IMAGE AVATARS: SELF-OTHER ENCOUNTERS IN A MEDIATED WORLD

Kathy Cleland

Thesis submitted for the Degree of Doctor of Philosophy

University of Technology, Sydney.

2008

CERTIFICATE OF AUTHORSHIP/ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Student

_____

Kathy Cleland

ACKNOWLEDGEMENTS

Thank you, first and foremost, to my supervisor Ross Gibson for providing unfailing support and encouragement throughout the process of researching and writing this thesis.

I would also like to thank Douglas Kahn who provided supervision for an earlier incarnation of my research. A big thanks also to Anna Munster, Julian Pefanis, Kate Richards, Melinda Rackham and Chris Chesher for their advice and support along the way.

During the course of my research I have also had the opportunity to gain valuable feedback through the presentation of conference papers and articles as follows:

- (2007, 2-4 July). Face-to-face: Avatars and Mobile Identities. Paper presented at *Mobile Media*, The University of Sydney. To be published in (2008 [forthcoming]). G. Goggin & L. Hjorth (Eds.), *Mobiles into Media.* New York; London: Routledge.
- (2007). Entering the Screen. *Artlink*, 27(3), 22-27.
- (2006, 27-29 November). Image Avatars and Media Mirrors. Paper presented at *Engage: audience, art and interaction*, UTS, Sydney.
- (2004, 16-19 November). Talk to me: getting personal with interactive art. Paper presented at *Interaction: systems, practice and theory*, UTS, Sydney.
- (2004, 26-29 May). The Virtual Self: the Avatar as Digital Self-Portrait. Paper presented at *Ciber@rt Bilbao: Challenges for a ubiquitous identity*. Bilbao, Spain.
- (2003, 10-12 October). The Evolution of the Avatar. Paper presented at *Plaything*. The University of Sydney.

TABLE OF CONTENTS

TABLE OF FIGURES

ABSTRACT

This research project investigates the rapidly evolving contemporary phenomenon of the avatar, a virtual image-body that represents individuals in computer-generated terrains. In online chat spaces and websites as well as in computer games and virtual worlds, it has become increasingly common to interact with others through these visual identity stand-ins. Often in the form of cute, animated cartoon characters (both human and non-human) individuals choose how they want to represent themselves, frequently choosing visual identities that are very different from those of their offline selves.

While the digital avatar represents some unique new opportunities for individuals to choose and control their prosthetic visual identities, this thesis demonstrates that the idea of the physical self being represented by a virtual image-body is not as new or as revolutionary as the hype surrounding avatars in digital environments might suggest. In fact, the idea of a virtual image-body has been around for a long time, manifested in the technological mediations or 'body-images' seen in mirrors, paintings, film and video. These mediated images of the self act as our proxies and stand-ins extending and reactivating the self in a variety of different environments and situations. With cumulative advances in imaging and media technologies, our mediated images have become increasingly malleable, responsive and interactive. More and more, as we interact with each other through images and screens, the mediated face-to-face encounter is coming to extend and augment—and even to replace—the physical face-to-face encounter.

The aim of this thesis is to explore the unique affordances of the digital avatar as well as to situate it within a broader media ecology of earlier technologically mediated 'image avatars' of the self including mirror images, photographs, film and video.

Through this investigation of our different image avatars, this thesis argues that the self is becoming a *mixed* and *multiple* reality, both physical and virtual. Through our image avatars, we experience ourselves as both self and other, physical and virtual, singular

and multiple, dispersed through our various avatar identities as they migrate from the physical world to photographs, video, the internet, games consoles, personal computers and mobile phones.

Chapter One: Introduction—the mediated self and the image avatar

Avatar

1: the incarnation of a Hindu deity (as Vishnu)

2 a: an incarnation in human form b: an embodiment (as of a concept or philosophy) often in a person

3: a variant phase or version of a continuing basic entity

4: an electronic image that represents and is manipulated by a computer user (as in a computer game)

Etymology: Sanskrit *avatarah* descent, from *avatarati* he descends, from *ava-* away + *tarati* he crosses over (1784).

[Merriam-Webster online dictionary]

Since the first apprehension of the archetypal mirror image, we have been projecting our subjectivity into images of ourselves and identifying with those images as visual avatars of our physical selves. Through photographs, film, television, video, computers and mobile phones, the human face and body are continually being recreated as mediated virtual images that can occupy different (and multiple) spatial and temporal

locations. Each of these differently mediated images creates new ways of seeing the self, and of seeing and interacting with others.

The avatar, a virtual body that represents individuals in computer-generated terrains, is a new phenomenon that has emerged in the digital age of interactive computing technologies. In online chat spaces and websites as well as in computer games and virtual worlds, it has become increasingly common to interact with others through these prosthetic identity stand-ins. In the form of cute, animated cartoon characters (both human and non-human) individuals can choose how they want to represent themselves, often choosing visual identities that may be very different from those of their offline selves.

As these online realms become more and more popular, the digital avatar is becoming an increasingly common online presence where it operates a visual identity stand-in for its offline user. Already, there are many millions of users who assume avatar identities in games and virtual worlds and these numbers are increasing very quickly as more and more individuals use the internet for entertainment, business, education and social interaction (Castronova 2005: 2). Bruce Sterling Woodcock, an analyst of Massively Multiplayer Online Games (MMOGs), reports that there were over 16 million active subscriptions to MMOGs in 2008, 10 million of these coming from the Blizzard Entertainment Inc.'s extremely popular game World of Warcraft.[1] The web consultancy firm Kzero[2] claims that there are about 100 million active users of other non-gaming virtual worlds such as Linden Lab's Second Life, China's hipihi.com, Sulake Corporation's Habbo Hotel and Disney's Club Penguin (Keegan 2008).[3]

However, while the digital avatar represents some unique new opportunities for individuals to choose and control their online visual identities, the idea of the physical

[1] For a more detailed breakdown of user numbers for Massively Multiplayer Online Games (MMOGs) see Bruce Sterling Woodcock's website http://www.mmogchart.com [Retrieved 15 October, 2008.]

[2] See http://www.kzero.co.uk. A chart of detailing the user numbers of different virtual worlds is available from http://www.kzero.co.uk/blog/wp-content/uploads/2008/09/universe-v6-master.jpg [Retrieved 15 October, 2008.]

[3] According to Linden Lab, as of 15 October 2008 Second Life alone has 'residents' totalling over 15 million although it should be noted that less than a million of those residents had actually logged into the world during the previous 30 days. For a more detailed breakdown of user statistics for Second Life see http://secondlife.com/whatis/economy_stats.php [Retrieved 15 October, 2008.]

self being represented by a virtual image-body is not as new or as revolutionary as the hype surrounding avatars in digital environments might suggest. In fact, the idea of a virtual image-body has been around for a long time, manifested in the technological mediations or 'body-images' seen in mirrors, paintings, film and video, and its lineage stretches back even further than these technologically mediated images to the primeval notions of ghosts, phantoms and doubles.

Within this media ecology, the digitally mediated avatar builds on and extends earlier modes of subjectivity and identity formation, as well as enabling new emergent modes of self-reflection and self-presentation. The selves we see and 'read' in these image avatars play a significant role in the constitution and development of identity and subjectivity. A complex feedback cycle of projection, identification and introjection takes place between the physical self and its various image avatars.

It is through these mediated image avatars that we can come literally face-to-face with ourselves. Mirror reflections, photographs, film, video and digital images recreate the physical self as an external representational image that may be experienced simultaneously as 'self' and 'other.' In *Camera Lucida*, Roland Barthes describes this uncanny splitting and doubling of the self when he looks at his photographic image as "the cunning advent of myself as other" (1993: 12).

This intriguing and uncanny experience of seeing ourselves as externalised images—as others—is one that has now become commonplace as our image avatars proliferate in photographs, video and digital media. This has profound implications not just for notions and experiences of subjectivity but also for how we see and understand ourselves as visible entities in the world.

Our responses to our variously mediated images are inherently ambivalent. At times, image avatars provide reassuring and gratifying confirmations of self, giving us access to states of ideality and providing us with productive enhancements of the self via new modes of prosthetic identity and agency. At other times our image avatars provoke feelings of anxiety, alienation and disappointment, especially if those images do not correspond to our own internal self-image or desired self-image, or are perceived by others in a negative light. These mediated images of the self occupy an uncanny liminal

zone between self and other, living and non-living, human and non-human, real and virtual.

The notion of the uncanny is a useful theoretical starting point to investigate the feelings of ambivalence and unease that are generated by our image avatars. In his 1919 essay "The Uncanny," Sigmund Freud comments on the wide array of different phenomena that evoke in us a sense of the uncanny. These phenomena include: life-like dolls and automata, mirror images, doppelgangers, magic and animism, spirits and ghosts, and detached body parts. What all of these phenomena have in common is a sense of what Freud calls "intellectual uncertainty" (2003). They create areas of 'boundary confusion' between self and other, animate and inanimate, real and not-real, human and non-human. As we will see in this thesis, intellectual and affective ambivalence and uncertainty is generated by each successive wave of mediated images from the primordial mirror image to our most recent digital images. Each new imaging technology mediates the self in different ways, creating new ways of presenting and seeing the self, and new relationships between the self and the mediated image.

More and more, as we interact with each other and with our own sense of self and personal identity using screens and images, the mediated face-to-face encounter is coming to extend and augment—and even to replace—the physical face-to-face encounter. Various images of the self act as our proxies and stand-ins extending and reactivating the self in a variety of different environments and situations.

In the digital avatar image we see an intensification and amplification of many of the trends already seen in earlier image avatars. However, the transformative possibilities of the digital avatar, both in terms of visual appearance and in terms of behaviour and action, go far beyond what was possible with these earlier image avatars. The 'becoming other' of the digital avatar enables far more radical transformations of the self than have been possible with our earlier image avatars. This increasing non-coincidence of the digital avatar with the physical self enables a projection of idealised image avatars that can be digitally enhanced and altered to present more fluid and 'programmable' identities. These new selves can also act and interact at a distance either under the direct control of their human user or with varying levels of autonomy.

As we are increasingly (and multiply) mediated by screens, images and networked digital information and communication technologies, we are coming to understand and experience ourselves and others as *mixed realities*, both physical and virtual. N. Katherine Hayles argues that we live an age of "intermediation" where digital media forms interact with earlier media forms and cultural practices (2005) and, in *Remediation: understanding new media* (1999), David Bolter and Richard Grusin, argue that the self is "remediated" through different media forms.

What new ways of understanding and representing the self are emerging in the complex image ecology of the 21st century? How do we interact with these mediated selves and mediated others? What is the relationship between our new digitally mediated selves and earlier analogue images and representations of the self? What are the affordances and constraints of these different image avatars? And, importantly, what are our affective responses to these differently mediated selves? These are some of the key issues that we will investigate in the following chapters.

Theoretical contexts and cultural case studies

In my discussion of the digital avatar and its earlier image avatar predecessors I draw on ideas from a range of different theoretical fields including psychoanalysis, media studies, sociology, philosophy, science, the visual arts, literature and film. As new media theorist Terry Flew comments:

> As with all media, the study of new media needs to be interdisciplinary, drawing upon the insights of fields as diverse as media and communication studies, sociology, psychology, cultural studies, economics and political economy, politics, discourse analysis, history, and the visual arts (Flew 2002: 30).

Different discourses and ideas about human identity and subjectivity are not independent or self-sufficient but together can be seen as forming what N. Katherine Hayles calls a "cultural field" where they inter-animate each other. Hayles argues that although it may be difficult to trace specific influences from one discipline to another, influences in a more diffuse form "create a cultural field within which certain questions or concepts become highly charged" (1990: 4). It is the exploration of some of these

"highly charged" concepts surrounding human identity, subjectivity and representations of the self and other within an increasingly mediated visual culture that is the focus of this thesis.

In the following chapters I draw on examples and case studies from everyday experience as well as from films, literature, the visual and performing arts, and popular culture. These different arenas of the cultural imaginary provide fruitful grounds for the exploration of issues surrounding human identity and its transformations in an increasingly technologised and mediatised environment.

By exploring possible futures and giving us an imaginative sense of how those futures might feel, writers, filmmakers and artists play important roles in helping us negotiate and understand our complex technology-saturated world, and in mapping and shaping its future trajectories. In "A Cyborg Manifesto," Donna Haraway writes that: "the boundary between science fiction and social reality is an optical illusion" (1991:149). She goes on to describe science fiction writers as, "storytellers exploring what it means to be embodied in high-tech worlds. They are theorists for cyborgs" (1991:173). Like science fiction writers and filmmakers, artists are also part of a cultural vanguard investigating and testing new forms of virtual embodiment and representations of the self in virtual environments. In *Digital Performance* (2007), Steve Dixon argues that: "…pioneers of digital performance equate fully with the "avant-garde" in its original military sense of individual soldiers going ahead of the main battalion, to penetrate and explore unknown and hostile territories" (2007:8). As 'advance troops' in the digital age, artists show us what it means to be embodied in the high-tech terrain of the late 20th and early 21st centuries exploring the near-future scenarios we may all soon be inhabiting. By helping us to creatively imagine and experience new forms of virtual embodiment and subjectivity, artists allow us to critically reflect on and interrogate these new forms of technologically mediated identity.

* * *

The discussion of the digital avatar presented in this thesis is a snapshot of the recent past and present and as such can only offer a partial view of a rapidly changing and evolving terrain. However by looking at the digital avatar within the broader historical context of mediated images of the self, we situate it within a more complex media

ecology where we can observe its commonalities and differences with other earlier 'avatar images' of the self including mirror images, photographs, film and video images.

The initial chapters of the thesis have a strong focus on the earlier mediated image avatar forms of painting, photography and video. In chapters 2-4 we look at how mediated images shape the way we see and interact with the world around us and with each other. These chapters set up a context for the discussion of the digital image and the digital avatar that is the focus of the latter half of the thesis.

In Chapter Two "Mediation and mixed realities" we examine the way different images mediate the world around us, creating new realities and ways of representing and interacting with the human image. As we will see, our experience and interaction with the world and with mediated images is increasingly becoming an experience of a 'mixed reality,' a complex blend of the real and the virtual. Increasingly, we interact with the world and with each other through a range of wholly mediated or partially mediated encounters.

In Chapter Three "Seeing the self: media mirrors and image avatars" we narrow our focus to investigate the way different visual images and media technologies act as *mirrors* for the self enabling us to come face-to-face with ourselves and offering novel and intriguing views of the self.

In Chapter Four "Being seen—the self as an image" we take another look at the self as an image, this time the self as an image *seen by others*. As well as enabling us to see and interact with images of ourselves, our mediated image avatars also create a profound awareness of ourselves as visible objects in the world subject to the gaze of the other. In this chapter we investigate and interrogate the ways individuals play out and negotiate their identities through different mediated images in the social domain.

In Chapter Five "The digital avatar—experimental selves and multiple identities" we turn our focus more specifically to the way the digital avatar offers individuals increased control over their visible image avatars and also facilitates the creation of multiple experimental selves and online identities. However, as we will see in this chapter, although individuals can recreate and multiply themselves in the digital terrain,

their identity choices are still limited by a variety of different cultural and technological constraints.

In Chapter Six "The mediated face-to-face encounter" we broaden our focus from the individual to look at the way mediated screen images act as interfaces between self and other. This chapter traces the evolution of the screen image and the corresponding changes in viewing position, mode of address and audience interaction. With the earlier media forms of film and television, the screen acts as a window through which the (distanced) viewer observes the image. With the digital image, the screen becomes a portal to an interactive media space. The digital avatar enables the audience to enter the image plane and interact directly with the media image.

In Chapter Seven "Prosthetic identities—technological extensions of the self" we explore in more detail the mediated face-to-face interaction offered by the real-time digital self-avatar assemblage that we see operating in games, virtual worlds and other online environments. In this chapter we interrogate the way the self is technologically extended via a transfer or delegation of agency between the offline physical self and the online digital avatar.

Chapter Two: Mediation and mixed realities

> Machines for seeing modify perception (Paul Virilio, *The Aesthetics of Disappearance*).

In order to give some context for the exploration of our different avatar forms and our responses to them, we first need to investigate the ways different images and media technologies mediate reality and shape our experience of the world around us. Every day we see and engage with a vast range of mediated images via newspapers, magazines, televisions, computers and mobile phones. These mediated images and new media technologies play an important role in framing and shaping the way we see and understand the world around us, and how we interact with it. The mediated images of paintings, photographs, film, television, video, and our more recent digital images all modify the way we *re-present* and see the world around us. In this chapter we will investigate the ontologies and modalities of these differently mediated images, exploring the advent of the digital image within the context of the earlier visual images of painting, photography, cinema and video.

It is also through these different media forms that we come to interact with images of ourselves and of others. New imaging and media technologies modify not only our perception of the world around us but also of how we see and understand ourselves. We see ourselves in mirrors and photographs, on CCTV cameras, mobile phones and the

internet. These different media images act as interfaces—points of connection and reflection—between ourselves and the world around us.

As we will see in this chapter, our experience of the world and of each other is increasingly becoming an experience of a *mixed reality*, a complex blend of the real and the virtual. More and more, as we experience the world around us and interact with each other through a range of partially or wholly mediated images, this blended experience is becoming our lived reality.

Reality, mediation and 'ways of seeing'

How do we see and perceive the world around us? How do we know that what we see is real?

Even before we consider the way the world is mediated in obvious ways by visual images and representations such as paintings, photographs and film, it can be argued that all of our experiences of the world are already mediated. The idea that the reality we see is merely an illusion is as old as Plato's metaphor of the cave where shackled men watch shadowy images flickering on the wall of the cave convinced that what they are seeing is 'real' rather than only shadowy second-hand reflections. For Plato, the physical world we see and experience through the senses is already an imperfect reflection of the universal world of ideas and pure forms, a shadowy realm of appearances and second-hand representations.[4]

As active viewing subjects, when we look at the world around us the images we see are already mediated on a number of levels by our own physiological and neurological responses as well as by social and cultural conditioning. As neurologist Antonio Damasio puts it:

[4] Plato had an even greater distrust of the mediated images created by artists, seeing art as an imitation of an imitation - a flawed copy of a copy. According to Plato, artists merely copy the surface appearance of a thing without understanding its essential nature. The artist is "an imitator of images and is very far removed from the truth" (Republic X, 27). In contrast, Aristotle, while also seeing art as a form of mimesis or imitation of the natural world, does not denigrate artistic practice as Plato does, rather he acknowledges the creative play of artistic mimesis and its transformative potential as well as the insights this can generate about the world around us.

> …the images you and I see in our minds are not facsimiles of the particular object, but rather images of the interactions between each of us and an object which engaged our organisms, constructed in neural pattern form according to the organism's design. The object is real, the interactions are real, and the images are as real as anything can be. And yet, the structure and properties in the image we end up seeing are brain constructions prompted by an object. There is no picture of the object being transferred from the object to the retina and from the retina to the brain. There is, rather a set of correspondences between physical characteristics of the object and modes of reaction of the organism according to which an internally generated image is constructed (2000: 321).

In this process, the human organism itself acts as the first and primary mediating interface with the world around it. We extract an image from the object as it exists in the world, recreating it as a representational image in our brains. The philosopher Henri Bergson takes up this idea differentiating between the independent existence and 'presence' of the object in the world and our conscious perception of it as a 'representation' or image in the human mind:

> It is true that an image may *be* without *being perceived*; it may be present without being represented; and the distance between these two terms, presence and representation, seems just to measure the interval between matter itself and our conscious perception of matter (1988: 35).

Bergson contrasts the unlimited *virtual*[5] potentialities of the object as it exists in the world with the specific *actualised* image that the human subject extracts from it in the

[5] The word virtual has different inflections of meaning depending on its context and on the disciplinary discourse within which it is deployed. Most commonly the virtual is contrasted with the real, and is described somewhat paradoxically as an 'unreal' reality or an 'almost' reality, something that appears to be real but is without real physical existence. However, the word virtual as it used by Bergson (and, following him, Giles Deleuze and other theorists such as Pierre Levy and Brian Massumi) is contrasted with the 'actual' rather than the 'real' so in the Bergsonian sense, the virtual or virtuality represents a set of possibilities inherent to an object that may or may not be actualised. In contrast, the use of the word 'virtual' in regard to computing technologies is closer to the common use of the term, referring to something that is "not physically existing as such but made by software to appear to do so from the point of view of the program or the user"(Oxford English Dictionary). The virtual is thus an apparent or simulated reality created by computer technologies, for example, *virtual reality* is a simulated environment that human users can experience and interact with as if it were real.

moment of visual perception. In this active visual process, the human subject operates as a "centre of indetermination," detaching a specific image from the physical object. As the object in the world becomes an image in our mind, its unlimited virtual potential becomes actualised in a specific picture:

> To obtain this conversion from the virtual to the actual it would be necessary, not to throw more light on the object, but on the contrary to obscure some of its aspects, to diminish it by the greater part of itself, so that the remainder, instead of being encased in its surroundings as a *thing*, should detach itself from them as a *picture* (36).

The perception and understanding of the world as an image or picture is also explored by the philosopher Martin Heidegger in his influential 1938 essay "The Age of the World Picture" (1997). Indeed, for Heidegger it is the representation or understanding of the world as a picture that is the defining characteristic of the modern age:

> [The] world picture, when understood essentially, does not mean a picture of the world but the world conceived and grasped as a picture. … The world picture does not change from an earlier medieval one into a modern one, but rather the fact that the world becomes a picture at all is what distinguishes the essence of the modern age [*der Neuzeit*] (1977: 129-130).

This process of making a picture of the world—of *pictorialising* and *framing*[6] the world—is the first step in the process of creating mediated images that stand in for (or replace) the physical world. These different views of the world are reified in written descriptions and in visual images such as drawings and paintings and these mediated representations in turn shape how we look at the world around us.

