Chapter 8: The avatarial camera

The 3D avatar represents a particular type of avatarhood as well as a particular type of computer-mediated visuality 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 visuality 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 world[83]. 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 physical environments: not as animated moving images, but as autonomous spaces and objects shot by a camera, projected through a camera lens

83 Alberti (1972), Damisch (1994).

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 understanding[84]. 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 Commoli'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 Baudry and others, the screen

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).

is not conceptualised as a window, but as a mirror, into which the subject projects its own unified (and false) self[85].

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 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

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.

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 entertainment[86].

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-scale fascinations and attractions of 'hyperreal' modern environments like theme parks, tourist attractions or shopping malls[87].

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' *The Language of The New Media* define the role of cinematic transparency and illusion as part of our interactions with computer-mediated spaces.

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).

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).

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-mediates 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:

> 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-un-

mediated. 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 loose 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' '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 a way to *travel* in hyperreality, 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 Foucault[88].

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

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)

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

89 (Friedberg 1993:177).

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 elsewhen" 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 work[90].

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

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).

corporeal form of vicarious embodiment[91]. 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 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

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).

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, irre-

spective 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, Manovich observation that "...the roles of viewer and actant are blended perfectly" (2001:210) is also a somewhat artificial construction. In embodied fiction, the distinction between 'viewer' and 'actant' is irrelevant to begin with. This difference in perspective is not just 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, and for artistic expression, that follow from vicarious embodiment in a simulated world. There is considerable artistic, cultural and technological distance, for example, between military simulators and *Super Mario 64*.

Computer games in the 'military simulator'-genre do not fit the general concept of hypermedia, a concept that serves to highlight the constant tension and negotiation between instrumental 'interactivity' and the immersive capacities of the 'remediated' media elements. Jim Bizzocchi and Robert F. Woodbury (2003) observes that when the cursor function itself becomes a part of the textual world that it allows us to interact with, the concept of 'interface' is subverted. However, this observation is relevant only in context of interactive media, or, as in Manovich' case, in the context of interactive cinema. The unreliable cursor is a "subversion" that Mario established 25 years ago, but which nevertheless failed to attract much academic attention on its own terms, in contrast to interactive films and photostory-puzzlers of various kinds.

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 avatarial 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 image[92].

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 embodiment[93]. 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

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.

inhabit the environment through photographically mediated visual kinaesthesia; we re-position as body-subjects that move in relation to the screen-projected simulated environment.

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 hyperrealism[95], 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

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).

matter of looking at, but a matter of moving around, of 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 cinema[96]. 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 synthetic[97]. 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 anymore[98].

98 The player defeats this boss by stomping on him.

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 'grown-up' 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 structure[99]. *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 universe[100]. 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 appear 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,

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.

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 dolls[101]. 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-like[102].

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 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

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.

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 culture[103]. At the same time, Virtual Reality is also seen as a paradigm for thinking about mediation, interaction and immersion in digital media. In Bolter and Grusin's *Remediation*, VR serves as the ultimate model of '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, the "perceptual illusion of nonmediation". This type of VR-research aims to identify and analyse the different elements 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' responses[104].

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

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

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).

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 Platonian 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):

> 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. In relation to computer games and similar media forms, the paradigm of Virtual Reality is distinct from 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. According to the VR paradigm, what matters is the transformation of your natural, pre-establish sense of embodiment. VR installations therefore strive towards 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 temporary step on the way. This ideal differs from the imperative of avatar-based interaction in four central respects:

First, 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, 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 is a harsh compromise. However, the contrary is the case: 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 must be already complete and 'full' from the moment you enter virtual reality.

In artistic VR installations, the popular paradigm of Virtual Reality may be transformed or subverted in various ways, aiming to produce alienation as much as immersion[105]. Similarly in computer games, playing through avatars is also playing *with* avatars, and some games are more self-conscious about vicarious embodiment than others. 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 the VR paradigm, 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

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.

funnelled into, or 'passes through', in Ryan's words, the electro-umbilical hookup that connects to the player's hands and fingers. In sensorially immersive VR, lacking the 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 stereoscopic vision, the associations of the monocular kino-eye would challenge and disturb the bid for natural embodiment[106].

Finally: VR is first-person point of view, by definition. Direct embodiment implies also a direct objective presence in simulated space; there can be 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 a 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 aim to bypass the principle of the avatar, entirely or in part, 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

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.

avatars. She does 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 sensorial 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 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 distinct paradigm of play, learning and mastery, 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.

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 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, exploiting the perceptual incorporation of non-continuous interfaces, and giving 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.

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*

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).

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 in the visual representation of space, or, in Friedberg's terminology, two different kinds of 'mobile windows'.

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.

> 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.

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).

> 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, I will 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 refer 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 in 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 ride[109]. 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 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

109 See Raymond Fielding (1983:119).

> 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 space[110]. 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

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.

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 image[111]. Translational vection, moreover, is less dependent on sensorial immersion, and gives a stronger sensation of physical motion than rotational vection; it takes the spectator for a ride[112]. The cinematic 'eye' of motion rides and avatar-based 3D is neither 'dematerialized' nor 'panoramic', but *vehicular*. Its archetypical model is the camera that is mounted on a speeding train[113]. 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 view[114]. 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 *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

111 For 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.

112 David Bordwell (1977) considers the phenomenon of self-movement in cinema. For a discussion of translational versus circular vection induced by 3D images, see Mohler, Thompson, Riecke and Bülthoff (2005).

113 The principle of vection 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 "Measuring Vection 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 translational vection, whereas its presence or absence produced no apparent differences in reported circular vection.

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 repositioning 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 film[115]. Another important factor in the development towards an ever more dynamic or 'liberated' camera has been the 'Steadicam' technology. Stanley Kubrick's *The Shining* (1980) is a notable example of how the Steadicam makes an impact on cinematography[116]. 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

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.

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).

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.

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 depends 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

117 The Omaha beach landing scene was directly re-created in *Medal of Honor: Allied Assault* (2015 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).

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 with the forces of the pre-modern, the medieval or 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-contained[118].

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. In spectacular rides, there are no tasks at hand, and the experience is usually meant to last only 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

118 For my own earlier discussion of the role of 'cyborgian' play, imagery and narrative in First Person Shooters, see Klevjer (2003; Klevjer 2006a).

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 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 and 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 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 impossible[120].

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 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

119 For a discussion of modding and modding culture, see Sotamaa (2003).

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.

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 way[121]. This avatarial configuration gives the strongest possible integration of looking and acting, of vision and destruction[122].

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.

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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, 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).

The filmic camera

The dual-locus configuration of the 3D avatar, as explained in chapter 7, loosens up the integrity of avatarial embodiment by allowing for a relative independence between the avatarial camera, the extended avatar and the player. Whereas the avatarial 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 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 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, like when ghosts glide past between the camera and the avatar-character. Such 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 slippery[123]. 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.

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 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

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.

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.