: Harvard University Press.
- Warren Robinett. 1980. *Adventure* (Atari 2600). Published by Sears, Roebuck and Co. US release.
- Wells, Paul. 1998. *Understanding Animation*. London: Routledge.
- Wiener, Norbert. 1948. *Cybernetics : or Control and communication in the animal and the machine*. Cambridge, Mass.: Technology Press.
- Will Crowther/Don Woods. 2006. *Adventure* (Java version). Published by astrodragon.com. Available from <http://www.astrodragon.com/zplet/advent.html>. Original Version, 1976.
- Williams. 1980. *Defender* (Arcade). Published by Williams.

- Williams. 1982. *Robotron: 2084* (Arcade). Published by Williams.
- Winnicott, Donald W. 1971. *Playing and Reality*. London: Tavistock Publications.
- Zhai, Phillip. 1998. *Get Real: A Philosophical Adventure in Virtual Reality*. New York: Rowman & Littlefield.
- Aarseth, Espen. 1997. *Cybertext. Perspectives on Ergodic Literature*. Baltimore: The Johns Hopkins University Press.
- Aarseth, Espen. 1999. Aporia and Epiphany in *Doom and The Speaking Clock: The Temporality of Ergodic Art*. In *Cyberspace Textuality. Computer Technology and Literary Theory*, edited by M.-L. Ryan. Indianapolis: Indiana University Press.
- Aarseth, Espen. 2000. Virtual Worlds, Real Knowledge: Towards a Hermeneutics of Virtuality. Paper presented at Virtuality in Europe, 23 - 26 March, at Paderborn, Germany.
- Aarseth, Espen. 2004. Genre Trouble: Narrativism and the Art of Simulation. In *First Person. New Media as Story, Performance and Game*, edited by N. Wardrup-Fruin and P. Harrigan. Cambridge, Massachusetts: MIT Press.
- Aarseth, Espen. 2005a. From Hunt the Wumpus to EverQuest: Introduction to Quest Theory. In *Entertainment Computing - ICEC 2005, 4th International Conference, Proceedings*, edited by F. Kishino, Y. Kitamura, H. Kato and N. Nagata. Sanda, Japan: International Federation for Information Processing.
- Aarseth, Espen. 2005b. The Perception of Doors: Fiction vs Simulation in Games. Paper presented at Digital Arts & Culture 2005, 1 - 3 December 2005, at IT University of Copenhagen.