Understanding the world as a picture also foregrounds the role of the human individual as an active viewing subject. In Heidegger's description of the *world as picture* the human *subject* is constituted as the defining focal point before which the *object* of the world is presented. As the framer of the image, the human being asserts itself as subject:

[6] Heidegger explicitly takes up this notion of framing or enframing in "The Question Concerning Technology" (1977), first published in 1954.

> The fundamental event of the modern age is the conquest of the world as picture. The word "picture" [*Bild*] now means the structured image [*Gebild*] that is the creature of man's producing which represents and sets before. In such producing, man contends for the position in which he can be that particular being who gives the measure and draws up the guidelines for everything that is (Heidegger 1977: 134).

However, although for Heidegger the pictorialisation of the world is inextricably related to the dominant agency of the human subject as the *maker* and *framer* of the world picture, it can also be argued that the human subject is similarly framed and pictorialised as an object in the world. Viewed, framed and mediated, the human subject also becomes a picture. This cognitive process of *pictorialising* and *framing* the world and the human subject is a vital part of the creative process and a necessary precursor to the creation of more explicit visual representations of the world and the human form in the visual arts.

Although, as we have seen, all vision is mediated in some way, there are clearly ontological and epistemological differences between unaided human vision and the more readily apparent mediations of painting, photography, film, video and digital media. These different visual images and media technologies act in more obvious ways to mediate our sense of reality and they play a significant role in teaching us how to look at and understand both the physical world and the human subject. Media critic and philosopher Vilém Flusser describes representational images as "mediations between the world and human beings" (2000: 9). In drawings and paintings, for example, the dynamic and ever changing three-dimensional physical world around us is translated into static two-dimensional images. These mediated representations allow us to capture and 'fix' an image from the flux of the world around us so that we can study it at our leisure. However, at the same time these mediated images also become filters that colour the way we see and interpret the reality they represent. Not only are we culturally trained in how to look at and understand images, as Jonathon Crary points out in *Techniques of the Observer* (1992), but these images in turn also play an important role in training us how to look at the world:

> …images come between the world and human beings. They are supposed to be maps but they turn into screens; Instead of representing the world, they obscure

> it until human beings' lives finally become a function of the images they create. Human beings cease to decode the images and instead project them, still encoded, into the world 'out there', which meanwhile itself becomes like an image—a context of scenes, of states of things (Flusser 2000: 9-10).[7]

In the next section of this chapter we will turn our focus from the world in general to a more specific focus on the way different images mediate, filter and represent the human subject. As we will see, painting, photography, film, video and digital imaging set up new relationships and modes of perception between the viewing subject and the mediated human image and encourage very different modes of subjectivity and ways of seeing and understanding the human subject.

Image ontologies

Paintings, photographs, film, video and digital images all operate as signifiers and stand-ins for the human subject. These mediated images can all be seen as *avatars*—visual stand-ins and reincarnations of the humans they represent—yet these different images embody very different types of representation and ways of seeing and interacting with the mediated human subject. How do our different visual media forms mediate and represent the human subject? What are the different ontologies and modalities of these images?

Among the ontological questions we might ask of images are the following: What is the formal or mimetic relationship of the image to the human subject it represents? Is the image indexical or symbolic? Is it life-size? Is it still or moving? Is it real-time or recorded? How do the affordances[8] of different visual images and media technologies affect how we can interact with and manipulate the mediated image?

---

[7] We will explore more fully the 'projective' nature of vision in Chapter Four.

[8] "Affordance" is a term used by perceptual psychologist J. J. Gibson (1979) and interaction design psychologist Donald Norman (1999) to describe the physical properties of objects that invite action and interaction. As Norman puts it they are: "the actionable properties between the world and an actor" (Norman 1999: 39). While representational images do not offer the same affordances as the physical objects they represent, they do encourage different modes of perception and engagement, and our various media technologies also offer a variety of affordances through which we which we can interact with and manipulate the mediated image.

Since we are looking at the representation of the human form, it is appropriate that we take the genre of portraiture, the visual representation of the human subject, as our key case study. One of the earliest and most popular artistic genres, portraiture dates back to antiquity in the form of statues, busts, coins, sarcophagi and wall paintings (Woodall 1997) but it was during the modern age—the age, as we have already noted, in which Heidegger claims the world itself is becoming a picture—that portraiture truly comes into its own. The Renaissance and Enlightenment periods, with their focus on the human subject and individualism, heralded a burgeoning of portraiture where the human subject is literally *framed* and becomes a *picture*.

In the painted portrait, the static, two-dimensional image comes to stand in for—to *re-present* and *make present*—the living three-dimensional human subject it depicts. The primary goal of naturalistic portraiture, which reached its height during the Renaissance, is to copy and represent as faithfully as possible the living image of the human subject. During the Renaissance period new developments in painting techniques and perspective created ever more naturalistic and life-like representations of the human figure such as Leonardo Da Vinci's *Mona Lisa* (see *Figure 2-1*).

Figure 2-1 Leonardo da Vinci, *Mona Lisa*, 1503-1506.

Although it could be argued that the more faithful and naturalistic the 'likeness,' the more successful the painting is in evoking the human subject it depicts, the painted portrait has an extraordinary amount of flexibility as a representational form, ranging

from the naturalism of da Vinci to far more stylised, expressionist and abstract forms such as those of Marcel Duchamp and Pablo Picasso (see *Figure 2-2* and *Figure 2-3*). The interpretive eye and hand of the artist is clearly evident in the painted portrait. Even at its most naturalistic, we can still see the crafted artifice of the artist's brushstrokes and the textures of the paint. In its more transformational modes, as can be seen in *Figures 2-2* and *2-3*, the painted portrait goes far beyond mimetic representation to recreate and alter the human subject far beyond simple likeness.

Figure 2-2 Marcel Duchamp, *Portrait of Chess Players*, 1911.

Figure 2-3 Pablo Picasso, *Woman Reading*, 1932.

In contrast to painting, the mediated image of photography has a very different ontological relationship to the human subject it depicts. With the photograph the interpretive hand of the artist is replaced by the automated functioning of the camera. Rather than creatively re-visioning reality as the artist does, the camera takes a direct *imprint* of it and, because of this, it copies more faithfully the objective physical reality of the subject it represents. As Roland Barthes points out in *Camera Lucida* "Painting can feign reality without having seen it. …in Photography I can never deny that the thing has been there (1993: 76). The photograph is very much like the mirror image in

this regard—its image is dependent on the existence of the object it captures and 'reflects'—and it has a much greater claim to reality or truth status than painting.[9]

In *The World Viewed* (1979), Stanley Cavell also highlights the 'reality effect' of photography arguing that photography and film represent a view of the world without the imprint of human subjectivity. With the mechanical automation of the camera, "[the] human agent [is removed] from the task of reproduction. A photograph does not present us with "likenesses" of things, it presents us, we want to say, with the things themselves" (1979: 17).

Similarly, film theorist André Bazin argues that the photographic image, because of its mechanised and automated production process, is not so much an image of the object or person but a 'tracing' or 'mould' of reality. Because of its indexical nature (its direct capturing of the reality it represents), the photograph represents a greater claim to realism than painting or sculpture[10]:

> The production by automatic means has radically affected our psychology of the image. The objective nature of photography confers on it a quality of credibility absent from all other picture-making. In spite of any objections our critical spirit may offer, we are forced to accept as real the existence of the object reproduced, actually *re*-presented, set before us, that is to say, in time and space. Photography enjoys a certain advantage in virtue of this transference of reality from the thing to its reproduction (1967:13-14).

In a similar vein, art theorist Susan Sontag compares the interpretive image of reality represented in painting with the photographic image's direct link to the object it represents:

> … a photograph is not only an image (as a painting is an image), an interpretation of the real; it is also a trace, something directly stenciled off the real, like a footprint or a death mask. While a painting, even one that meets

[9] We will deal more fully with the mirror image and the way different media images act as mirrors in the next chapter.

[10] Bazin makes an exception here for the sculptural form of the death mask which is also an automated process which takes a mould or impression of its object (Bazin 1967: 12).

> photographic standards of resemblance, is never more than the stating of an interpretation, a photograph is never less than the registering of an emanation (light waves reflected by objects) – a material vestige of its subject in a way that no painting can be (1978: 154).

Because the photograph carries a literal trace of its subject, it provides a technologically accurate copy of objective reality rather than a subjective human interpretation. In his essay "The Myth of Total Cinema" (already quoted from above), Bazin writes that the "guiding myth" of the invention of cinema, like "all the techniques of mechanical reproduction of reality in the nineteenth century, from photography to the phonograph, [is] an integral realism, a recreation of the world in its own image, an image unburdened by the freedom of interpretation of the artist…" (1967: 21). The phrase 'the camera never lies' sums up this idea (Hargreaves and Hamilton 2001: 109-10). [11]

In this recreation of the world, the development of media technologies that reproduce life-like movement as well as sound leads to an increasing sense of realism in the image. Indeed, as Bazin argues, throughout the twentieth century we see a continual evolution of the image towards an increasingly realistic representation or what Bazin calls "total cinema." In this evolutionary process, the still black and white image comes to life with the addition of movement, next sound is added to the silent film image, and then the black and white image becomes colour so that the objective reality of the world is captured in ever more total and realistic detail.

The capturing and reproduction of movement that we see in film (and video) signifies a profound ontological change as a temporal dimension is added to the image. The still "moment" of the photograph is transformed into the "momentum" of the cinematic image (Sobchack 1992: 63) and the framed human subject is animated and brought to life.

[11] The use of photography to create objective 'scientific' portraits also fed into the nineteenth century desire for taxonomies, typologies and classifications and as such was used extensively as a tool of surveillance and classification by science, anthropology, medicine and penal systems. As Peter Hamilton and Roger Hargreaves comment: "Social portraiture…and its counterparts in science, medicine and the judiciary, offered 'parallel' and related forms of surveillance; photography was used to highlight the existence of classes, categories and types of people" (2001: 111).

As we have seen, the images that appear in photographs, film and video all have a direct indexical representational link to objects in the world. Even though it is true that photographers and filmmakers do manipulate and shape reality and often have very distinctive personal styles, nevertheless the reality effect that results from the imprint and transfer of objects in the physical world to the physical media of film and video is a key feature of these media forms, at least in their analogue versions. With the advent of the digital image, that link is again called into question.

Digital media technologies can create images that are indistinguishable from conventional analogue photographs, film and video, thus calling into question the reality-status of the image. We can no longer be sure that 'seeing is believing.' The digital image combines the transformational interpretive possibilities of the representational forms of drawing and painting with the visual 'reality effect' that we have become accustomed to with the indexical images of photographs, film and video.

In a catalogue essay for the *BitStreams* exhibition held at the Whitney Art Museum in 2001, the authors comment:

> Nothing since the invention of photography has had a greater impact on artistic practice than the emergence of digital technology. While photography revolutionized the arts by superseding painting's claim to represent the "real," digital technology has become the ultimate tool for capturing the nuances of the "unreal." In digital media, all information is reduced to binary code, a series of zeros and ones, creating a dynamic arena in which images and objects can be melded, morphed, or made to disappear. Artists have taken advantage of their unprecedented control over sensation and information to produce works that challenge our everyday perceptions of color, form, sound, space and time. Imbued with unsettling emotional and psychological states, these works also reflect the pervasive sense of irreality that has come to suffuse our everyday lives in this dawning digital age (Rinder et al: 2001).

The digital image, and the data that recreates it, is of a completely different order than that of the analogue copy or image. In analogue systems, visual and sound images are 'mirrored' in material substrates in indivisible continuous form. In comparison, the digital system encodes images into 0's and 1's and stores them as discontinuous and

discrete data. Digital technology does not take a direct copy or imprint of reality, it simulates it, translating and recreating it in the 0s and 1s of its programmable code.

In "The Work of Culture in the Age of Cybernetic Systems," Bill Nicholls investigates the shifting ontologies and epistemologies that result from the transition from the camera to the computer—from the copy to the simulation. As Nicholls puts it: "The copy reproduces the world, the chip simulates it" (2000: 101).

Even before the advent of the digital image, postmodern French media and cultural theorist Jean Baudrillard argued that simulations of reality— *signs* of the real— were starting to eclipse and displace reality itself. As Baudrillard points out, mediated images generated by the mass media frequently *precede* or replace our experience of reality (the real world) and the boundary between fiction, images and artifice on the one hand, and reality on the other hand, has become increasingly blurred.

Baudrillard defines simulation as "the generation by models of a real without origin or reality: a hyperreal" (1983: 2) and comments that once simulation becomes indistinguishable from reality, the real itself is called into question. As Baudrillard puts it, "simulation threatens the difference between the "true" and the "false," the "real" and the "imaginary"" (1994: 3). With digital imaging technologies, simulation has truly come into its own, and the hyperreal digital image dominates our contemporary media sphere:

> By crossing into a space whose curvature is no longer that of the real, nor that of truth, the era of simulation is inaugurated by a liquidation of all referentials—worse: with their artificial resurrection in the systems of signs, a material more malleable than meaning, in that it lends itself to all systems of equivalences, to all binary oppositions, to all combinatory algebra. It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real for the real, that is to say of an operation of deterring every real process by its operational double, a programmatic, metastable, perfectly descriptive machine that offers all the signs of the real and short-circuits all its vicissitudes (Baudrillard 1994: 2).

Today it is clear that digital technologies are increasing the scope and seductive power of imaging technologies and are also increasingly blurring the boundary between the

real and the mediated. In the digital age, the irreal and the hyperreal are starting to compete with and replace the real. Unlike the conventional analogue photograph where 'seeing is believing,' with the digital image we can no longer necessarily believe what we see. Digital images present images that look real—hyperreal even—without necessarily having any direct referent in the physical world. Whether the digital image is created out of nothing—*ex nihilo*—or is the result of digital manipulation, its status as a direct copy of reality can no longer be assumed.

Figure 2-4 Keith Cottingham, *Fictitious Portraits*, 1990-1992.

Digital images can be seamlessly composited and blended together to create new fictional realities that are indistinguishable from those of analogue photography. Digital composites may use fragments of indexical images, but once these source images are combined together, unreal fictional simulacra are created. The digital portraits in Keith Cottingham's *Fictitious Portraits* (see *Figure 2-4*) appear to be of 'real' subjects but are in fact entirely fabricated hybrids, composites seamlessly put together from a variety of different source samples. Taking the process a step further, Brazilian artist Alceu Baptistao's hyperreal digital model Kaya (see *Figure 2-5*) is a pure digital fiction created entirely in the digital software program Maya.

The ease with which the 0's and 1's that underlie the digital image can be transformed via computer algorithms means that the digital image is inherently mutable and "programmable" (Manovich 2001). This plasticity and mutability of the digital image is

exemplified in striking visual form in digital composites and morphs. Indeed, Yvonne Spielmann cites the collage and the morph as the two key aesthetics of the digital image (1999).

Figure 2-5 Alceu Baptistao, *Kaya*, 2001.

Nancy Burson's digital composites use computer morphing technology to average and merge the features of individuals to create composite or collective portraits such as her *Beauty Composites* (see *Figure 2-6*) where she merged the faces of famous beauties from the 1950s and the 1970s to create two composite beauty portraits and *Mankind* (see *Figure 2-7*), where she merged representative faces from different races to create a collective portrait of humanity.[12]

[12] These digital composites are reminiscent of early photographic experiments by Francis Galton and Arthur Batut in the late 19th century who produced composite photographs that merged the individual images of different people such as family members or social groups to create a single merged image. However, these early images showed the ghostly traces of the various source images and do not have the apparent integrity of the more seamless contemporary digital image.

Figure 2-6 Nancy Burson, *Beauty Composites*, 1982.

Figure 2-7 Nancy Burson, *Mankind,* 1983-5.

Digital morphs, with their uncanny ability to shape-shift from one form to another, also exemplify the sense of irreality that is associated with the digital image. According to Vivian Sobchack, morphing visually represents the process of change and becoming rather than showing a fixed and stable identity (2000). [13]

Computational algorithms bring the image to life, creating a new simulacral movement rather than merely recording living movement as does conventional analogue film and video. Images erupt from the digital substrate into recognisable forms which mimic familiar analogue forms but underneath the reassuringly familiar surface image lies an

[13] Sobchack sees the digital morph as an allegory of "the quick-changes, fluid movements, and inhuman acceleration endemic to our daily lives" (Sobchack 2000: xiii).

alien sea of digital data endlessly shifting and reconfiguring. In Michael Jackson's *Black or White* music video (1991) different genders, races and age groups morph seamlessly from one to another. In a car advertisement, a tiger morphs into a car. In *Terminator 2: Judgement Day* the hi-tech cyborg terminator morphs from one visual identity (victim) to another (see *Figure 2-8*). The uncanniness and fascination of the morph derives from the tension between our knowledge that the movement or transformation we are witnessing is impossible even as we are visually and imaginatively convinced by its compellingly real appearance.

Figure 2-8 T-1000 from *Terminator 2: Judgement Day*, 1991.

The digital image can also be manipulated through the use of computer algorithms and digital overpainting to create a hybrid mixed reality image that blurs indexical and interpretive forms of representation. In Richard Linklater's innovative digital films *Waking Life* (2001) and *A Scanner Darkly* (2006) film footage of live actors is digitally overpainted to create graphic characters whose images bear the recognisable and uncanny traces of the indexical image of the human actor beneath the computer graphic image. The digitally processed footage of the actors creates a shimmering and shifting mask-like effect as the underlying indexical image of the actor takes on the unreal qualities of a painting or cartoon caricature. The mixed reality of live footage and graphic overpainting creates an hallucinatory oscillation of identity between the

indexical reality of the filmed actor and their graphically animated image (see *Figure 2-9*).

Figure 2-9 Still image from *Waking Life*, 2001.

New mediated and simulacral human images are also being created in the form of graphically animated characters or *avatars* that represent human users in computer games and virtual worlds. Like the mediation of the human form represented in paintings, these new avatars offer radical transformations of the human form giving their human users the ability to recreate and refashion themselves without being constrained by the realities of their actual physical appearance. We will be exploring these new digital avatar forms in more depth in the following chapters particularly in Chapter Five.

New media: estrangement and familiarity

Our conscious awareness of the magical strangeness and uncanniness of the digitally mediated human images we see in films like *A Scanner Darkly* and in other digital images is partly due to the newness and novelty of these images. Unlike earlier media technologies such as photography, film and video which we have had time to become familiar with, these new digital images are still fresh and new, and because of this we are more consciously aware of the emerging characteristics of the digital medium.

Not surprisingly, it is at the birth of a new technology or media form that we are most aware of its material and ontological properties. Film theorist Tom Gunning argues that when a new media technology is experienced for the first time, it evokes a sense of wonder and awe which is often equated with the magical and the uncanny. In his 2002 essay "Re-Newing Old Technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn of the Century" Gunning links what he calls the early "cinema of attractions" with the traditions of variety theatre (where magic tricks and illusions were a popular form of entertainment), and with the display of scientific curiosities and marvels in science fairs and expositions. Just as contemporary audiences today marvel at new digital special effects so too were early cinema audiences intrigued and delighted by the uncanny magic of still images coming to life and early stop motion animation and special effects.

In her book *When Old Technologies Were New* (1998) Carolyn Marvin also comments on the sense of wonder evoked as the multitudes were dazzled in the late 19th century by the then new media spectacles of electricity and the telephone. Similar reactions of wonder and fascination must have also been evoked by the first photographic images and the first radio and television transmissions, but these moments of wonder have become lost to us as these once new technologies become increasingly familiar and we become desensitised to them.

Our first experiences of technological contact with these earlier media technologies (telephones, cameras, film and television) are shadowy childhood memories that have become lost to us as we have gained an everyday familiarity with them. Our individual and collective cultural memories of these primal moments of first technological contact become apocryphal tales such as that of early cinema audiences fleeing from the cinematic image of an approaching train in Louis Lumière's 1895 *Arrival of a Train* or are displaced onto children or "primitive" societies.[14]

[14] It is interesting to note that Gunning disputes the technological naiveté of early cinema audiences, pointing out that rather than being fooled by these early cinematic images, contemporary cinema audiences actually took a knowing and sophisticated delight in the thrill and novelty of the moving image. The "screams of terror and delight were well prepared for by both showmen and audience. The audience's reaction was the antipode to the primitive one: it was an encounter with modernity" (1995: 129).

As 'new media' become 'old media,' they become part of the fabric of our reality, and after a while we become so habituated to them that they become taken for granted as a 'second nature.' Gunning describes the introduction of new technologies as an evolution from "the spectacular and astonishing" to "the convenient and unremarkable" (2003: 39). In the current cultural moment we have a heightened awareness of the unique new qualities and modalities of our emerging new digital technologies and the images they create, but in time they too will become familiar and unremarkable as perhaps they already are for a younger generation of digital natives who have never known a world without computers, the internet and video games (Tapscott 1998; Prensky 2001).

Once we have become habituated to our new media technologies and they become "unremarkable," they fade into the background unless they are brought to our conscious attention in some way. Marshall McLuhan (1967a) suggests that as media technologies are domesticated and we become familiar with their different ontologies and modalities, we become increasingly anaesthetised to them, and in this familiarity we can become blind to the ways in which they mediate reality and transform our modes of human communication and interaction.

However, although the audience's awareness of different media technologies is at its highest at the birth of a new technology when it is still new and novel and its characteristics and modalities are readily apparent, Gunning argues that this sense of technological wonder and awareness of the medium can be re-awakened, either when the technology breaks down (2003: 46) or through an "aesthetic de-familiarization" which creates a technological "re-enchantment" (47). Gunning here draws on the work of Russian formalist Victor Shklovsky (1965) who argues that art creates a heightened perception of experience by de-familiarising and "making it strange," "…art removes objects from the automatism of perception" (Shklovsky 1965: 13). Highlighting the materiality and the modalites of different media forms creates a Brechtian sense of estrangement and defamiliarisation which can operate in a variety of different ways to re-sensitise us to the mediated nature of the image and its modalities—to the image *as image*—rather than just focusing on its content. Juxtaposing different image and media forms together, we can see how they interact and rub against each other in ways that generate aesthetic, affective and cognitive friction. Seeing a video image alongside a live performer or a photographic image draws attention to each medium's different

qualities and affordances—their specific spatial, temporal, material and interactive properties.

In Chris Marker's 1962 film *La Jetée*, a science fiction narrative made up almost entirely of still photographic images, there is a wonderful and extraordinary moment when one of those images suddenly comes to life. Just after half way through the film, the still photographic image of a woman sleeping on a bed unexpectedly comes to life as we see the woman open her eyes and slowly blink, looking directly at the audience. In this moment we have moved from the ontology of the still image to that of the moving image, the opening of the woman's eyes signifies both the awakening of the woman and the awakening of the image itself. In the shift from one image modality to another there is a cognitive shock or frisson that *wakes us up* to the materiality and modality of the image. What we thought was a still image, becomes a moving image. In *La Jetée* we feel again the same sense of magic and wonder that early cinema audiences must have felt watching the still image come to life—the "magic metamorphosis" as Gunning puts it as the still image emerges into the "astonishing moment of movement" (1995: 118-119). This magical sequence in the film, where the image appears to literally come to life and 'look back' at the viewer, only occurs for a few brief seconds and it is not repeated. Nevertheless this moment re-orients and re-sensitises the viewer's perceptions for the duration of the rest of the film.

Figure 2-10 René Magritte, *La Trahision des Images*, 1929.

Artists play an important role in exploring and highlighting the different modalities, aesthetics and affordances of different media forms and images, and in making us reflect upon them. René Magritte's famous painting *La Trahision des Images* (*The Treachery of Images*) (see *Figure 2-10*), shows a painting of a pipe with the counter-

intuitive caption "Ceci n'est pas une pipe" (this is not a pipe). The painting highlights the fact that the image is an *image* and not the object that it represents—the pipe in the painting is a *painting* of a pipe, not the real thing.

In the same way that Magritte's painting draws attention to the mediated nature of the painted image, Kirsten Geisler's *Who Are You* (see *Figure 2-11*) makes us look more closely at the mediated nature of video and computer generated images and their claims to represent reality. In *Who Are You*, the audience is confronted with two wooden frames on the gallery wall containing two back projected portraits, one video, and the other a computer-generated figure. The portraits ask each other and the audience the question "Who are you?" Both portraits are equally 'unreal', they are both just images, not the 'real thing' but the video image has a privileged status in that it is seen as a more direct representation or reflection of reality than either a painting or a digitally simulated image.

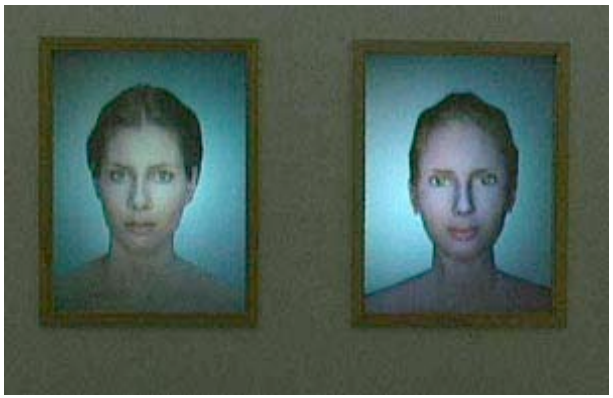

Figure 2-11 Kirsten Geisler, *Who Are You?* 1996.

When ontologies are transferred from one medium to another, there is also a transferral of the rules and reality effects from one modality to another. Canadian artist Adad Hannah's uncanny video stills show human actors mimicking the still pose of the photograph or freeze-frame. His stills hover in mid-action as if in suspended animation with only tiny movements—a slight flicker of the eyes or shake of the hands—betraying their liveness. Like glitches in a videotape on a shaky pause, the movements flicker as if from frame to frame and back again. These small movements create the uncanny

experience of a *duration* of the frozen movement evoking the childhood game of 'Statues' where children must 'freeze' and hold their poses or else move and be caught out.

Digital special effects can also make us aware of the materiality of the digital image by disrupting our suspension of disbelief, deliberately foregrounding 'impossible' images and events. In an advertisement for McDonalds' new breakfast range, we watch an image of a woman getting out of her car as she is going to work. As she emerges from her car, her image freezes or 'pauses' and a 'door' opens in her chest through which emerges a childish alter ego who goes into McDonalds to get breakfast. The child then returns and climbs back into the woman's chest handing her the breakfast on the way. As the 'door' in her chest closes, the woman's image unfreezes and she comes back to life, and looks down with surprise and pleasure at the breakfast package now in her hands.

Figure 2-12 Aziz + Cucher, *Dystopia* (*Chris* and *Maria*) 1994.

'Impossible' digital images also draw attention to the digital artifice of their construction. In Aziz + Cucher's digital portraits from their 1994 *Dystopia* series (see *Figure 2-12*) we see human faces where the facial features have been digitally erased so they have no eyes, eyebrows or mouths—there is a rudimentary nose but no nostrils. The digital erasure of the features results in a series of identity-less 'facial blanks'—impossible uncanny faces. In Julie Rrap's digital image *Overstepping* (see *Figure 2-13*)

we see a pair of human feet digitally manipulated to incorporate inbuilt fleshy high heels. The seamlessness of the digital manipulation of these hyperreal images also serves as a reminder that we can no longer trust the apparent reality of the images we see in our magazines and on our cinema, television and computer screens.

Figure 2-13 Julie Rrap, *Overstepping*, 2001.

The audience and the mediated image

So far, we have concentrated on looking at the different ontologies of mediated images and the ways they represent and transform reality. Now let us look at the role of the audience. How do we see and interact with mediated images? Why are we so fascinated by them? What do we do with them? How do the different affordances and constraints of different images and media technologies facilitate different forms of interaction and ways of seeing and controlling the image?

As well as allowing us to create imaginary images, the mediated images of painting, photography and film enable us to 'fix' and 'freeze' external reality so that we can better examine, manipulate and understand it. Images allow us to extract and preserve moments from the flux of time, so that we can contemplate and interpret them at our leisure. Through the mediation of images, we gain a sense of control and power over the objects and the reality that those images represent. Once a human image from the

physical world is represented in a painting or captured by a camera, it becomes a separate object that can be possessed and perused. This allows the mediated image to act as a stand-in for the presence of the human subject it represents. As Woodall writes, "[t]he desire which lies at the heart of naturalistic portraiture is to overcome separation: to render a subject distant in time, space, spirit, eternally present" (1997: 8).

Our love of images can also be seen as a fetishistic disavowal of our primeval fear of death. Images allow us to 'save' and 'preserve' the world around us including images of our loved ones and of ourselves. The image becomes a fetishistic talisman protecting us from the inevitable processes of aging, death and disappearance.

Media theorist Friedrich Kittler argues that media technologies become forms of prosthetic memory enabling us to preserve the past and re-experience it in the present. In *Gramophone, Film, Typewriter* Kittler argues that the camera and the gramophone have replaced literature as the primary repository of memories of the dead and departed.[15] Whereas in literature, it is the reader's own memory and imagination that activates the words on the page and makes the dead live again, audiovisual technologies capture and preserve the living images of the subjects they represent, reactivating the dead and making them live again before our eyes and ears as an externalised reality (1999: 10). Kittler writes: "The realm of the dead is as extensive as the storage and transmission capabilities of a given culture. In our mediascape, immortals have come to exist again" (1999: 13).

In superstitious belief, images also have a magical quality that links them to the physical entities they represent. In *Mimesis and Alterity* (1993) Michael Taussig draws upon Charles Fraser's notion of sympathetic magic and the Law of Similarity where mimetic objects or images are believed to have a magical relationship with the people they represent. Frazer uses the example of effigies used in magical rituals in the belief "that, just as the image suffers, so does the man, and that when it perishes he must die" (Frazer cited in Taussig 1993: 48). Taussig comments:

[15]In a similar vein, Jacques Derrida writes that the mediated image has a *hauntology* rather than an ontology. The spectral presences that we see in mediated images haunt us as they hover between life and death, and presence and absence (1994).

> …I want to dwell on this notion of the copy, in magical practice, affecting the original to such a degree that the representation shares in or acquires the properties of the represented. To me this is a disturbing notion, foreign and fascinating not because it so flagrantly contradicts the world around me but rather, that once posited, I suspect if not its presence, then intimations thereof in the strangely familiar commonplace and unconscious habits of representation in the world about me (1993: 47-48).

With the advent of the camera, the human subject also becomes increasingly objectified as an image that can be possessed and scrutinised by others. In his influential 1936 essay "The Work of Art in the Age of Mechanical Reproduction," Walter Benjamin describes the latent aggression and acquisitiveness inherent in the way mechanical reproduction enables us to gain access to objects through their images. Benjamin describes the way the camera extracts an image by "pry[ing] an object from its shell" and "destroy[ing] its aura" (1986a: 223).[16]

Reproductive media technologies also give the viewer increased access to the mediated image and the physical object it represents by "put[ting] the copy of the original into situations which would be out of reach for the original itself" so that it "meets the beholder halfway" (220). Benjamin quotes from Paul Valéry's 1928 article "The Conquest of Ubiquity" where Valéry presciently comments on the potential of reproductive technologies for the "home delivery of Sensory Reality:"

> Just as water, gas, electricity are brought into our houses from far off to satisfy our needs …so shall we be supplied with visual and auditory images, which will appear and disappear at the simple movement of the hand (Valéry 1964: 226).

The mediated image satisfies the audience's desire to "bring things "closer"" (Benjamin 1986a: 223) so they can be examined and scrutinised at their convenience:

[16] This latent aggression is also apparent in the way we use of the verb 'to shoot' to describe taking a photograph. As Susan Sontag comments: "… there is something predatory in the act of taking a picture … it turns people into objects that can be symbolically possessed (1978: 14).

> Every day, the urge grows stronger to get hold of an object at very close range by way of its likeness, its reproduction. Unmistakably, reproduction as offered by picture magazines and newsreels differs from the image seen by the unarmed eye (223).

The camera enables a particular instant of time to be extracted from the temporal flux of everyday existence so it can be observed and contemplated by viewers at their leisure. Some of the earliest photographs in the late 19th century reveal an artistic and scientific fascination with the ability of new photographic technologies to manipulate reality and to reveal 'realities' beyond the reach of normal unmediated human vision. In Eadweard Muybridge and Étienne-Jules Marey's time and motion studies we see the sequential frozen frames of human and animal movement which allowed audiences to see and analyse the subtleties of physical movement. The camera, with its ability to magnify objects in close-ups and to capture moments of time as still images, also opens up what Benjamin calls an "unconscious optics" that augments and improves upon natural vision enabling the audience to scrutinise objects in new ways not possible with the "unarmed eye" (223-226).

With today's sophisticated time-lapse photography and cinematic slow-motion techniques, movements that are ordinarily imperceptible to unmediated human vision are sped up or slowed down so we can apprehend them more clearly. With time-lapse photography time is compressed so that we can watch a foetus growing in the womb or a human face aging in the space of a few seconds rather than the months or years it would normally take. With ultra slow-motion photography, we see the rippling of muscle on an athlete's legs as she runs or the subtle transitions of emotion on a human face.

For Benjamin, the viewer's perception of still images and moving images is also very different:

> The painting invites the spectator to contemplation; before it the spectator can abandon himself to his associations. Before the movie frame he cannot do so. No sooner has his eye grasped a scene that it is already changed. It cannot be arrested (1986a: 238).

Whereas the still image encourages reflection and contemplation, the moving image of film is typified by distraction and absorption. With the still image, the viewer's own train of thought and mental associations play a key role in creating the meaning of the image. However, in the moving image, meaning—although still open to interpretation—is to a large extent determined by the ordering of the images and the cause and effect relationships established by the narrative flow. When viewing a film, the spectator's reflective train of thought is interrupted and forced into new directions by this constant flow of images and their linear narrative imperative. Benjamin quotes Duchamel "I can no longer think what I want to think. My thoughts have been replaced by moving images" (238).

In the 20th and 21st centuries we have also seen a dramatic increase in the agency of the viewer and their control over how they access and see mediated images. With painting, photography and film, it is the artist or creator of the media image who determines the image that the audience will see and, to a large extent, controls how they will see it. The viewer takes on the perspective of the artist or the viewpoint of the camera. However, with more recent media technologies such as television, video players and computers, the audience gains increased control over the selection of images and the modes of viewing them.

With the development of video recording technologies in the 1960s and domestic video players in the 1970s, viewers gained new levels of control over the moving image. Through the video remote control viewers gain the power (impossible in the physical world) to control time as well as the objects in the mediated image. The viewer can stop, start, rewind, forward, fast-forward and freeze-frame the moving image. Vivian Sobchack contrasts the unstoppable ephemeral flow of cinematic images with electronic video where the temporal flow of the image can be controlled at will by the viewer:

> This ability to control the autonomy and flow of the cinematic (through freezing images, "fast forwarding," "replaying" portions of the film's experience) and to possess its "body" so as to wilfully animate it at home (rather than have to go to the theatre where its animation is beyond one's control), is all a function of the "materiality" of the electronic (specifically the videocassette and player/recorder)—a medium that has its own ontology and, in

numerous and radical ways, has appropriated and transformed the cinematic (1992: 63).

With computers and digital software programs, audiences gain even more power to scrutinise, manipulate and control images. Images can be copied, magnified, recoloured, retouched, composited and transformed through a vast range of special effects. The ability of users to control and interact with digital images in real-time gives the user a strong sense of personal agency and control over the mediated image. The real-time interaction and responsiveness of digital media creates a compelling sense of 'liveness' and immediacy. Computer applications respond to your commands and web pages come to life under your fingers as you click through their links, start movies and trigger animations.

Unlike film and television where the viewer is interpellated en masse, with digital media the viewer experience is highly personalised. Users select their own pathway through the digital media terrain accessing content and following links based on their own interests and time schedule rather than being at the mercy of a broadcast media schedule. Web pages you have visited greet you by name when you return and suggest items you may find of interest based on your previous interactions. Computer games also deliver highly personalised experiences and remember your scores and previous game interactions.

In some ways these newer media technologies allow greater opportunities for contemplation due to the viewer's control over the media image (we can freeze-frame, pause, rewind, slow down, magnify), nevertheless this increased viewer control also leads to an intensification of distraction because of the ease with which we can change channels on our televisions, shift between different applications and windows on our computers and click from one link to another on the internet.

Media ecologies and mixed realities

Our everyday experience of the world includes the perception of the physical world of three-dimensional objects (both natural and man-made), the mediated world of words and images, and the interior world of perception, memory and the imagination. These different worlds interpenetrate each other and are part of our daily life.

Our urban and domestic environments have become mediascapes with public screens and advertising billboards, televisions, computers, games consoles and mobile phones all competing for our attention. On these different screens, and in the pages of print media, we come in contact with an array of mediated images that co-exist with and supplement the physical world and the interior world of our imaginations. Our experience of the world is increasingly becoming an experience of a *mixed reality*, a complex blend of the real, the imaginary and the mediated. In the 21st century, the proliferation of different images and media forms is leading to an increasingly diverse and complex media ecology where different image and media types co-exist and are also starting to converge through the meta-medium of digital technology. In his book *Bodies in Code* Mark Hansen takes up this idea asserting that: "mixed reality comprises a norm determining what perception is in the world today" and is the "condition for all real experience in the world today" (2006: 8).

As different realities and media forms are mixed and blended, their different individual characteristics and distinctions begin to blur and merge. In this mixed reality terrain 'old' and 'new' media technologies interact and inter-animate each other in complex ways. In *Remediation: Understanding New Media* (1999) David Bolter and Richard Grusin argue that new media technologies "remediate" old media technologies by borrowing and appropriating their forms and conventions, recreating, simulating, transforming and augmenting them in the process. In *The Language of New Media* (2001), Lev Manovich uses the term "transcoding" to describe the transference of qualities and characteristics from different media forms and the physical world to the digital medium.[17]

Different types of "remediation" or "transcoding" occur between all media forms including painting, photography, film, video, television and digital media, as they

[17] For example, the computer desktop incorporates icons representing real world office objects such as files, folders and trashcans. Similarly, the computer interfaces of different software applications also borrow from familiar cultural forms, mimicking painterly, photographic and filmic modes of representation in their icons and control panels. Video editing software incorporates video control panels and Adobe's image software application PhotoShop uses icons of paintbrushes, magnifying glasses and erasers. Microsoft Word allows users to choose between 'portrait' and 'landscape' when selecting the layout of their documents, terms both borrowed from painting.

imitate and borrow from each other forming complex feedback loops of influence and "intermediation" (Hayles 2005).

Media ontologies become blended, hybridised and transposed as they are remediated from one ontological state or medium to another and the digital medium has unprecedented power to process these ontological translations from one modality to another. The digital mimics the physical and the physical becomes a digitised virtual image. Once digitised, indexical images and computer generated simulacral images all become part of a common digital terrain, sharing the same pixels and being similarly affected by computer algorithms. In an era of increasing technological convergence and digital remediation, the different screens and ontologies of the cinema, television and computer merge and inter-animate each other.

Although the digital medium can be seen as a meta-medium that engulfs and remediates all earlier media forms (Bolter and Grusin 1999; Kittler 1999), new media technologies have not completely replaced earlier media technologies. Rather than new media replacing old media, Henry Jenkins argues that with increasing media convergence old and new media will "interact in ever more complex ways" (2006a: 6) as media content flows across different media platforms (print, television, film, internet, mobile phones and games consoles).

The digital medium is becoming a lingua franca for mediated images and its ability to simulate different media forms means that images can be translated or transcoded into a variety of different incarnations and appear on different media platforms. Although Kittler somewhat dismissively describes this as the mere "surface effects" of the interface (1999: 1) the screen interface and its affordances are central to how audiences engage with mediated images and how those images come to intersect with and augment the physical world.

Ron Burnett describes the combination of real and virtual elements in a shared hybrid image environment as a "middle space" (2004: xx) and this hybrid reality is also expressed in the terms "augmented reality" and "mixed reality" used in computer

science and increasingly by the arts and entertainment industries.[18] Computer scientist Paul Milgram suggests the idea of a "virtuality continuum" to describe the different levels of blended or mixed reality between the real environment of the physical world and the virtual environments generated entirely by computers (see *Figure 2-14*).

Figure *2-14* The continuum of mixed reality environments (from Milgram & Kishino, 1994).

The 'grey' mixed reality area in the centre of the continuum includes real environments that are augmented by digital elements such as computer graphics, and virtual environments that are augmented by elements captured from the real world such as video feeds. With augmented and mixed reality systems, and telepresence applications, the physical and virtual worlds are blended and juxtaposed. Actions in the virtual have impacts in the real world and vice versa. With the increasing trend toward ubiquitous computing, for example, the use of sensors and RFID tags in buildings, cars, appliances and other consumer products, the world itself becomes an interface (Bolter and Grusin 1999: 212-219).

Although the term *mixed reality* has specific definitions and uses within the field of computer-generated media, I use it more broadly to describe the blended co-existence and interaction of the physical world with different media forms including print media, photography, film, radio, television and video as well as the more recent digital media technologies such as the internet, digital simulations and virtual reality[19]. It is this mixed

[18] The terms "augmented reality" (Asuma, 1997; Haller, Billinghurst & Thomas, 2007) and "mixed reality" (Milgram & Kishino, 1994) are both used to describe the blending of real and virtual (digitally created) environments and experiences.

[19] It is interesting to note here that art, literature, theatre and film are frequently cited as precursors to (or early forms of) virtual reality since they create imaginary worlds and experiences. See for example, Howard Rheingold's *Virtual Reality* (1992), Darren Tofts' *Memory Trade: a prehistory of cyberculture* (1998), Pierre Lévy's *Becoming Digital* (1998), Marie-Laure Ryan's *Narrative as virtual reality* (2001), Oliver Grau's *Virtual Art: From Illusion to Immersion* (2003) and Steve Dixon's *Digital Performance* (2007: 365).

reality area between the wholly real and the wholly virtual that we all experience as our everyday realities.

In our increasingly mediated urban and domestic environments, multiple forms of mediated images pervade the physical environment so that as viewers we are continually oscillating between different images and realities. As I am typing, my gaze moves between a series of nested windows on my computer screen, to pictures on the wall, to my television screen, and to images on the covers of books lying on my coffee table. Looking across the room, I can also see out the window the framed reality of the 'real' world of trees, birds, grass and neighbouring houses.

The mixing of different ontological realities and modalities is also commonplace in the visual arts and entertainment industries. In films, human actors interact with virtual environments and digitally created characters borrow their voices from human actors. In sporting events, music concerts, and other live performances, giant video screens supplement and magnify the live performance, and these magnified images are often interspersed with shots of spectators, pre-recorded video, instant replays and animated graphics. The juxtaposition of live and mediated images enables different modalities of images to be apprehended simultaneously or in oscillation as they are compared and contrasted.

Human perception and mixed realities

Although the 'virtual realities' represented in the imagination, literature and images are typically seen as being of a different order of reality than the material physicality of so-called 'real life' (RL), this opposition between the virtual (unreal) and the physical (real) is a shaky one.

The mediated images we see in paintings, photographs, film, video and digital media, as well as mentally generated ideas and images, all produce real impacts and affective responses in the human organism. As Don Ihde points out, "…in a broader, more phenomenological sense, both RL and VR [virtual reality] are part of the lifeworld, and VR is thus both "real" as positive presence and a part of RL" (2002: 13). The perceptual experiences generated by media images can feel just as real as those generated by the

physical world. Bolter and Grusin argue that: "Media have the same claim to reality as more tangible cultural artefacts; photographs, films, and computer applications are as real as airplanes and buildings" (1999: 19).

New media theorist Mark Hansen stresses the importance of the human body as the key interface between the reality of these different worlds and the "interpenetration of physical and virtual spaces" (2006: 3). The human body continues to be our primary interface for all our experiences whether they are real, virtual or imaginary. Everything we experience—whether it's swimming in the ocean, daydreaming, driving a car, watching television or playing a video game—is experienced by the human body and the human sensorium. Even with virtual reality technologies, where the myth of disembodied experience is at its highest, this experience is still necessarily mediated by (and constituted by) the physical body. As N. Katherine Hayles comments:

> Cyberspace, we are often told, is a disembodied medium. ... In a sense, [this is] correct; the body remains in front of the screen rather than within it. In another sense, however, [this is] deeply misleading, for [it] obscure[s] the crucial role that the body plays in constructing cyberspace. In fact, we are never disembodied. ... Far from being left behind when we enter cyberspace, our bodies are no less actively involved in the construction of virtuality than in the construction of real life (1996b: 1).

In *The Media Equation: How People Treat Computers, Television and New Media Like Real People and Places* (1996) Byron Reeves and Clifford Nass argue that there is no essential or functional difference in how the brain responds to the real physical world, and how it responds to mediated images. According to Reeves and Nass our "old brains" have not yet caught up with our new media technologies and they do not have the sophistication to distinguish between an image derived from the world and a mediated image of that same object. This means that people tend to respond in essentially the same way to the audiovisual cues of a mediated image of a person as they would to a real person. Even though we may be consciously aware that mediated images are not real, nevertheless, we have an ingrained unconscious tendency to treat them as if they were.

Reeves and Nass draw on some well established psychological and sociological experiments that study how people interact with other people and objects in the real

world, and then recast those experiments replacing real people and physical objects with media images such as audio and video recordings and interactive computer personas. Their results show that people's responses to these mediated images show essentially the same physiological and behavioural patterns as real world responses even though the participants clearly know they are not real.[20] Ingrained physiological responses (such as reacting to sudden movement or sounds) and social responses (such as a tendency to be polite) are carried over from the physical world into our interaction with mediated images. Perhaps, as Sherry Turkle speculates: "*We have learned to take things at interface value*. We are moving toward a culture of simulation in which people are increasingly comfortable with substituting representations of reality for the real" (1995: 72).

Responses to mediated images may also be marked by feelings of confusion and ambivalence. One of the reasons for this ambivalence is the uncertainty of the ontological status of the image (and its relationship to reality). Looking at technologically mediated images— for example, a photograph or a live television transmission—we see something that is simultaneously real and unreal, present and absent. The mediated image challenges our perceptions on a number of levels resulting from the cognitive dissonance we experience between the physical world and the mediated image. Cognitive dissonance (and the associated experiences of perceptual and affective dissonance) is created by our uncertainty over how to classify and respond to these different images that are at once familiar and strange, real and unreal, present and absent. In *What Do Pictures Want?* (2005) W. J. T. Mitchell describes our ambivalent response to images as a "double consciousness" and this nicely describes the way our minds oscillate from an immersive suspension of disbelief where we respond to images as if they were real, and a more distanced and detached intellectual engagement.

* * *

[20] There is a tension between our old brain (with its primitive physiological and psychological responses) and the rational reflective mind that is quite aware that what it is watching is a media representation rather than the real thing. When we are caught up in a film, for example, we may indeed respond to it as if it were real. But we are also capable of stepping back from the immediacy of the moment to one of reflective awareness. This is precisely the pleasure of the horror movie. Our old brains react with the thrill of fear to the sudden movement of the killer's knife towards the victim but at the same time we know that the image is not real—there is no real danger.

As we have seen in this chapter, increasingly we interact with the world around us and with each other through a variety of mediated images that come to stand in for and to augment and transform the physical realities they re-present.

We experience the world and each other as *mixed realities*, a combination of physical reality and mediated image. Different media types intersect and inter-animate each other as images and identities proliferate and circulate within our increasingly diverse media ecology.

New technological mediations of reality such as those created by digital imaging, simulation and virtual reality operate alongside previously existing images and media forms. These new digital media forms do not necessarily replace earlier media forms, instead they co-exist with them, or remediate them, creating a complex and intertwined media ecology of mixed realities and hybrid selves.

We see ourselves through the prism of these different media images—painting, photography, film, video, and digital images—and identify with the different selves and the identities that are reflected back to us. As Bolter and Grusin comment:

> …we see ourselves today in and through our available media. When we look at a traditional photograph or a perspective painting, we understand ourselves as the reconstituted station point of the artist or the photographer. When we watch a film or a television broadcast, we become the changing point of view of the camera. When we put on the virtual reality helmet, we are the focus of an elaborate technology for real-time, three-dimensional graphics and motion tracking. This is not to say that our identity is fully determined by media, but rather that we employ media as vehicles for defining both personal and cultural identity. … New media offer new opportunities for self-definition, for now we can identify with the vivid graphics and digitised videos of computer games as well as the swooping perspective of virtual reality systems and digitally generated film and television logos. We can define ourselves through the converging communication technologies of the telephone and the Internet (1999: 231).

In these different media forms we come to see different technological reflections or *avatars* of the self. In the next chapter we will explore in more detail the way different

media technologies act as mirrors for the self, enabling us to come face-to-face with our mediated selves and to see and understand ourselves in new and different ways.

Chapter Three: Seeing the self—media mirrors and image avatars

> While he is drinking he beholds himself
> reflected in the mirrored pool—and loves;
> loves an imagined body which contains
> no substance …
> …He knows not what
> he there beholds, but what he sees inflames
> his longing, and the error that deceives
> allures his eyes.
>
> (Ovid, *Metamorphoses*)

The story of the beautiful youth Narcissus, who falls in love with his own image reflected in a pool (see *Figure 3-1*), is the archetypal myth symbolising our human love affair with our own image. In the mirror image we come face-to-face with ourselves, seeing ourselves as if we were looking at another person. This reflected mirror image inaugurates a profound splitting of the self into two: the subject (self) who looks, and the object (other) that is looked at. As we will see in this chapter, this splitting of subjectivity triggers a variety of different responses ranging from narcissistic

fascination and identification to more ambivalent responses of disconnection, uncanniness and alienation.

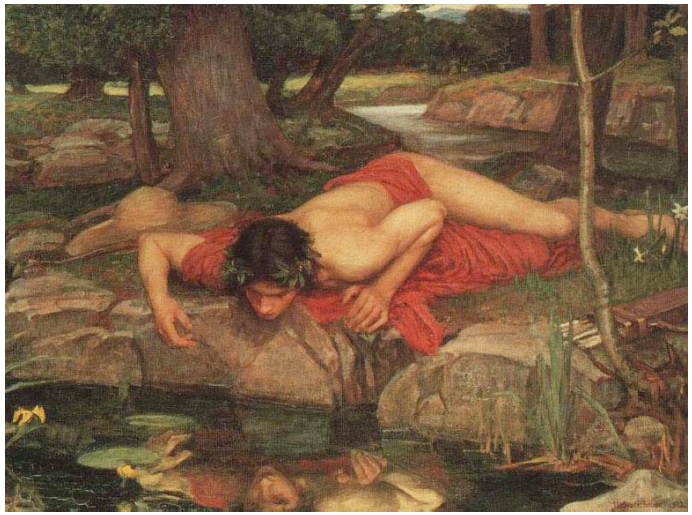

Figure 3-1 John William Waterhouse, *Echo and Narcissus* (detail), 1903.

In the 21st century, the archetypal mirror image is only the first of many mediated images of the self that we now have access to. In addition to painted portraits and drawings, over the last 150 years new imaging and media technologies have initiated many new ways of representing and seeing ourselves as visual images, transforming in very profound ways how we see and understand ourselves not just as physical entities in the world but also as *mediated visual images*. These mediated images play an important role in creating our own sense of self and *self-image*.

These mediated images can be seen as *avatars*, visual stand-ins and manifestations that double or multiply the self, recreating it as an illusory virtual presence. Mirror reflections, paintings, photographs, film, video and our more recent digital images recreate the self-body beyond itself as an externalised representational image, as an *image avatar*.

As media theorist Marshall McLuhan comments, the key lesson of the Narcissus myth is that: "men at once become fascinated by any extension of themselves in any material

other than themselves" (1967: 51). In this chapter we will look at the ways in which this fascination with our own image is played out, and how different visual images and media technologies act as mirrors enabling us to see and understand ourselves in new ways.

The mirror image

> Je est un autre. (I is another.)
>
> (Arthur Rimbaud, from a letter to Paul Demeny, May 15, 1871).

It is in the mirror image that we first come to see and understand ourselves as a coherent visual image. Through our immediate (unmediated) vision we can never see ourselves as a whole visual entity. In particular, our face—the primary site of our identity—remains hidden from us. This means that our perception of our visual selves and of our visual identity is primarily determined through mediated rather than immediate experience and this has profound implications for the constitution of our self-image and sense of personal identity and subjectivity.

As we see in the Narcissus myth, the image of the self that is reflected in the mirror image is one that is *spatially displaced and separated from the physical body*. The mirror image thus inaugurates a profound splitting of the self into two as the physical 'self' becomes a mediated visual 'other' that we can see and interact with in a number of ways. We can project our identity and subjectivity into this displaced image, so that it becomes a self-affirming confirmation of our visual presence and identity in the world, or we can see the reflected image as an 'other' that we can observe and interact with as we would with another person. The mediated mirror image thus sets up an ambivalent and oscillating set of responses, it is both 'me' and 'not-me,' 'real' and 'not-real,' 'self' and 'other.' In his essay "Of Other Spaces" (1986) Michel Foucault describes the mirror image as a paradoxical amalgam of the real and the virtual:

> In the mirror, I see myself there where I am not, in an unreal, virtual space that opens up behind the surface; I am over there, there where I am not, a sort of shadow that gives my own visibility to myself, that enables me to see myself there where I am absent… (1986: 24).

For anthropologist Edmund Carpenter, an important consequence of the mirror image is that it provides visible evidence of the existence of a non-physical symbolic self that is separate from an individual's physical self:

> The notion that man possesses, in addition to his physical self, a symbolic self is widespread, perhaps universal... A mirror corroborates this. It does more: it reveals that symbolic self *outside* the physical self. The symbolic self is suddenly explicit, public, vulnerable. Man's initial response to this is probably always traumatic (1976: 112-113).

In his description of this primal encounter with a symbolic external image of the self in the mirror image, Carpenter highlights the sense of psychic shock that occurs when the self perceives itself for the first time as an externalised image that is visible in the world. As we have seen, once the self becomes externalised as an image avatar in this way, the self becomes split, distanced from itself—it becomes an other.

Adding to the sense of otherness that is provoked by our reflected image is the externalised third person perspective from which it is seen. Taking a phenomenological approach, Don Ihde compares the embodied "here body" (the phenomenological experience of the felt or lived body) with the disembodied spectacle of the "there body" (the virtual image-body or body-as-representation) (2002: 3-15). Unlike the first person perspective from which we perceive our physical bodies (we experience our bodies from the inside out), our virtual image-body is experienced as an externalised image located in a space outside of our physical bodies.[21] The embodied self experiences the spectacle of the disembodied "there body" as an other, a detachable representational image of the self.

However, while the "here body" is experienced as 'self' and the "there body" as 'other', this experience is further complicated by complex processes of identification with (and projection into) our virtual image bodies. Art theorist Amelia Jones describes how the separation between self and other implodes when the self identifies with and projects

[21] Of course, as Ihde points out, we also experience a simultaneous third person perspective of our bodies through the visual perception of visible body parts.

itself into its mirror image resulting in an oscillation between the processes of splitting/othering and of identification:

> …in the narcissistic scenario it is the *image* (the reflection in the water) that allows the self to love the self, affording a *distance* between the self and the self-as-image, producing the self as other. This distance—like that required by aesthetics—is necessary for the self to master the other (the artist/the artwork). But, at the same time, in narcissism the image is the self, all distance is collapsed, and the borders of the frames of identity are imploded (1998: 180).

The individual's awareness of self shifts between the experience of the embodied physical self/body (the "here body") and the disembodied self-image (the "there body") which is externalised and experienced as an image-object-other. As we identify with our mirror image, there can be a rapid oscillation between first person and third person perspectives so that they appear to 'fuse' and become one.

The mirror image also plays a key role in psychoanalytic theory. Jacques Lacan writes of the infant's narcissistic fascination with its mirror image during what he describes as the mirror stage (somewhere between six and eighteen months of age) where the infant first comes to recognise and identify with its mirror image. Prior to this time the infant's boundaries between self and (m)other, and between inside and outside, are blurred and indistinct. It is in its mirror image that the infant first comes to know itself as an individuated subject. The infant's recognition of itself in its mirror image and its identification with that image, initiates an awareness of the self as an 'I', as a subject and image in the world:

> We have only to understand the mirror stage *as an identification*, in the full sense that analysis gives to the term: namely, the transformation that takes place in the subject when he assumes an image—whose predestination to this phase-effect is sufficiently indicated by the use, in analytic theory, of the ancient term *imago* (Lacan 1977: 2).

The imago is external to the infant so that the apprehension of the self—of an 'I'—comes into being not as an interior awareness of self, but as the result of an encounter with an externalised specular image. The narcissistic pleasure the child derives from its mirror image is also due to the reassuringly coherent visual identity it sees in the mirror

image which is contrasted with the infant's own lack of control over its own body which it experiences as disturbingly fragmented and incoherent.

For Lacan, this recognition of the self in the mirror image is a "misrecognition" (méconnaissance). The seemingly unified, coherent image of the self in the mirror imago is actually only a seductive fiction, the first in a series of imaginary identifications with fictive images and phantoms of the self that the subject is destined to make throughout her life. As Ovid puts it, the image that we see reflected in the mirror image is illusory and virtual, it is an "imagined body which contains no substance," an "error that deceives" at the same time as it "allures" our eyes. The narcissistic lure of the infant's externalised and phantasmatic body image reflected in the mirror is repeated in later "misrecognitions" of similarly fictive externalised body images created through an ever-increasing range of technological mediations.

The human child's narcissistic captivation with its own image is also evidence of a particularly human fascination with the virtual image:

> This act [the infant's recognition of its image in the mirror], far from exhausting itself, as in the case of the monkey, once the image has been mastered and found empty, immediately rebounds in the case of the child in a series of gestures in which he experiences in play the relation between the movements assumed in the image and the reflected environment, and between this virtual complex and the reality it reduplicates—the child's own body, and the persons and things, around him (Lacan 1977: 1).

Today, in addition to the conventional mirror image, we see ourselves through the prism of many different visual image and media technologies including paintings, photographs, film, video and digital images. Nevertheless, the mirror image remains our prototypical image avatar and is a frequent source of comparison for the 'media mirrors' that follow it.

However, before we look at the 'media mirrors' of photography, film, video and digital media, it is instructive to first look at the earlier mediated image of painting and the way it 'mirrors' the human subject. The painted portrait is a precursor to these more recent media technologies and, in its ability to creatively transform the human image, also

rehearses some of the more radical visual transformations we will see with the digital avatar.

Media mirrors: the painted portrait

With the portrait image, the mirror held up to the self is that of the painted canvas. Unlike the transitory mirror image that only exists while the object it reflects is present in front of it, the avatar image of the portrait has a fixed and enduring visual identity. The painted portrait exists as an independent entity and does not rely on the physical presence of the human subject; it thus represents a far more profound spatial displacement and splitting of the avatar image from the self-body than does the mirror avatar.

As we saw in the previous chapter, this separation of the image from the subject means that the portrait avatar can act as an autonomous virtual stand-in for the human subject it represents. The mediated image of the portrait thus represents a *presence in absence*, facilitating a variety of new relationships between the mediated image and its viewers. We will explore the way mediated images enable new forms of mediated intersubjective encounters in future chapters, but for the discussion at present, I want to focus on the way the portrait image—specifically the *self-portrait*—enables new forms of *self-reflection*.

The genre of self-portraiture is intimately associated with the dual processes of self-reflection and self-presentation. Although, as we saw in the previous chapter, portraiture is one of the earliest genres in the visual arts dating back to antiquity, the genre of the *self*-portrait[22] is more recent, only emerging as a distinct sub-genre of portraiture during the Renaissance with the advent of new techniques for mirror production and the greater accessibility of accurate mirrors (Melchior-Bonnet and Jewett 2001; Pendergrast

[22] The term self-portrait itself was coined in the nineteenth century during the Romantic period with its celebration of the power of individuality and the creative genius of the artist. Prior to that time self-portraits were typically described as a "portrait of the artist done by himself" or a "likeness by oneself" (Woods-Marsden 1998; Avgitidou 2003; Griffey 2006). The Oxford English Dictionary dates the first use of the term self-portrait as 1831.

2003).[23] Indeed, the mirror is a necessary pre-condition for the self-portrait as it is only through this reflected image in the mirror surface that the artist can see his own face in order to paint it. The use of the mirror as a device for both self-reflection and self-portraiture is shown in a very literal way in Parmigianino's famous *Self-Portrait in a Convex Mirror* (see *Figure 3-2*), a technical tour de force where the artist paints a precise reproduction of his image as it appears to him in the curved surface of a convex mirror, including the distorting effects of the mirror itself.

Figure 3-2 Parmigianino, *Self-Portrait in a Convex Mirror*, c.1524.

The increasing popularity of portraiture and self-portraiture during the Renaissance and Enlightenment periods reflects the rise of Humanism and the increasing interest in the individual human subject during this period.[24] This concern with individual subjectivity

[23] Even though mirrors became more accessible during the Renaissance period, they were still quite small and very expensive. It was not until modern production methods for large sheets of glass were perfected in the twentieth century that mirrors, as we know them today, became relatively cheap and widespread. For more information on the fascinating history of mirrors, see Pendergrast (2003) and Melchior-Bonnet and Jewett (2001).

[24] The growing popularity of portraiture in Western culture parallels the rise of the novel which has also been closely associated with the exploration of individual subjectivity and the invention of the modern subject. In *The Rise of the Novel* (1957), literary critic and historian Ian Watt investigates the focus on the individual human subject in the novel as a reflection of the social and cultural milieu of the time including philosophical ideas that emerged during the Renaissance and Enlightenment, for example Descartes' *cogito*.

and identity and its visual expression is an essential characteristic of the self-portrait. As an adjunct and extension of the mirror image, the reflected image of the portrait opens up new possibilities for self-representation and for self-examination. In the self-portrait, the avatar image of the self is consciously re-visioned and re-created by the artist, acting as a more subjective mirror than the conventional mirror image. In the self-portrait the artist fuses the representation of his external appearance with his subjective experience and understanding of himself. These visible external images of the self can then be observed and scrutinised by the artist. For example, in Rembrandt van Rijn's many self-portraits (around 80 portraits painted over a period of more than forty years) we see a visual diary showing the artists' evolution from a young to an old man (see *Figure 3-3* and *Figure 3-4*) through various stages of confidence and prosperity to growing disillusion and self-doubt.

Figure 3-3 Rembrandt van Rijn, *Self-Portrait as a Young Man*, 1629.

Figure 3-4 Rembrandt van Rijn, *Self-Portrait*, 1660.

As Angeliki Avgitidou puts is, self-portraiture becomes the "visual equivalent of thinking through, the search for the 'real me': I see/show myself in order to find out who/how I am" (2003: 133). Avgitidou also links the practice of self-portraiture with Michel Foucault's "technologies of the self" where the "self-portrait can be 'justified' as an attempt to care for the self, a kind of self-exercise and self-examination, a duty to the exploration and advancement of the self" (132).

This increasing focus on subjectivity and the interior psychological life of the human subject becomes more evident in the continuing development of portraiture throughout the modern and Romantic periods where the portrait is increasingly used to reveal the inner psychological self—the 'true self'—as well as representing a recognisable likeness of the outer physical self. In contrast to the more staged performative aspects of earlier Renaissance portraiture, where the portrait enacted and attested to the social position and status of the subject, more and more portraiture came to be associated with capturing the "inner essence" of the subject (Woodall 1997: 5).

The evolution of the genres of portraiture and self-portraiture also reflects changing ideas about human identity and subjectivity. The unified and reassuringly stable identity of the modern bourgeois subject exemplified in nineteenth century portraiture gives way, in the twentieth century, to representations of the fragmented, multiple and destabilised postmodern subject. Art theorist Ernst van Alphen sees the contemporary portrait as indicative of a crisis in modernist mimetic representation:

> …in twentieth century art the portrait has become such a problematic genre, marginal as well as central in a subversive way, because from a semiotic point of view the crisis of modernity can be seen as the recognition of the irreconcilable split between signified and signifier. At the moment that artists stop seeing the sign as a unity, the portrait loses its exemplary status for mimetic representation. But artists, who have made it their project to challenge the originality and homogeneity of human subjectivity or the authority of mimetic representation, often choose the portrait as the genre to make their point. The portrait returns, but with a difference, now exemplifying a critique of the bourgeois self instead of its authority, showing a loss of self instead of its consolidation; shaping the subject as simulacrum instead of as origin (1997: 241-242).

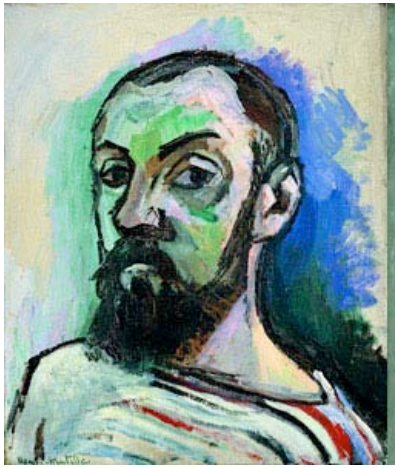

Figure 3-5 Henri Matisse, *Self-Portrait*, 1906.

Figure 3-6 Pablo Picasso, *Self-Portrait*, 1906

This visible mediation and fictiveness of the subject—the split between signifier and signified—is an integral characteristic of the painted image. As we saw in the previous chapter the painted image does not have the same claim to represent reality as the photographic image that represents a literal 'trace' of its human subject. Even in highly naturalistic and life-like portraits, the painted image shows clear signs of the hand of the artist in a way that the indexical images produced by the conventional mirror image and the camera do not. The painted image facilitates a creative transformation of the human image rather than its literal 'objective' depiction. Indeed, with the advent of photography (which we will discuss in the next section) and the ease with which cameras capture an accurate likeness of their human subjects, the painted portrait is freed from its role of naturalistic mimetic representation. The twentieth century sees the 'mirror' of the painted self-portrait become increasingly non-naturalistic as the self is reflected in the fragmented multi-perspectival images of cubism, in Dadaist collage, and in the surrealist creation of fantastic and dreamlike imaginary selves. The subjective and transformative re-visioning of reality is particularly evident in the highly stylised and abstracted forms of self-portraits of artists like Henri Matisse, Pablo Picasso, Salvador Dali and Frida Kahlo (see *Figures 3-5, 3-6, 3-7* and *3-8).* As Alphen comments:

> The project of 'portraying somebody in her/his individual originality or quality of essence' has come to an end. But portraiture as a genre has become the form

of new conceptions of subjectivity and new notions of representation (Alphen in Woodall 1997: 254).

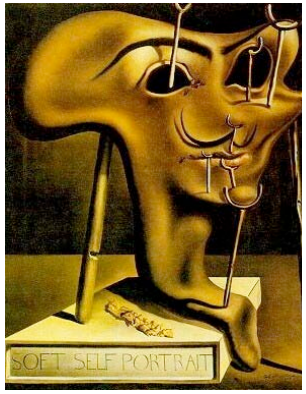

Figure 3-7 Salvador Dali, *Self-Portrait with Grilled Bacon*, 1941.

Figure 3-8 Frida Kahlo, *Little Deer*, 1946.

Before we move on to look at the more 'objective' self-portrait images enabled by the camera, one more important feature of the painted portrait image needs to be discussed. We have already noted the way the portrait image initiates a far more radical spatial displacement and separation of the human subject from its avatar image than is possible with the conventional mirror image. Unlike the transient mirror image which requires the physical presence of the human subject for its existence, the still and durable image of the portrait avatar allows the human subject to contemplate itself as a fully autonomous and independent image.

This spatial displacement and separation of the mediated portrait image from the human subject it represents is also accompanied by a radical *temporal* displacement of the image. Unlike the mirror image where we can only see reflections of our *present selves*, in the portrait image we can see and scrutinise images of our *past selves*. These image avatars are unaffected by the temporal aging of the physical body and act as enduring material reminders of the visual identities of past selves. This ability to see the self across time enables a profound new understanding of the self as a sequence of historical selves. As already mentioned, Rembrandt's many self-portraits taken over the course of the artist's life are exemplary in this regard. The portrait avatar image thus becomes a *time traveller* enabling us to preserve past images of ourselves so that they can live on

into the future. As we will see in the next section, this temporal displacement of the image from the human subject is also a defining characteristic of photography and film.

The camera: a 'mirror with a memory'

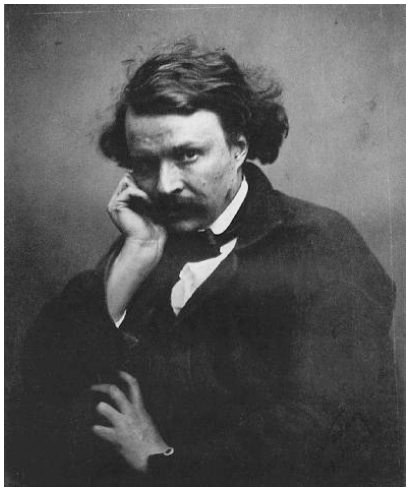

Figure 3-9 Felix Nadar, *Self-Portrait*, 1910.

Like the painted portrait, the photographic image holds up a mirror to the human face and captures a durable and lasting image of its subject. However, with this new media mirror the reflected image avatar contains an actual physical imprint of the human subject making it a far more literal mirror that its painted predecessor (see *Figure 3-9*). The photograph combines the permanence of the painted portrait with the 'objective' imprint of reality that the mirror image provides. Early photographic images in the mid- to late-19th century were frequently compared with the mirror image and were described as a "permanent mirror" or a "mirror with a memory" (Ewing 2004: 10).

The advent of the camera also made access to images of the self much more democratically accessible to the general public enabling a much wider social access to the genre of portraiture, which had previously been limited to the wealthy and the famous (Woodall 1997; Hamilton and Hargreaves 2001):

> [Photography] soon admitted an unprecedentedly wide clientele to portraiture, enabling people who could not previously afford, or were not considered worthy of, painted immortality to have their features recorded for posterity. Photographic portraits were, for example, soon commonly circulated as calling cards and collected into albums by the middle-class intelligentsia (Woodall 1997: 6).

Indeed, with the invention of the camera, the painted portrait was quickly eclipsed by the photograph as the key means of capturing a durable image of the human subject. For the first time members of the general public could now capture and examine images of themselves enabling them to become familiar with their visual identities—and with their own faces.

In today's media-saturated environment with its proliferation of images of the self, a lack of familiarity with one's visual identity seems unthinkable, but this was not the case in the mid-19th century when many people still did not have access to accurate mirrors in their own homes. In *The Faces in the Mirror*, William Ewing comments that people not familiar with their mirror images were often astounded when they saw their photographic image for the first time, their initial reaction typically being "one of shock" resulting in either extreme pleasure or disappointment depending on how they felt about their photographic representation. Even more astounding is the information that when Parisian photographer Felix Nadar's clerk handed clients the wrong photographs they typically accepted them as their own image without question (2004: 10).

It is salutary to remember that it has only been in the 20th century that the widespread availability of accurate mirrors and cameras has led to our contemporary familiarity with our own visual identities, and to realise how important visual images have become to us in the formation of our subjectivity and in constructing a sense of our own visual presence and identity. In *Prosthetic Culture: Photography, Memory and Identity* (1998), Celia Lury describes what she calls the "subject-effects" of "seeing photographically" in contemporary culture, commenting that as well as creating durable prosthetic visual identities for the human subject, "…the photograph, more than merely representing, has taught us a way of seeing …and …this way of seeing has transformed contemporary self-understandings" (1998: 3).

In these new image avatars made possible by the camera we experience a second iteration of the Lacanian mirror stage as we come to identify with our photographic images, projecting and reading our identity in the images that we see reflected in these new media mirrors. Just as the child misrecognises itself in its mirror image, so too does the human adult continue to identify with its illusory virtual image in photographic images. As media theorist Friedrich Kittler comments: "Film was the first to store those mobile doubles that humans, unlike other primates, were able to (mis)perceive as their own body" (1999: 16). In our new media mirrors of photography and film we now have permanent recorded images of ourselves that allow us to see and identify with multiple images of our past ourselves, initiating complex new forms of (mis)perception and illusory identification in the interplay of memory, projection and identification.

As Barthes points out, with the advent of the camera, individuals *en masse* are now enabled to see themselves "on the scale of History" constituting a seismic shift in modes of self-perception:

> To see oneself (differently from in a mirror): on the scale of History, this action is recent, the painted, drawn or miniaturized portrait having been, until the spread of Photography, a limited possession, intended moreover to advertise a social and financial status – and in any case, a painted portrait, however close the resemblance (this is what I'm trying to prove) is not a photograph. Odd that no one has thought of the *disturbance* (to civilization) which this new action causes. I want a History of Looking. For the Photograph is the advent of myself as other: a conniving dissociation of consciousness from identity (1993: 12).

For Barthes, the uncanny "advent of myself as other" that he sees in the mediated image of the photograph and its "dissociation of consciousness from identity" initiates an even more radical alienation of the self from the image than occurs with the mirror image. Unlike the mirror image, which relies on the immediate physical presence of the human subject—and reflects a living, moving image of its subject—the photographic image exists as an independent physical identity that is radically separate from its human progenitor.

These photographic avatars also show us fleeting and partial versions of the self, disrupting and challenging the experience of the self as a unified, coherent entity and providing visual evidence that we are not one, we are many. The moments and poses

caught by the camera represent a reification and fragmentation of the self in "a thousand shifting photographs, altering with situation and age" (Barthes 1993: 11).

In his article "Portraits, Mirrors, Death," Yuri Tsivian recounts the comments of Russian playwright Leonid Andreev after witnessing his cinematic image avatar in a short documentary film:

> Cinema kills the very idea of identity. Today my mental image is still formed by what I am at this moment. Imagine what will happen when the cinematograph splits my self-image into what I was eight years old, eighteen years old, twenty-five years old! …What on earth will remain of my integrity if I am given free access to what I was at different stages of my life? …It makes you feel scared (Andreev cited in Tsivian 1992: 68).

Today, Andreev's fears have become our everyday realities. We routinely witness these different versions of ourselves in the photo albums, videos and websites that have become testaments to our very identity. In these postmodern times, the idea that we are not a stable unified subject no longer provokes anxiety but has itself become something of a commonplace. Rather than evoking the profound sense of unease experienced by Andreev, these images have become reassuring signs of our existence and reality.

The uncanniness of the mediated image

For many theorists, the objectification and reification of the self in mediated images also evokes uncanny associations with death and spectres. In photographs, images of our past selves are preserved for the future, immune to the processes of aging and death that afflict the physical body. In these images we can come face-to-face with our past selves kept forever young. However, while images allow us to disavow or cheat death, they simultaneously act as death's ghostly reminder. In our photographic images we see ghosts of our former selves. Talking of being photographed, Barthes describes the process as an embalming, and the photograph as an effigy (1993: 12), "a micro-version of death" where the subject becomes "a spectre" (14). He goes on to comment that: "Death is the *eidos* of [the] photograph" (15) and "[w]hether or not the subject is already dead, every photograph is this catastrophe" (96).

Similarly, Susan Sontag comments:

> All photographs are memento mori. To take a photograph is to participate in another person's (or thing's) mortality, vulnerability, mutability. Precisely by slicing out this moment and freezing it, all photographs testify to time's relentless melt" (Sontag 1978: 15).

Even when the still, frozen image of the photograph is brought to life in the cinematic image, where it is reanimated to simulate a sense of life and living movement, the uncanniness of the image is still clearly apparent. Film theorist Christian Metz describes the cinematic image as a mirror that reflects phantoms rather than real objects and living beings. The cinematic image, "is not really the object, it is its shade, its phantom, its double, its *replica* in a new kind of mirror" (Metz 1982: 44).

The frozen still image of the photograph and the flickering representations of the cinema image show us ghostly apparitions returning from the past to haunt the present. Paul Virilio describes the mechanical reproduction of our images as a ghostly "cloning," and a production of the "living dead:"

> ...we will see industrial production of a personality split, an instantaneous cloning of living man, the technological recreation of our most ancient myths: the myth of the double, of an electroergonomic double whose presence is spectral - another way of saying a ghost or the living dead (1997: 39-40).

Sigmund Freud's seminal 1919 essay "The Uncanny" provides some useful insights into the uncanny nature of the splitting and doubling of the self that we see in these new mechanically produced image avatars. Freud links the idea of the double (as seen in mirror images, shadows and other representational images) with death and ghosts, tracing its origins to the evolution of the idea of the soul in response to the fear of death.[25] Freud comments:

> The double was originally an insurance against the extinction of the self, or, as Rank puts it, 'an energetic denial of death', and it seems likely that the 'immortal' soul was the first double of the body. … In the civilization of

[25] In this essay Freud draws on Otto Rank's earlier 1914 study "Der Doppelgänger."

> ancient Egypt, it became a spur to artists to form images of the dead in durable materials. But these ideas arose on the soil of boundless self-love, the primordial narcissism that dominates the mental life of both the child and primitive man, and when this phase is surmounted, the meaning of the 'double' changes: having once been an assurance of immortality, it becomes the uncanny harbinger of death (2003: 142).

The sense of uncanniness and alienation that is generated when we see our mechanically re-animated images can also be attributed to the diminished sense of agency and control we have in regard to these new images. In "The Work of Art in the Age of Mechanical Reproduction" Walter Benjamin writes of the experience of actors whose images are mechanically reproduced and projected on the cinematic screen, commenting that the "feeling of strangeness that overcomes the actor before the camera … is basically of the same kind as the estrangement felt before one's own image in the mirror" (1986a: 230). However, as Benjamin points out, this new image avatar has an additional layer of uncanniness, "…now the reflected image has become separable, transportable" (231) enabling it to exist independently from its human progenitor.

The alienation the actor feels in the face of his mechanically produced cinematic image is also explored by the playwright Luigi Pirandello in his 1915 novel *Shoot* (2005) which documents the experiences of a cinematograph operator in the early days of silent cinema. In *Shoot!* the camera is seen as an instrument that mechanises life and steals the human soul and Pirandello uses it as a metaphor for the increasing mechanisation and alienation of the human condition in the age of the machine. His cameraman hero proclaims: "Long live the Machine that mechanizes life!" (7):

> The machine is made to act, to move, it requires swallowing up our soul, devouring our life. And how do you expect them to be given back to us, our lives, our soul, in a centuplicated and continuous output, by the machines? Let me tell you: in bits and morsels, all of one pattern, stupid and precise... (Pirandello 2005: 7)

The moving image of the cinema also inaugurates profound new modes of self-representation, self-perception and self-awareness. In his introduction to *Shoot!* Tom Gunning quotes from Jean-Luc Godard's 1965 film *Pierrot le fou*, where one of the characters speaks the following lines directly to camera: "We have entered the age of

the Double Man. One no longer needs a mirror to talk to oneself" and goes on to comment that the advent of the moving image produces a "new mode of self-observation and self-consciousness" (2005: vii).

As well as providing ghostly glimpses of our preserved past selves, the fragmented images we see in photographs and film also show us strange new views of our bodies. As we saw in the previous chapter, the camera enables new augmented forms of vision including close-ups and slow-motion images where the subtleties of facial expression and physical movement can be intimately observed. In the cinematic image the actor can directly observe his own moving image whose actions, unlike the mirror image, are independent of his own body. In close-ups, the human body is fragmented into its constitutive parts: a face, a hand, breasts, a torso, feet, etc. Such close-ups literalise Lacan's description of the fragmented body experienced by the subject in dreams of "disintegration" and "disjointed limbs" (1997: 4) and represent the uncanny return of the infant's experience of its body as a fragmented "body-in-bits-and-pieces" (Grosz 1990: 44). Freud also refers to the profound uncanniness of detached body parts, "a severed head, a hand detached from the arm … feet that dance by themselves" (2003: 150) which evoke in us primal fears of castration and dismemberment.

For Benjamin, who refers at length to Pirandello's work, when an actor's image is cinematically reproduced, the actor loses his "aura"—his here-and-now physical presence and agency in the face of the audience. Not only is the actor's soul or "aura" stolen by the camera, the avatar image itself is mechanically processed and re-presented, subjected to the mechanical quirks of the cinematic apparatus. In the early days of the cinema, the camera and projector were both hand-cranked which meant that the movements of human actors frequently appeared jerky and unnatural. Early silent films were also shot and projected at 16-18 frames per second, which created a flickering effect.[26] The actress Varia Nestoroff, another character in *Shoot!,* reacts with horror when she first sees her cinematic doppelganger on screen:

> She herself remains speechless and almost terror-stricken at her own image on the screen, so altered and disordered. She sees there someone who is herself but

[26] It was not until the "talkies" in the 1930's that the frame rate was standardised at 24 frames per second.

> whom she does not know. She would like not to recognise herself in this person, but at least to know her (Pirandello 2005: 40).

This sense of anxiety provoked by the image avatar is also shown in Andy Warhol's film and video portrait of Edie Sedgwick in *Outer and Inner Space* (see *Figure 3-10*). Warhol filmed Sedgwick on 16mm film sitting in front of a video monitor where a pre-recorded video of her was simultaneously being screened.

Figure 3-10 Edie Sedgewick in Andy Warhol's *Outer and Inner Space*, 1965.

Callie Angell comments:

> … Sedgwick seems to be unnerved, not by the film camera she is facing, but by the uncanny presence of her own pre-recorded video image looking over her shoulder from the television behind her. Video—and perhaps television as well—seem to be directly implicated as the instrument of her suffering (2002: 280).

Angell goes on to suggest that Sedgwick's discomfort can be sourced to the "tension that arises between the living reality of a person and the image that person is reduced to, a conflict which she must literally act out, in real-time, in this film … as she endures the ordeal of the face-off with her televised self" (280).

Whether the individual's response to their screen image is one of existential angst or narcissistic gratification, there is no doubt that the moving image of the 'cinematic mirror' creates a profoundly different subjective experience of the self than is possible with the conventional mirror image or with still painted and photographic images.

However, up until the development of domestic film and video equipment, it was rare for most people to see recorded moving images of themselves. As Metz comments, although "…film is like the mirror…[it] differs from the primordial mirror in one essential point: although, as in the latter, everything may come to be projected, there is one thing and one thing only that is never reflected in it: the spectator's own body (1982: 45).

It was not until the second half of the 20th century that the domestic availability of Super 8 film and domestic video cameras made it increasingly common for us to see ourselves reflected in recorded moving images, enabling us to access new perspectives and dynamic views of the self in motion. In particular, it is in the work of early video installation artists in the 1960s and 1970s that we see an in-depth investigation of the medium of video as a tool for new modes of self-observation and self-surveillance.

Video: the moving image and self-surveillance

The narcissistic self-surveillance enabled by the mirroring video image is a key characteristic of the video medium. In her influential article "Video: The Aesthetics of Narcissism" (1986), American art critic Rosalind Krauss posits narcissism as the defining feature of early video art and video installations—the video medium enacts a solipsistic "self-encapsulation" enabling individuals to see and interact with images of themselves.

This solipsistic self-encapsulation enabled by the video mirror is exemplified in Nam June Paik's famous video installation *TV Buddha* (see *Figure 3-11* where a statue of the Buddha sits in front of a monitor where his real-time image, captured by a video camera, is reflected back to him. The monitor acts as a 'video mirror' allowing the Buddha to meditate on his own video avatar image for eternity.

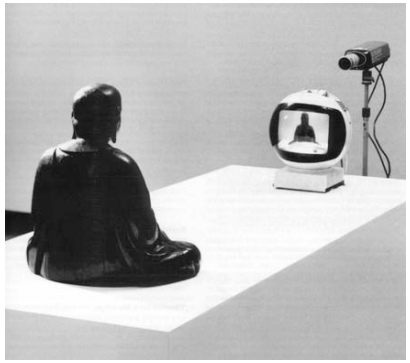

Figure 3-11 Nam June Paik, *TV Buddha*, 1974.

TV Buddha also exemplifies another characteristic of video, the ability to record and transmit images at the same time. When the video camera is connected to a video monitor, images can be captured and displayed simultaneously, making it possible to see real-time moving images of the self for the first time since the mirror image.

The use of the video camera as a tool for new modes of self-surveillance and self-observation has been explored by many artists who have not only captured their own images but have also created gallery installations that enable audience members to see and observe their own video images in new and novel ways.

Images captured by live-feed video cameras, enable audiences to experience the uncanny splitting and 'othering' of the video image from the physical self. The video avatar acts as an uncanny double confronting the audience participant with strange and intriguing views of their physical selves. Coming face-to-face with their real-time video avatars, the audience members become both viewers and the viewed. As contemporary video art critic Michael Rush puts it:

> …video installation artists at the end of the [twentieth] century have used the medium for ever-deepening examinations of the self. The camera has the unique property of being a conduit for real-time images of the self; when placed in a designed environment like an installation it has the power to present an encompassing view of the self. … In many installations, the viewer actually enters the artwork in a literal sense to experience it. For artists occupied with

> issues of identity, this ultimate merging of viewer and viewed is especially pertinent (1999: 148).

Figure 3-12 Peter Campus, *Interface*, 1972.

In *Interface* (see *Figure 3-12*), video installation artist Peter Campus enables gallery viewers to see both their mirror and video avatars simultaneously by setting up a sheet of transparent glass in a darkened gallery room to act as both a physical mirror and as a projective surface. The video camera captures an image of the gallery visitor and projects it on the glass alongside their reflected mirror image enabling both the mirror avatar and video avatar to be seen in the same viewing plane. Depending on the position of the viewer, the images may appear to be standing next to each other or appear to be super-imposed, one emerging out of the other, face-to-face or back-to-back. This work draws attention to the uncanny difference in orientation between the mirror image and the video image. The mirror image is actually a reversed (left-right) image of ourselves. In the video image we see a truer (non-reversed) reflection of ourselves but one that is strangely disconcerting because of our greater familiarity with our mirror images.

In *mem* (1975) and *Aen* (1997), Campus also creates strange and unfamiliar views of audience members by experimenting with the positioning of cameras, projectors and glass screens to create strange skewed or upside down images. Other early video art installations by artists such as Bruce Nauman, Dan Graham, Peter Weibel, Ira Schneider and Frank Gillette also exploit both the mirroring and self-surveillance possibilities of

the video medium as well as its ability to provide different uncanny temporal and spatial views of the audience.

The ability of video to record and playback real-time and pre-recorded events means that it can simultaneously display different time intervals within the present moment. With the video image we can see the present time (with real-time closed-circuit feeds) and the past, allowing us to see both past images the self as well as present images. Video also enables other temporal manipulations—speeding up, slowing down, freeze framing and reversing the flow of the image. We experience the *durational* qualities of the image—we see time passing, time as it unfolds from moment to moment. As Rush comments: "It is in Video art, unlike any traditional form, that time can be manipulated, literally slowed down, sped up, erased, thus eliminating the boundaries of past, present, and future" (2003: 134).

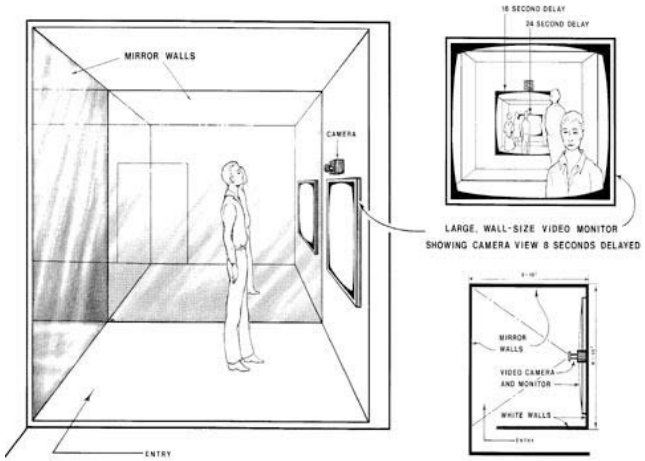

Figure 3-13 Dan Graham, *Present Continuous Past(s)*, 1974.

Dan Graham's installation *Present Continuous Past(s)* (see *Figure 3-13*) uses mirrors as well as video technology to insert the audience into the installation, presenting them with discontinuous but simultaneous avatar images of themselves at different time intervals. Comments the artist: "In causing a reflection and at the same time finding the self reflected, he/she divides into subject and object, into an awareness and an image" (Graham 1993). The installation comprises a mirrored room with a video monitor set

into the middle of one of the walls. The mirror shows audience members an immediate reflection of themselves in the present. Simultaneously, a video camera captures their image in the room as well as their reflection in the mirror. The captured image is then displayed on a video monitor with an 8 second time delay so that the audience has the uncanny experience of seeing themselves duplicated both temporally and spatially, appearing at different temporal intervals (present and past) and spatial locations (the mirror and the video monitor.) Because the video playback image includes the mirror image (which contains a reflection of the video monitor) audience members see themselves in the gallery space (8 seconds earlier) and also their image in the video monitor containing the mirror reflection that shows them 16 seconds earlier. This recursive effect, achieved by pointing the camera at the mirror image, creates an infinite feedback loop endlessly multiplying the video and mirror avatar images at different time intervals.

Figure 3-14 Frank Gillette and Ira Schneider, *Wipe Cycle*, 1969.

Wipe Cycle (see *Figure 3-14*), a collaboration by Frank Gillette with Ira Schneider, also explores the temporal dislocation of the video image avatar using image feedback and time delays. The *Wipe Cycle* installation comprises a bank of nine video monitors (3x3). Four monitors show pre-recorded footage (from television and other sources) and the

other monitors show live and time-delayed images of viewers as they enter the gallery. Comments Gillette:

> The most important function of *Wipe Cycle* was to integrate the audience into the information. It was a live feedback system which enabled the viewer standing within its environment to see himself not only now in time and space but also eight seconds ago and sixteen seconds ago. … It was an attempt to demonstrate that you're as much a piece of information as tomorrow morning's headlines (Gillette quoted in Rush 1999: 125).

Gillette describes Andy Warhol's visit to the exhibition:

> Andy, of course, loved seeing himself on television, but even he was a little confused by the multiple images and time delays. He kept shifting his briefcase from hand to hand to see if he was really being filmed live or not (Gillette quoted in Rush 2003: 19).

As well as the different temporal views of the self made possible by the video mirror, we can also see different spatial orientations of the self—from the front, the sides and the back. Unlike the mirror image, which is directly controlled in real-time by the movements of the viewer, the video image allows both spatial and temporal dislocations where the movements of the video avatar seem to take on an apparent life of their own beyond the control of the viewer. Margaret Morse describes the video avatar image as a "video replicant," "…free to wander, no longer tied to a mirror position; once recorded, it is unleashed in time as well to enjoy its semiautonomous but ever so repetitive existence (1998:172).

Unlike the mirror image, which is controlled by the embodied eye of the viewer and her position in relation to the mirror, the video mirror image is controlled by a disembodied external eye, that of the video camera itself. When the video camera is positioned to capture a frontal image of the viewer, the video mirror reflects a more or less familiar mirror image, one that appears to be under the visual control of the viewer and her frontal gaze. However, if the video camera is positioned to the side of the viewer or, even more disconcertingly, behind her, the reflection displayed in the video mirror is unnervingly unfamiliar showing the viewer an image of herself that is radically exterior to her own look. Positioning the camera to the side of or behind the viewer thus gives

the sense that the viewer is being observed or spied on, inducing a disquieting feeling of unease and mild paranoia.

Bruce Nauman's closed-circuit video installation *Live/Taped Video Corridor* (see *Figure 3-15*) exploits the uncanniness of the video image showing audience participants unnerving images of themselves as seen from behind. The installation comprises a long narrow corridor with an entrance/exit at one end and two monitors set one above the other at the other end of the corridor. The lower monitor shows a pre-taped video of the empty corridor and the upper monitor shows a live closed-circuit video image captured by a camera positioned high up on the wall at the entrance of the corridor facing the monitors. As soon as an audience member enters the installation, her image is captured and displayed on the upper monitor at the other end of the corridor.

Figure 3-15 Bruce Nauman, *Live/Taped Video Corridor*, 1969-70.

Unlike the familiar mirror image of the self where the subject sees a frontal image, typically including her face, in *Live/Taped Video Corridor* the audience member is confronted by a view where she can only see a rear-view image of herself and the back of her head. This evokes the same uncanny feeling as René Magritte's famous painting *La reproduction interdite* (1937) (see *Figure 3-16*) which shows a man looking into a mirror that reflects an image of the back of his head instead of the expected image of his face. The disturbing uncanniness of Magritte's painting lies in its literal effacement of identity, the reflected image of a man with no face, and this uncanny experience is

duplicated in *Live/Taped Video Corridor*. Because your face is not visible in the video image it may take awhile to even recognise that the image in the monitor is indeed you. As an audience member, there is a shock of recognition when you realise that the figure you see in the monitor slowly walking up the corridor is actually a real-time image of yourself and not a pre-filmed actor. The installation design never allows you to see your own face in the screen-mirror (although others may see it as you turn away from the monitors to face the camera). You can only verify that the image is indeed yourself by what you are wearing, your hairstyle and how you are moving, never through the affirmation of your facial identity.

Figure 3-16 René Magritte, *La reproduction interdite*, 1937.

Live/Taped Video Corridor also confounds our visual expectations in another way. The closer we get to the monitor at the end of the corridor, the further away we are from the camera and the smaller our image becomes. Again, this experience is diametrically opposed to the way conventional mirror images work where the closer we get the larger and more detailed our image becomes. This creates the strange and alienating experience of appearing to walk away from yourself rather than towards yourself as you get closer to the video-mirror.

Morse comments on this feeling of uncanniness when confronting her video image in *Live Taped Video Corridor* and the profound experience of dislocation and

defamiliarisation it creates: “To me it was as if my body had come unglued from my own image, as if the ground of my orientation in space had been pulled out from under me” (1998: 155-56).

Figure 3-17 Peter Weibel, *Observing Observation: Uncertainty*, 1973.

This same uncanny disorientation where the video mirror refuses to reveal a frontal image of the viewer is also exploited in Peter Weibel’s *Observing Observation: Uncertainty* (see *Figure 3-17*). The installation consists of three video cameras positioned at the perimeter of a circle. The cameras are set up in such a way that audience members can observe different parts and views of their bodies but they can never see their faces or a coherent view of themselves no matter how many different positions and placements they try.

* * *

Digital video artworks incorporating audience images and themes of surveillance and self-observation also continue to be explored by more recent artists making use of the capacities of digital imaging and sequencing technologies to manipulate and display images of the audience in new ways. The digital avatars displayed in these more recent works bear strong similarities to the video avatars discussed above, but digital technologies enable more sophisticated manipulations and transformations of the video avatar image. The use of digital databases to store images and image sequences that can

then be retrieved and re-presented create expanded possibilities for both spatial and temporal manipulations of the image avatar.

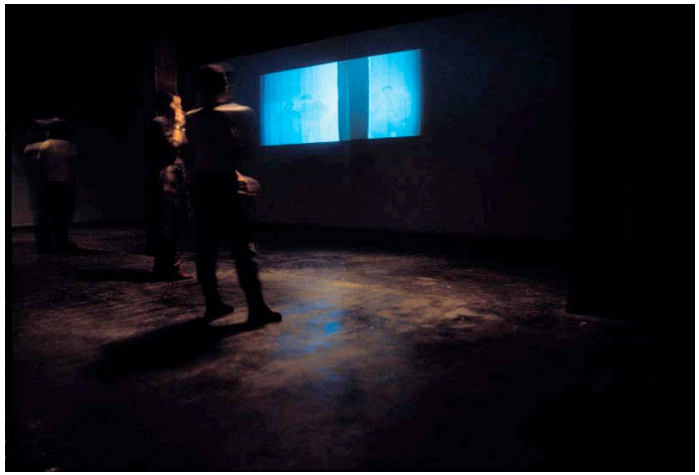

Figure 3-18 Alex Davies, *Swarm*, 2003.

Australian artist Alex Davies' work *Swarm* (see *Figure 3-18*) uses captured video images of the audience to create a dynamic live audiovisual environment. Video images of the audience are taken continuously over the period of the exhibition and stored in a database so they can be manipulated and re-sequenced to create ghostly greyscale projections of audiences present and past. The projection acts as an uncanny video mirror where audience members see images of themselves as well as images of previous exhibition visitors. There are three layers of video images: one taken in real-time, the second drawn from the most recently captured video footage, and a third layer selected at random from the video database. The computer system transitions rapidly through the different layers so that images appear and disappear creating what the artist describes as "a shimmering ghostly visual aesthetic" (Davies n.d.). Video reflections of audience members are revealed by a moving mask or window that travels horizontally across the viewing plane where the phantom video avatars are projected. As the video mask moves across the space, the width of the window also dynamically changes, triggering a spatialised audioscape made up of ambient sounds, footsteps and murmuring voices. Over the period of the exhibition, the work accumulates thousands of video fragments

in its database, any one of which may reappear days or even weeks after a particular individual or group has left the exhibition. These video phantoms appear, sometimes singly, sometimes in groups, providing a ghostly record of previous exhibition visitors, which eerily mingle in the same visual plane with the images of current visitors.

In another video installation, *Dislocation* (see *Figure 3-19* and *Figure 3-20*), Davies continues to explore the idea of audience self-surveillance, but here he experiments with the layering and merging of real-time images and pre-recorded images to create uncanny hybrid *mixed reality* images where real-time video images of audience members are captured and digitally composited with images of pre-recorded video characters.

In the installation, you enter an empty gallery room where there are four individual portals set into one of the walls. As you look through one of the portals, you see what appears to be a simple closed-circuit video feed of the gallery room you are in, including your own image seen from behind. Typically once audience members realise that they are seeing themselves in the viewed image, they turn around to check for cameras and then try to verify that the image they are seeing is indeed themselves by staging movements to check whether the movement is reflected in the image in front of them.

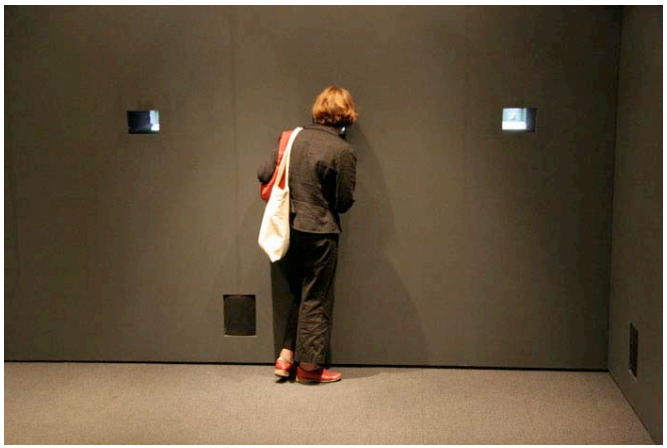

Figure 3-19 Alex Davies, *Dislocation*, 2005, installation view.

Figure 3-20 Alex Davies, *Dislocation*, 2005, the view through the portal.

The auto-voyeurism of watching your own image is given an uncanny and disturbing twist when you also become the unwitting observer/voyeur of a number of different scenarios that are apparently being played out in the room behind you. As you watch though the portal, you may see a man entering the room and walking up behind you, or a young couple coming into the room and kissing, or a security guard entering with a barking dog. This uncanny sense of bodily presences behind you, and your own possible vulnerability to these presences, induces you to turn around and look behind you, but when you do you are confronted with an empty room.

Dislocation plays with notions of appearance and reality, the 'real' indexical images of the audience and the pre-recorded 'phantom' video characters occupy the same viewing plane, their apparent physical reality only shown to be false when the audience member turns around to confront the empty space behind them. The real and the virtual seamlessly merge in the video image that the audience participants see through the portals. Indeed, once the participant's image is digitally captured it too becomes virtualised. The hyperreal fabrication of the composite digital image subverts the traditional 'seeing is believing' ethos of traditional video, and the simultaneous presence and absence of these digital images and phantoms sets up an uncanny mixed reality visual experience where you cannot trust the evidence of your own eyes.

Radical translations: the transformative digital mirror

In the digital age, the computer-mediated screen is fast becoming our most important new media mirror reflecting a variety of different new and transformed images of the self. Unlike the traditional mirror and its photographic, cinematic and video analogues, with their straightforward reflection of what is in front of them, the reflections provided by the computer can be digitally altered to create a myriad of radically transformative effects. Artist and theorist David Rokeby describes interactive computer systems as "transforming mirrors" (1995). As Rokeby describes it:

> …an interactive technology is a medium through which we communicate with ourselves—a mirror. The medium not only reflects back, but also refracts what it is given; what is returned is ourselves, transformed and processed. To the degree that the technology reflects ourselves back recognizably, it provides us with a self-image, a sense of self. To the degree that the technology transforms our image in the act of reflection, it provides us with a sense of the relations between this self and the experienced world (1995: 133).

While many of the images we see reflected on the computer screen remediate or simulate conventional indexical images of the self such as photographic or video images, as we have seen, with the digital image this direct indexical link may no longer apply. In the digital age, images of the self can be manipulated, transformed and mutated just as easily as any other digital image.

The digital mirror reveals the radically transformative nature of digital technologies and their ability to seamlessly blend recognisable visual elements of the viewer with computer-generated mutations and distortions. Dynamic graphical effects controlled by computer algorithms can be applied to the viewer's image in real-time to create strange new digital reflections.

In his series of software mirrors, Daniel Rozin uses automated computer programs to parse and transform images of the viewer. The viewer's image is captured by a video camera and then digitally manipulated and mutated before being dynamically displayed on the mirror-screen. The transformed reflections are synchronised with the movements of the viewer creating a strong causal connection between the viewer and his transformed digital reflection. In *Time Scan Mirror* (see *Figure 3-21*), images of the

viewer's face are sampled over a period of 30 seconds to create multiple perspectives of the face, which are spatially stretched out and dynamically scrolled across the screen. Similarly, in John Tonkin's *time and motion study* (see *Figure 3-22*), a camera captures a series of still images from audience members that are then projected as a dynamic visual timeline creating a 'time and motion study' of animated audience self-portraits.

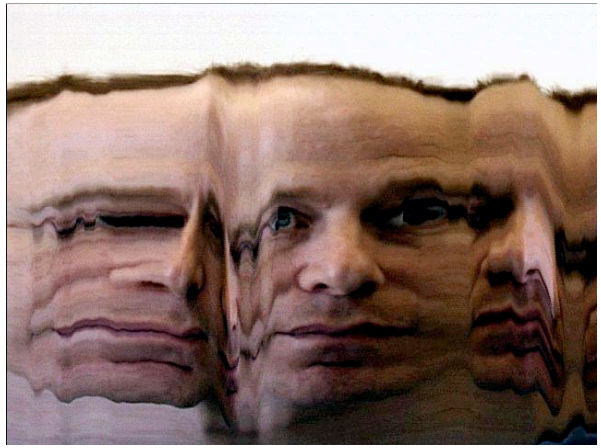

Figure 3-21 Daniel Rozin, *Time Scan Mirror*, 2004.

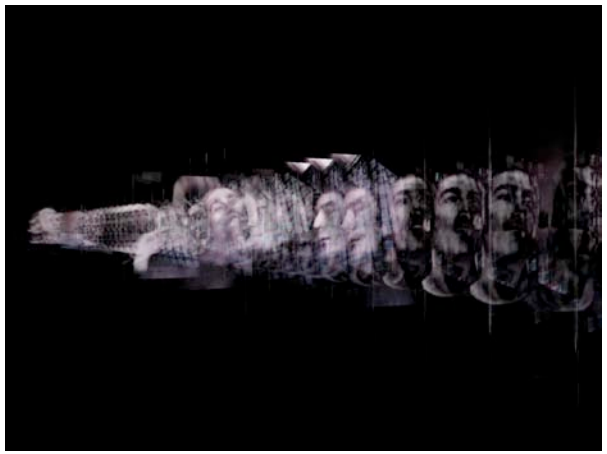

Figure 3-22 John Tonkin, *time and motion study*, *2003/2006*.

These new digital mirrors produced by computer software have much in common with the distorting mirrors of fun fairs and sideshows but they can also make use of face tracking techniques to create more focused and discrete transformations. Ed Tannenbaum's *Elastic Surgery*[27] allows individuals to scan and manipulate their faces using software that warps facial features to create grossly distorted images which nevertheless still retain traces of the identity of the source face. Similarly, Apple's Photobooth software program (that comes as part of OSX) has a built-in 'fun mirror' function that allows users to apply a number of distortion effects to their faces including: stretch, squeeze, dent, bulge and twirl. These real-time digital mirrors share the transitory, ephemeral nature of the conventional mirror image but they can also be captured and digitally recorded thus allowing them to be retrieved and redisplayed at a later time.

These artworks highlight the ability of the digital mirror to transform and mutate the avatar images of its viewers. Although the audience member may be responsible for generating or triggering the digital reflection, the artist/programmer and the computer/art system play a determining role in shaping the form and content of the digital image. Transformed by computer algorithms, these digital reflections have a tendency to evade and exceed the control of viewers in far more radical ways than is possible with the analogue mirrors of photographs, film and video.

Figure 3-23 Monika Fleischmann and Wolfgang Strauss (with Christian-A. Bohn), *Liquid Views: the virtual mirror of Narcissus*, 1993.

[27] *Elastic surgery* can be viewed at Ed Tannenbaum's website: http://www.et-arts.com

In the interactive installation *Liquid Views: the virtual mirror of Narcissus* by German artists Monika Fleischmann and Wolfgang Strauss (with Christian-A. Bohn) (see *Figure 3-23*) we see a recreation of the archetypal myth of Narcissus in the digital realm. A computer monitor with a touch screen is embedded in a pedestal screen-side up so when the viewer looks down into the screen of the monitor she sees her own face reflected back at her as though looking into a pool of water. The image of the viewer is captured by a live video camera and a transformative computer algorithm is applied to the image so that it appears as if it is under water. When the viewer touches her image, the image begins to blur and the water to ripple.

Art critic Christiane Paul comments on the transformative nature of the digital mirror in *Liquid Views*:

> *Liquid Views* both translates the corporeal experience of the reflection into the virtual realm and at the same time unveils the function of the interface as a technological device that translates the viewer's image into the virtual space of reflections. Interaction entails a distortion of the image that is controlled by the laws of the machine (2003: 169).

Figure 3-24 Lynn Hershman, *Paranoid Mirror*, 1995-6.

Lynn Hershman's *Paranoid Mirror*[28] (see *Figure 3-24*) also creates a series of uncanny mirror reflections using interactive computer technology. As audience members approach what looks like a conventional mirror hanging on the gallery wall, sensors in the floor detect their presence and trigger different sequences of video that are displayed as 'reflections' in the digital mirror. In its inactive mode, when it is waiting for audience interaction, the mirror shows the back of a woman's head. Once a viewer approaches the mirror, a starting sequence is triggered and the woman's head, as if becoming aware of being looked at, starts to turn around before dissolving into sequences of pre-recorded images from the video disk and reflected images of the viewer standing in front of the mirror.

Figure 3-25 Alexa Wright and Alf Linney, *Alter Ego*, 2002-2004.

The individual's lack of control over the avatar self reflected back at them in the digital mirror is also a feature of *Alter Ego* (see *Figure 3-25*), an interactive installation by Alexa Wright and Alf Linney, where audiences are presented with a particularly uncanny digital mirror image. In the installation, the audience member is invited to enter a darkened room and sit in a chair in front of what appears to be a large, dark mirror or reflective surface with a ghostly white mask-like image reflected on it. As you

[28] The work was inspired by Van Eyck's famous *Marriage of Arnolfini* (1434) where an image of the artist can be seen reflected in a mirror situated centrally in the background of the painting behind the bride and groom. Likewise, in the background of the *Paranoid Mirror* is a shadowy presence of the artist herself as well as other fore-grounded reflected images of the viewer and other women pre-recorded in the stored videodisk sequences.

line up your face with the white mask, a camera located in the frame of the mirror captures your image.[29] When your image is successfully captured, it is mapped onto a 3D digital model and your digital mirror image is suddenly reflected back at you. Once this digital doppelganger appears, it starts to mimic your facial expressions, but after awhile it begins to act more autonomously, winking at you or pulling faces. The experience is as if your mirror reflection suddenly took on a life of its own. Indeed, *Alter Ego* represents a literal example of Barthes' "advent of the self made other" as the self is re-embodied and animated as a digital doppelganger that assumes its own agency and interacts in a semi-autonomous fashion—an uncanny and unsettling experience.

The computer software that controls *Alter Ego* tracks and synthesises facial expressions in real-time enabling it to fairly reliably recognise and reproduce fifteen different facial movements and expressions including: smiling, laughing, winking, sadness, fear, surprise, anger and disgust. The digital facial image is made up of a series of morph targets and each model is individually sculpted to create a realistic range of expressions. Nevertheless the digital other that is reflected back at you from the other side of the screen presents an unsettling and uncanny digital 'other'. There is something spooky and not quite right about the face and the way it moves and displays expressions. It exemplifies the notion of the uncanny as *unheimlich*, the familiar made strange. Because we are so used to watching human faces and analysing the nuances of facial expressions, the current limitations of digital animation techniques are readily apparent creating a sense of alienation and unease.

Other new digital imaging technologies such as digital morphing and digital compositing have created powerful new tools to seamlessly transform the digital image. As we saw in the previous chapter, the digital morph visually represents a process of change and becoming rather than fixed and stable identity and resonates with new postmodern understandings of the fluidity and mutability of identity. The everyday transformation of faces that occurs as a result of aging, cosmetic changes (makeup and hairstyle), and the more radical changes that have become possible through plastic

[29] To enable this process to happen you have to hold your face absolutely still for 5-10 seconds, somewhat reminiscent of the frozen positions of subjects posing in the early photographic process of the daguerreotype.

surgery, enter a new realm with the digital morph where we see a series of 'impossible' but visually compelling transformations. With the magical shape-shifting of the digital morph, the reflected image can progressively be altered so that the 'self' seamlessly transforms into an 'other.'

Figure 3-26 Denis Beaubois, *Constant,* 2003 (still images from digital video).

In Denis Beaubois's video work *Constant* (see *Figure 3-26*) we see a photo-realistic human face which slowly and fluidly morphs into different faces, changing age, race and physical features as it does so. The morph is so slow that the facial changes are barely perceptible from moment to moment but reveal profound changes over longer time periods. A number of source faces were used in the construction of *Constant* but it is impossible to tell which of the faces that emerge through the digital morph correspond to the 'real' faces and which are the avatar 'in-betweens'. Self and other, different races and ages, all liquefy as different faces slowly emerge from and subside into the image flux of the morph.

As we see in *Constant*, the morph produces an endless series of 'in-between' identities as the morph transitions between key reference images. While the key reference images may have direct referents in the real world, these in-between identities are pure digital fictions. In *Meta-morphing* (2000), Vivian Sobchack comments:

> Like that which is uncanny, morphing generates our physical and cultural "double"—some radically other "familiar" whose visible image … not only "reflects" us but also "renders" and "clarifies" us. As our physical double, the morph interrogates the dominant philosophies and fantasies that fix our embodied human being and constitute our identities as discrete and thus reminds us of our true instability: our physical flux, our lack of self-coincidence, our subatomic as well as subcutaneous existence that is always in motion and ever changing (xii).

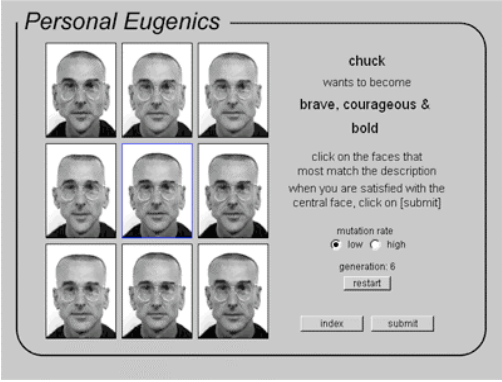

Figure 3-27 John Tonkin, *Personal Eugenics*, 1999-2000.

In John Tonkin's interactive installation *Personal Eugenics*, users scan and transform their digital image using automated software that morphs their features to create an animated process of facial 'evolution' based on the user's own desired goals for 'improvement" (see *Figure 3-27*). Similarly, Nancy Burson's *Human Race Machine* allows individuals to scan their faces and then morph them to create a variety of transformations including gender, racial and age morphs (see *Figure 3-28*). These works interrogate the disturbing idea that identity and subjectivity, including gender and race, can be transformed as easily as a digital image. Scott Bukatman comments on the seductive attraction of the physical transformations played out in morphing: "Like so many tantalizing digital dreams, morphing holds out the promise of endless transformations and the opportunity to freely make, unmake, and remake oneself" (2000: 226).

Figure 3-28 Nancy Burson, *Human Race Machine*, 2000.

The power of individuals to use digital technologies to change and manipulate their own visual images is becoming ever more evident in the enhanced digital images that we see reflected on our computer screens in digital images and on personal websites. Increasingly, the images reflected back to us in the transformative digital mirror of the computer screen are those of idealised or fantasy selves that are not tied to the specificities of our physical bodies. In computer-mediated online spaces such as chat rooms, games and virtual worlds, it is becoming increasingly common for individuals to be represented as digital avatars, cartoon-like pictorial representations whose visual identities can be freely constructed (see *Figure 3-29*).

The narcissistic lure of these digital avatars can be very seductive, particularly when the digital image that is reflected back in the digital mirror is a pleasurably idealised fantasy identity. Inheriting something of the infant's jubilant misrecognition of itself in the mirror image, these new screen images set up new fictive identities for the self to identify with, and they offer access to states of ideality far beyond those that are possible with our more indexical photographic and video image avatars.

Figure 3-29 Avatars in the virtual world *Second Life* (www.secondlife.com).

Just as with earlier media mirrors and image avatars, these new digitally mediated reflections of the self enable us to see and understand ourselves in new and novel ways. As with our previous media mirrors, these new image avatars initiate new forms of subjectivity and virtual embodiment. As Sobchack puts it:

> Insofar as the photographic, the cinematic, and the electronic have each been *objectively constituted* as a new and discrete techno-logic, each also has been *subjectively incorporated,* enabling a new and discrete perceptual mode of existential and embodied presence. In sum, as they have mediated and represented our engagement with the world, with others, and with ourselves, photographic, cinematic, and electronic technologies have transformed us so that we presently see, sense, and make sense of ourselves as quite other than we were before each of them existed (2004: 139).

Lacan's theory of the mirror stage needs to be updated to account for the new range of experiences and identifications enabled by our new media mirrors, in particular the transformative virtual body of the digital avatar. As we inhabit our new digital screen avatars, controlled in real-time by our physical bodies, we experience a complex distribution of identity and subjectivity between our physical and digital selves. For N. Katherine Hayles, the cyborgian human-machine coupling of the digital avatar initiates a new mirror stage, the "mirror of the Cyborg," where the boundaries of the physical body are opened up to new transformative configurations enabled by the virtual cyborgian body. The physical self-body inhabits one side of the computer screen but it is simultaneously dematerialised and rematerialised in a virtual body as it enters the virtual domain behind the screen:

> The additional dimensions that open beyond the specular reflections of the screen, reinforced by the fuller range of sensory feedback, give the Mirror of the Cyborg different dynamics from the Lacanian mirror. Moving into cyberspace binds the subject and object positions together in a reflexive dynamic that makes their identification problematic. The putative subject is the consciousness embodied in physical form, while the object is the puppet behind the screen. Since the flow of sensory information goes in both directions, however, the puppet can also be seen as the originary point for sensations. Along with many others who have experienced this technology, I found this ambiguity one of cyberspace's most disturbing and arresting features. Cyberspace represents a powerful challenge to the customary construction of the body's boundaries, opening them to transformative configurations that always bear the trace of the Other (Hayles 1993: 187).

We will be exploring the transformations of identity enabled by the digital avatar and the way these new virtual bodies operate as prosthetic identities in more detail in the following chapters.

Ambivalent responses: narcissism and alienation

As is evident in this chapter, the ways we experience the separation and displacement of the self in our different image avatars is profoundly ambivalent. On the one hand, our experience of ourselves in our image avatars may be one of pleasurable narcissism and self-affirmation (as described by Lacan) where we experience our image avatars as empowering amplifications of our sense of self and agency. We come to know and understand ourselves through the mediated reflections and representations we see in our image avatars. Our media mirrors and image avatars provide gratifying and durable evidence of our existence in the world. We identify with, and project ourselves into, these visible avatar selves. The superstitious fear that the camera 'steals the soul' has given way instead to a belief in the camera's ability to 'prove' and 'preserve' our existence and our experiences—images prove that we exist and provide documentary evidence of our existence.

On the other hand, our experience of our image avatars may be one of shock and uncanniness (as described by Carpenter, Barthes and Benjamin) where we see strange others that we do not recognise (or do not want to recognise) as ourselves. These selves may threaten our sense of self as a unified and coherent entity, or they may challenge our internal self-image and the image that we want to project into the world. As we have seen, seeing ourselves as reified object-others rather than active subjects can also create a feeling of helplessness or powerlessness in regard to these displaced body images, especially when those images are appropriated and manipulated by others.

Responses to our image avatars may also change over time. The uncertainty and existential shock provoked by encountering an unfamiliar view of the self may give way to feelings of fascination, delight and engagement as the image becomes more familiar; or the avatar image may continue to provoke feelings of unease and alienation, particularly if it does not match our own mental self-image or is experienced as an uncanny and disconnected other.

Our fascination and identification with these increasingly fictive image avatars, and the technologies that create them, can also be seen as a potentially addictive and solipsistic retreat from reality. In the regard, it is interesting to note that McLuhan reads the Narcissus myth as an allegory of our relationship with mediated images and argues that we have become "servomechanisms" of the very technologies we have created:

> To behold, use or perceive any extension of ourselves in technological form is necessarily to embrace it. … It is this continuous embrace of our own technology in daily use that puts us in the Narcissus role of subliminal awareness and numbness in relation to these images of ourselves. By continuously embracing technologies, we relate ourselves to them as servomechanisms. That is why we must, to use them at all, serve these objects, these extensions of ourselves, as Gods or minor religions (1967: 56).

Like Narcissus, unable to tear his gaze away from his mediated image in the pool, our media images have an hypnotic and addictive effect. As famously proclaimed by media critics Guy Debord and Jean Baudrillard, spectacular media images and simulacra are increasingly coming to take precedence over the physical world around us. Rokeby forecasts similar concerns as new technologies become more immersive and we come to identify more closely with the new image avatars we inhabit in computer-generated virtual spaces:

> In mirroring works … we watch our silhouette encounter a world. We may be drawn at times to identify strongly with this "shadow," but it remains clearly separate from us. In immersive environments, rather than observing, we inhabit this shadow, this limited representation. Currently, the technology is cumbersome, but as it evolves toward apparent transparency, the danger arises that we will become, literally, "a shadow of our former selves" (1995: 153).

When we look in the mirror of the computer screen, the self we see is one that is shaped and enhanced by digital technologies and computer programs. These new digital avatar images constitute far more profoundly illusory and malleable identities than the image avatars of our previous media mirrors. As Frank Biocca comments:

> In the twentieth century we have made a successful transition from the sooty iron surfaces of the industrial revolution to the liquid smooth surfaces of computer graphics. On our computer monitors we may be just beginning to see a reflective surface that looks increasingly like a mirror. In the virtual world that exists on the other side of the mirror's surface we can just barely make out the form of a body that looks like us, like another self. Like Narcissus looking into the pond, we are captured by the experience of this reflection of our bodies. But that reflected body looks increasingly like a cyborg (1997).

* * *

As we have seen in this chapter, our different media technologies provide us with powerful and transformative new ways of viewing and understanding the self. Our identification with images and mediations of our physical selves constitutes not only a split in subjectivity but also creates a proliferation of virtual image-selves or avatars that act as our alter egos and proxies. These different image avatars clearly show us that we do not have a simple and singular visual identity; we have many different faces and identities. In recorded photographs, film, video and digital images we see different versions of ourselves as we have existed at different times, from childhood up until the present, with all of the changes in physical appearance and identity that have occurred along the way. This documentary evidence of our multiple past selves is a relatively recent phenomenon in human history and one that has profound affects on our understanding of ourselves as constantly changing and evolving 'works in progress.' As we will see in Chapter Five, this complex understanding of ourselves as fluid and multiple has become a core feature of constructivist and postmodern theories of identity that emphasise the contingent, changeable and constructed nature of human identity and subjectivity.

In the twenty-first century, we are bombarded with images of ourselves. Along with reflections of ourselves in mirrors and photographs we now have a range of screen-based surveillance and communication technologies where images of the self proliferate through CCTV surveillance cameras, computers, webcams, the internet and mobile phones.

These media mirrors enable new forms of self-surveillance and generate a profound awareness of the self as a visible object in the world. In the next chapter this awareness of the physical self and its image avatars as visible objects that can be seen and judged by others is extended and explored in more depth as we move from self-surveillance

(seeing the self) to public surveillance (being seen). What meanings are ascribed to our various image avatars and how do we seek to control the way those images are presented, negotiated and read in the social arena?

Chapter Four: Being seen—the self as an image

"I am looked at, that is to say, I am a picture" (Lacan 1978: 106).

In the previous chapter, we investigated the way that visual images and media technologies act as mirrors enabling new forms of self-surveillance. So far we have focused on how our media mirrors, and the externalised image avatars they reflect back to us, create new ways of seeing and understanding the self. Now it is time to draw back from the mirror and consider how our physical selves and our image avatars are seen by others within the broader social domain. As well as enabling us to see and interact with images of ourselves, our mediated images also create a profound awareness of ourselves as visible objects that are seen by others.

This construction and understanding of the self as an image has profound implications for notions and experiences of subjectivity and how we think of ourselves as visible entities in the world. This chapter will explore the implications of what it means to experience the self as an image and the role of visual images and avatars in the formation of concepts of self and individual identity within the social realm. The recognition of the self as a visible entity, not just for oneself but *also for others*, means that the image of the self—whether the physical self or its image avatars—becomes an important site for the negotiation and contestation of personal identity and meaning in

the social realm. How is meaning inscribed on our physical and mediated bodies? What role do our image avatars play in the construction and negotiation of identity and subjectivity? What strategies do we use to negotiate and control our different visual identities?

As we saw in the previous chapter, over the last 150 years, the physical image we present in face-to-face encounters has increasingly been supplemented by a variety of mediated image avatars including photographs, film, video, and digital images. These different image avatars offer us a variety of external views of ourselves that show us how we are seen by others.

Before we look at the way visual images and media technologies mediate and remediate the physical self, it is instructive to first consider the ways identity and meaning are inscribed on the surface of the physical body itself. Our physical bodies themselves constitute the first 'images' through which we are seen by others.

The social mirror and the physical self as image

As we saw in the previous chapter, it is in the mirror image that the child first becomes aware of itself as an image and as a visible entity in the world. The mediated and externalised self represented by the mirror image avatar acts as a visual metaphor of split subjectivity where the child can directly apprehend itself as a visual object: I am *here* (in my body) and I am *there* (in my image). This awareness of oneself as an external image constitutes a shift from a phenomenological first person perspective (where the embodied self looks out at the world) to an imagined third person perspective where we 'see ourselves from the outside' from a point in space that is external to our embodied first person experience.

At the same time as the child affirms its own visual existence in the world, it also becomes aware of itself as a visible object that can be viewed by others. Maurice Merleau-Ponty comments:

> Until the moment when the specular image arises, the child's body is a strongly felt but confused reality. To recognize his image in a mirror is for him to learn that *there can be a viewpoint taken on him.* …By means of the image…he becomes capable of being a spectator of himself. Through the acquisition of the specular image, the child notices that he is *visible*, for himself and for others (1964: 136).

In this way the child's recognition of itself in the mirror image is inextricably linked with an awareness of being seen by others. If I can see myself as a visible object, then others can see me too. I exist not only for myself, but also for others. And importantly, as Merleau-Ponty comments, in this moment I become aware that in the process of being seen, a *viewpoint* can be taken on me. My visual image is not only seen, but also judged, as meaning and signification are attached to the image.

Significantly, for Jacques Lacan, the child's recognition and identification with itself in its mirror image initiates the child's entry into the symbolic order of signification and social interaction. The mirror itself takes on a social aspect. This awareness of being seen—of *one's visibility as an image*—is initiated not only by the literal mirror image but also by the *mirroring look* of the social other. As Jean Paul Sartre puts it, "I see *myself* because *somebody* sees me…" (1992: 349). The 'I see you' inherent in the look of the other is an affirmation of our identity; it 'proves' our existence. But this awareness of being looked at also provokes in us a self-consciousness awareness of ourselves as visible objects:

> As soon as we see other seers…henceforth, through other eyes we are for ourselves fully visible…. For the first time, the seeing that I am is for me really visible; for the first time I appear to myself completely turned inside out under my own eyes (Merleau-Ponty1968: 143-44).

The existence of the social other is an essential component in the formation of individual subjectivity in both psychoanalytic and sociological theories of identity. The child comes to know itself as a subject through social interaction and by testing its identity in the social arena. The awareness of being seen by others provokes a feeling of self-consciousness—a consciousness of oneself as an image-object—along with the accompanying anxiety about *how* one is being seen. What do others see when they look at me? Who am I to others?

This idea of the *social mirror*, and the importance of its role in the constitution of individual subjectivity, is a central theme in the work of American sociologist Charles

Horton Cooley (1864-1929). In *Human Nature and the Social Order* (1922), Cooley formulates the idea of the "looking glass self" to describe the way our concept of self is formed through social interaction with others and through the way that self is reflected back to us in the mirroring look of the other as a result of this interaction.[30] Cooley describes his analogy of the "looking glass self" as follows:

> As we see our face, figure, and dress in the glass, and are interested in them because they are ours, and pleased or otherwise with them accordingly as they do or do not answer to what we should like them to be; so in imagination we perceive in another's mind some thought of our appearance, manners, aims, deeds, character, friends, and so on, and are variously affected by it (1922: 184).

According to Cooley our self-image is fundamentally influenced by what we believe others think of us and the implied or *imagined* social judgement entailed in this reflection. We imagine how we appear to others and simultaneously imagine what their judgements of us may be. This imagined judgement in turn leads to feelings of pride or shame. Cooley comments:

> A self-idea of this sort seems to have three principal elements: the imagination of our appearance to the other person, the imagination of his judgment of that appearance, and some sort of self-feeling, such as pride or mortification. The comparison with a looking-glass hardly suggests the second element, the imagined judgment, which is quite essential (1922: 184).

With this imagined reflected image of ourselves we put ourselves into the position of the other and take an externalised third person perspective on ourselves. As Cooley points out, it is not just the imagined *image* that is important in this process but the imagined *judgement* by the other. Just as we see others and judge them, so too do we know that we are also being seen and judged. Our imagined (third person) view of

[30] Cooley's "looking glass self" draws on the work of American psychologist and philosopher William James and his notion of the "social self." In *The Principles of Psychology* (1890) James writes that: "*a man has as many social selves as there are individuals who recognize him* and carry an image of him in their mind" (1890: 291). The social self is part of what James calls the "empirical self" which is "*the sum total of all that* [a man] *CAN call his*" (291). This includes his material self (his body and his clothes and his possessions) as well as his social self, his spiritual self and his "pure ego."

ourselves is strongly influenced by these imagined judgements. There is an on-going interaction between how others see us—and reflect that self back to us—and how we see ourselves. Other people's views help to construct, reinforce and change our self-image.

The awareness of the social judgement implied in the look or gaze of the other, as well as the interlinked and reversible relationship between *seeing* and *being seen*, is also explored by Lacan in his discussion of the gaze and the field of vision in *The Four Fundamental Concepts of Psycho-analysis* (1978).[31] Lacan illustrates this reversible relationship in a series of interlinked triangular diagrams that position the human subject as both an active viewing subject and also as a visible object (image) caught in the gaze of the other.

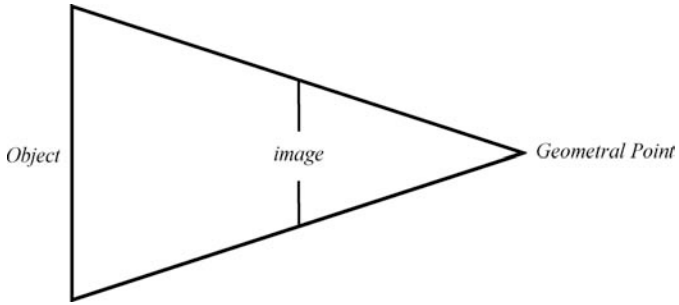

Figure 4-1 Lacan's diagram of the Renaissance 'cone of vision.'

In *Figure 4-1* Lacan replicates the classical Renaissance perspectival 'cone of vision' situating the subject at the focal geometral point of vision with the image intervening between the subject's eye and the object. The diagram highlights the fundamentally mediated nature of vision which we explored in Chapter Two. All we can know of the object is our image of it. As Kaja Silverman puts it, "we can only see the object in the guise of the "image," and can consequently lay claim to none of the epistemological authority implicit in the perspectival model" (1996: 132).

[31] Lacan explores these ideas in his essays "The Line and the Light" and "What is a Picture?" in *The Four Fundamental Concepts of Pyscho-analysis* (1978).

The viewing subject plays an active role in mediating the way the image or picture is constructed from the object. How the image is seen and understood is a function of the viewer's physiological, affective and cognitive processes, which, in turn, are influenced by socially learned understandings and values. We do not just simplistically introject the image as it is, we simultaneously project our own subjective socio-cultural understandings and meanings onto it. As Matthew Causey explains:

> The subject does not apprehend the object, whether that object is the other of her own subjectivity or the other of worldly objects, but her own phantasmic projections on the representational screen (1999: 389).

In *Figure 4-2* the tables are turned on the subject and the *seer* becomes the *seen* who is now situated at the position marked 'picture,' becoming an object in the field of vision originating from the 'point of light.' Lacan calls the point of light: "the point of irradiation, the play of light, fire, the source from which reflections pour forth" (1978: 94). These "reflections" are projected onto the subject via the mechanism of the screen turning the subject into a picture. In this process, identity and meaning are projected and inscribed on the individual.

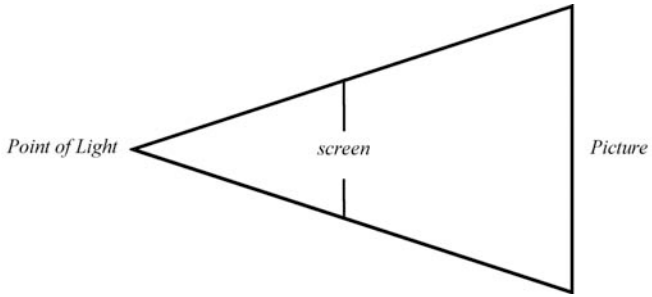

Figure 4-2 Lacan's diagram showing the mechanism whereby the subject is made into a picture.

In *Figure 4- 3* the two triangles are joined and the image and screen merge to form the image-screen, with the 'subject of representation' on one side and 'the gaze' on the other. The subject thus becomes the focal point of an 'all-seeing' external gaze that is directed at the subject from the world outside him.

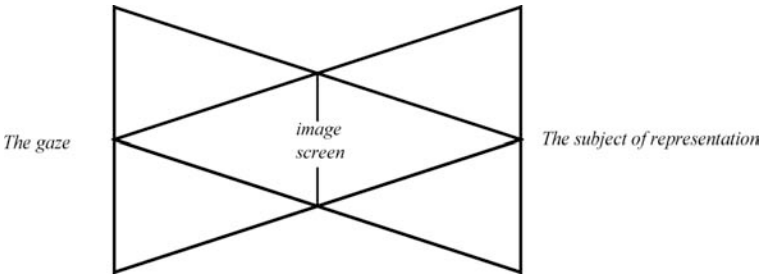

Figure 4-3 Lacan's diagram showing the operation of the gaze and the image-screen.

Lacan uses a camera metaphor to convey the alienating power of the social gaze to fix the individual within its field of vision as an image: "What determines me, at the most profound level, in the visible, is the gaze that is outside. …the gaze is the instrument through which …I am *photo-graphed*" (106). Unlike the mirror image, which is reassuringly controlled by the look of the subject, the gaze and the photographic image are both controlled by an agency that is radically *exterior* to the subject. The seeing 'eye' of the metaphorical camera is positioned in the world outside the subject and represents the alienating gaze of the other rather than the self-affirming gaze of the self. Thus for Lacan the gaze and the field of vision encompass not only the social realm of seer and seen but also point to a more profound existential awareness of the self as a visible object. Like the Symbolic, the gaze pre-exists the birth of the subject and captures the subject in the field of vision as an object to be looked at, as a *picture*: "…in the scopic field, the gaze is outside, I am looked at, that is to say, I am a picture" (106). Lacan attributes to the gaze an inhuman or superhuman aspect—the gaze is thus allied to the all-seeing eye of God. "I see only from one point, but in my existence I am looked at from all sides" (72). The gaze thus generates a hyper-awareness of being observed and induces a self-conscious awareness of oneself as a visible object.

As we have seen, albeit in very different ways, Cooley's notion of the looking glass self and Lacan's linked notions of the gaze and the image-screen both emphasise the specularity of the individual as an image and the role of an external mirroring look or gaze in the constitution and ratification of this visual identity. The 'mirroring look' of the other and the Lacanian gaze carry within them a strong sense of social judgement and act to inscribe social meanings and judgements on the individual. In the next section we will investigate in more depth the mechanisms whereby these social meanings and

judgements are projected onto the visible surface (the image-screen) of the body and how these images are negotiated and read in the social arena. As we will see, the techniques and strategies individuals use to control and manage their visible identities/images are crucial tools in the construction and maintenance of their social identities.

Social bodies: negotiating the image-screen

As images in the world, the outer surface of the body becomes a reflective surface—an image-screen—where socially constructed identities are projected and read. The skin—the individual's superficial visible appearance—acts as an interface between the inner experience of the self and the outer expression of that self as a visible image to the external world.

As Michel Foucault argues in *Discipline and Punish* (1979), the body is a site where social discourses are inscribed and contested. Elizabeth Grosz describes this notion of bodily inscription as "the metaphor of the textualised body" (1990: 62) where socio-cultural discourses informing notions, for example, of race, gender, sexuality, class and deviance are 'written' on the body inscribing it with certain meanings. In his article "The Social Skin," Terence Turner takes up this idea, writing that:

> …the surface of the body as the common frontier of society, the social self and the psycho-biological individual becomes the symbolic stage upon which the drama of socialization is enacted and bodily adornment becomes the language through which it is expressed (1980: 111).

The subject negotiates her identity by playing with her visible image and the image-screen of her body becomes a site of contestation where she simultaneously projects her visual identity and is 'read' as an image by the social gaze. S. Brent Plate sees the image-screen as the meeting point for the imaginary and the symbolic—a contested site where subjectivity and identity are constituted in the social realm:

> In the register of the imaginary, the subject/viewer projects her or his own imago onto the screen. There the projected imago comes into contact with the other side of the screen, on which is portrayed the image through which the subject is seen by others in the symbolic realm. While the gaze circumscribes the subject, the site of the screen becomes the site where the eye and the gaze meet. Out of this sutured relation, this discourse in the field of the other, this sight in the field of vision, identity springs (1996: 15).

In today's hypermediated society of the spectacle a repertoire of culturally coded identities are disseminated instantaneously across the globe and these identities are produced, distributed and inscribed on individual bodies. Individuals 'try on' these different identities, projecting their imagined self-images through the image-screen of their visible appearance for the look/gaze of the social other. The success (or otherwise) of this projected image can be read in the mirroring look of the other or observed through 'mediated reflections' in conventional mirror images and media mirrors. In this process individuals internalise the external operation of the look/gaze by seeing (and judging) their own mediated images against socially defined norms.

Silverman highlights the ideological function of the screen as a mechanism for the projection and inscription of the cultural image repertoire onto the body of the subject:

> It seems to me crucial that we insist upon the ideological status of the screen by describing it as that culturally generated image or repertoire of images through which subjects are not only constituted, but differentiated in relation to class, race, sexuality, age, and nationality (1992: 150).

This process is also implicit in Gilles Deleuze and Félix Guattari's concept of "facialisation" which describes the cultural territorialisation of the face (and body[32]) as it is coopted as a vehicle for socially produced identities and subjectivities (1988: 167-191). For Deleuze and Guattari, the face, and the surface of the body, bring together two different semiotic systems, that of *signifiance*, the social world of symbolic meaning and exchange, and that of *subjectification*, where the subject is constituted and disciplined:

> The surface of the organism, the angle of signifiance and interpretation, and the point of subjectification or subjection. You will be organized, you will be an

[32] According to Deleuze and Guattari the operation of what they call the "faciality machine" is responsible for "perform[ing] the facialization of the entire body" (1988: 181).

> organism, you will articulate your body—otherwise you're just depraved. You will be a signifier and a signified, interpreter and interpreted—otherwise you're just a deviant (159).

Faces are "engendered by an abstract machine of faciality (visagéité)" that creates the "social production of the face" (181). Here, the face acts as an interface between the unseen interior experience of the self and subjectivity, which Deleuze and Guattari describe as a "black hole in which it lodges its consciousness, passions and redundancies" (168), and the exterior operation of the gaze and the faciality machine that makes the face into a screen where identities and subjectivities are inscribed by the social gaze. The face "constructs the wall that the signifier needs in order to bounce off of; it constitutes the wall of the signifier, the frame or the screen" (168).[33]

As we can see, the operation of the social gaze to inscribe meaning and signification on the physical body makes the body a socially meaningful semiotic system and a site for the social contestation of meaning. Whether these meanings are accepted and internalised, or rejected and contested, it is at the site of the image-screen of the body, and through our various mediated images, that we negotiate the meaning of our visible images.

In the next section of this chapter we will challenge and extend this idea of the textualised body in order to explore in more detail the way individuals negotiate the social gaze drawing on social repertoires of images as they play with the signifiers of their visual identities in the social arena.

Constructing our visible identities: playing with and performing our visible images

As we have noted, even before the advent of mediation, we are already seen as images in the world. The superficial surface of the skin (the image-screen of our bodies) is where the self is presented as a visible image for others to see. It is a part of the nature

[33] We will explore Deleuze and Guattari's advice for how to escape the constraints and territorializations of the faciality machine through various "deterritorializations" and "lines of flight," where the individual creates a "Body without Organs" (BwO), in the following chapter.

of human beings as *social* beings to be concerned about our visible appearance and how we appear to others and to put considerable effort into how we present ourselves in the social arena. As we will see in this section, through the different perspectives of Jacques Lacan and Erving Goffman, one of the key ways individuals manipulate and play with their visible images and public presentations of self is through the social signifiers associated with appearance and behaviour, including bodily adornment, costume and performance. This 'masking' or 'dressing up' of the surface appearance of the physical body enables individuals to control and play with the visible identities they present to the world. While coming from very different theoretical perspectives—psychoanalytical for Lacan and sociological for Goffman—both theorists share a fascination with how individuals manipulate, play with, and perform themselves as images in the social arena.

As Lacan comments, the concern with one's visible image and how one is seen is a peculiarly human fascination:

> Only the subject - the human subject, the subject of the desire that is the essence of man—is not, unlike the animal, entirely caught up in this imaginary capture. He maps himself in it. How? In so far as he isolates the function of the screen and plays with it. Man, in effect, knows how to play with the mask as that beyond which there is the gaze. The screen is here the locus of mediation (1978: 107).

In this quotation, Lacan describes the screen as the "locus of mediation," the site where the subject maps and plays with his visible image. The screen can thus be seen both as a *projective* screen where a desired identity can be projected, and as a *protective* screen or mask behind which the individual can hide.[34] Through the skin surface—and its various adornments—we simultaneously reveal aspects of ourselves, which we project into the world, and also conceal or hide other aspects of ourselves. As Lacan comments, it is at the site of the image-screen where "the being gives of himself, or receives from the

[34] In this description of the projective/protective function of the screen Lacan draws on Roger Caillois' study of mimicry in the natural world where creatures make themselves into an image or picture of the entity they are mimicking. In nature, this mimicry serves one of three purposes: camouflage, travesty (masquerade) and intimidation (Lacan 1978: 99). This idea of the body's superficial surface appearance as a 'mask' is a common one. Friedrich Nietzsche speaks of "the will to appearance, to simplification, to the mask, to the cloak, in short to the superficial–for every surface is a cloak…" (Nietzsche, *Beyond Good and Evil* sec. 230).

other, something that is like a mask, a double, an envelope, a thrown-off skin, thrown off in order to cover the frame of a shield" (107).

This idea of playing with one's social image and identity through the manipulation of appearance is also the focus of sociologist Erving Goffman. In *The Presentation of Self in Everyday Life*, first published in 1959, Goffman builds on Cooley's idea of identity as a constructed social performance comparing the individual's "presentation of the self" to playing a part or staging a role:

> …the performed self [is] seen as some kind of image, usually creditable, which the individual on stage and in character effectively attempts to induce others to hold in regard to him (1973: 252).

Through these presentations or performances of self, individuals seek to control the impression they are making by adjusting the visible signs of their identity, that is, how they *look* and how they *act*. For Goffman, "impression management," of both physical appearance and behaviour, plays an important part in staging a successful performance, and the individual's social identity emerges as a "dramatic effect" of successfully looking and acting the desired part:

> A correctly staged and performed scene leads the audience to impute a self to a staged character, but this imputation—this self—is a *product* of a scene that comes off, and is not a *cause* of it.
>
> …the self, then, as a performed character, is not an organic thing that has a specific location, whose fundamental fate is to be born, to mature, and to die; it is a dramatic effect arising diffusely from a scene that is presented, and the characteristic issue, the crucial concern, is whether it will be credited or discredited (252-253).

A similar point is made by feminist theorist Judith Butler who argues that even such a supposedly innate part of our identities as gender is actually a learned social performance created "through language, gesture, and all manner of symbolic social

sign" (1990b: 270).[35] Our gendered identities as male and female are enacted social performances:

> The act that one does, the act that one performs, is, in a sense, an act that has been going on before one arrived on the scene. Hence, gender is an act which has been rehearsed, much as a script survives the particular actors who make use of it, but which requires individual actors in order to be actualized and reproduced as reality once again (1990a: 272).

Goffman's work on the performative nature of our social identities suggests that it is not only gender that is performed in this way but *all* of our social roles and identities. Indeed, our visible presentations and performances *constitute* our identities and our social images. Who we are perceived to be is judged as a result of these public presentations and performances of self.

The different roles and identities that individuals can successfully assume are determined by how successfully they can enact and perform those desired identities. These identities are performed and ratified in the social arena and not all these performances are successful. As Goffman puts it, the individual performer has "fantasies and dreams, some that pleasurably unfold in triumphant performance, others full of anxiety and dread that nervously deal with vital discreditings in a public front region" (1973: 253).

Some of us are better at managing our visible images and identities than others. As Silverman persuasively argues in *The Threshold of the Visible World* (1996) we are not free to assume any cultural identity we choose, certain identities are foreclosed to us by our physical and socio-cultural specificities. As much as one might want to assume the

---

[35] This idea that gender is a performance or costume that can be put on as a type of masquerade or mask was explored by the Freudian psychoanalyst Joan Riviere in her 1929 article "Womanliness as a Masquerade." In the article Riviere documents a case study of a successful professional woman who sought to mask the visible signs of her 'masculine' success by assuming exaggerated 'female' characteristics, coquetting and flirting with her male colleagues. Commenting on this behaviour, Riviere notes: "Womanliness therefore could be assumed and worn as a mask, both to hide the possession of masculinity and to avert the reprisals expected if she was found to possess it." Riviere goes on to question whether there is any difference between this performed femininity and 'genuine' womanliness: "The reader may now ask how I define womanliness or where I draw the line between genuine womanliness and the 'masquerade.' My suggestion is not, however, that there is any such difference" (Riviere [1929] 1986: 38).

culturally valorised identities represented by famous movie stars or other public figures, our age, looks, physical body shape, financial resources, educational background, skills and talents will inevitably limit the range of identities that is actually open to us. The operation of the social gaze can also impose unwanted identities on individuals that may be at variance with their own self-images or the images they are trying to project.

Although we all to some extent seek to control and craft our visible appearance so that we present our preferred 'image' to the world, for professional actors this experience is one that is particularly self-conscious and explicit. The crafting of one's visible image and behaviour is after all the 'job description' of the actor. Nevertheless, even for actors the gap between the imagined self-image (the self that they try to project) and the reality as it is seen by others can be profound. In *Parables for the Virtual* (2002a), Brian Massumi quotes Ronald Reagan's description of his experience as an actor seeing himself on screen and the disjunction between his mental image of himself as the character he is playing and the external image of himself that is generated on film. Reagan comments:

> It has taken me many years to get used to seeing myself as others see me, and also seeing myself instead of my mental picture of the character I'm playing. First of all, very few of us ever see ourselves except as we look directly at ourselves in a mirror. Thus we don't know how we look from behind, from the side, walking, standing, and moving normally through a room. It's quite a jolt. Second is the fact that when you read a story you create a mental picture of each character. For the first few years this is true even in reading a script. You don't see yourself because you haven't had much experience in seeing yourself. Thus as you act the part, in your mind you envision your mental picture of the author's character. You go to the rushes and somebody has stolen that heroic figure, and there you are—just plain old everyday you—up on the screen. It's one hell of a letdown (Reagan quoted in Massumi 2002a: 46-7).

As Reagan points out, this experience of seeing the self from the outside, *as others see us*, is quite rare and often unsettling—a jolt or shock to the senses as Reagan describes it. Unlike the *imagined* image of the self that is projected in Cooley's looking glass self, when the image of the self is captured by a camera, it is reified and externalised as a visible detached image outside of the self. This experience of literally seeing oneself as

an image may not always be a disappointment, as it is for Reagan, but it is always slightly uncanny and alienating to see ourselves 'from the outside', to see ourselves as an 'other,' an object in the world for the gaze of others.

Working at the nexus of image, identity and representation, the work of artists can help to re-sensitise us to the ways cultural repertoires of images, and their associated social discourses and meanings, are inscribed on the bodies of individual subjects and social groups. The constructed and mask-like nature of our superficial visual identities, and the social norms and meanings they convey, is deliberately exposed and contested in the self-portraits of artists such as Cindy Sherman, Yasumasa Morimura and Tomoko Sawada. In their self-portraits, these artists explore the visual limits of the physical body and its ability, with the aid of clothing, makeup and accessories, to negotiate and perform a range of different culturally coded identities.

Figures 4-4 and *4-5* Cindy Sherman, *Untitled Film Stills*, 1977-80.

In Cindy Sherman's photographic self-portraits, the artist self-consciously and deliberately manipulates herself as an image, impersonating a range of feminine identities drawn from popular media culture and from art history. In *Untitled Film Stills* (1977-80) Sherman takes on the personas of culturally stereotyped images of femininity inspired by films of the 40s and 50s (Krauss 1993; Meskimmon 1996: Alphen 1997; Chadwick1998; Silverman 1996). In these self-portraits the artist consciously selects the different elements of mise-en-scène—setting, clothing, props and pose—to present herself in a variety of different roles and personas: a girl lying on her bed in a pin-up

pose, a student in a library, a housewife looking provocatively over her shoulder (see *Figures 4-4, 4-5* and *4-6*).

Figure 4-6 Cindy Sherman, *Untitled Film Stills*, 1977-80.

Sherman's self-portraits also reveal the gap between the individual's desired or imagined self-image and the actual public presentation or performance of that image, although in Sherman's case (unlike Reagan's) this effect is one that is deliberately created. Silverman writes of this gap of "ideality" in Sherman's work and the way the viewer is drawn to identify and empathise with Sherman's protagonists:

> The tenderness with which Sherman details her protagonists' narcissistic ambitions, and the fact that she literally puts herself in their place …encourages us to identify with them.
>
> Significantly, it is not these women's ideal imagos with which we identify. That identification is for the most part foreclosed by the repeated exposure in the *Untitled Film Stills* of the aspiration to ideality. It is rather with the women themselves, in all their manifest distance from the mirror, that we are encouraged to form this psychic alignment. The case needs to be stated even more forcefully: it is because the protagonists of the *Untitled Film Stills* are shown to fall so far short of approximating their ideal imagos that we identify with them (Silverman 1996: 224).

As Silverman puts it, we as viewers identify with the "… abyss that separates us and always will separate us from ideality" (224).

Yasumasa Morimura also exploits this gap of ideality but in a more explicitly transgressive and confrontational way. In his photographic self-portraits, Morimura assumes a variety of female alter egos drawn from the visual arts and popular culture. His *Self Portrait as Art History* exhibition, which toured Japan in 1998, included cross-dressing self-portraits of himself as Cindy Sherman (see *Figure 4-7*), Marilyn Monroe (see *Figure 4-8*) and a pregnant Mona Lisa (see *Figure 4-9*).

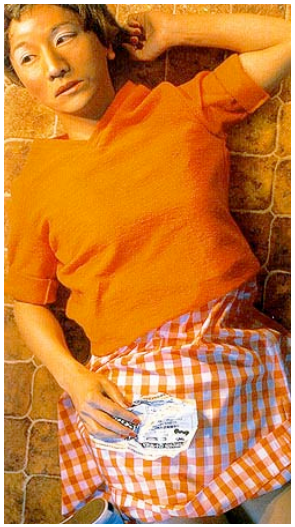

Figure 4-7 Yasumasa Morimura, *To My Little Sister: For Cindy Sherman*, 1998.

Morimura's cross-dressing disrupts and challenges socially normalised gender codes and gendered subjectivities. Rather than attempting to seamlessly inhabit the female identities he assumes, his self-portraits reveal his own identity as much as those of the identities he impersonates. His male body and facial features are clearly visible beneath the exaggerated semiotic signifiers of the female identities he impersonates. Part of the cultural charge of his self-portraits comes from this clash of male and female signifiers. Morimura is clearly not trying to 'pass' as the female identities he portrays. In *Vested Interests* (1993), Marjorie Garber describes the cross-dressing drag performer's act as "not passing but trespassing" as female (367) and Morimura's self-portraits share this same confrontational quality. His self-portraits are acts of social and aesthetic defiance

where the artist asserts his right to assume identities that would normally be closed to him.

Figure 4-8 Yasumasa Morimura, *Self-Portrait/After Marilyn Monroe*, 1996.

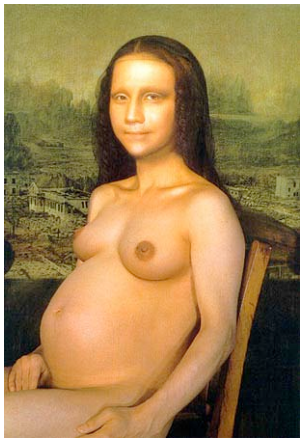

Figure 4-9 Yasumasa Morimura, *Mona Lisa in Pregnancy*, 1998.

In the photographic self-portraits of Tomoko Sawada the gap between the individual's presented surface image and the revelation of an underlying identity is totally erased in a disconcerting series of visual transformations. Sawada's self-portraits demonstrate the malleability of the surface appearance of the physical body and its ability to assume multiple mask-like personas/identities. In her photo series *ID-400* (see *Figure 4-10*), the artist uses different hair colours, hairstyles, jewellery, hats and makeup to create 400

different personas or alter egos, each with its own distinctive identity. In other self-portraits Sawada parodies traditional and contemporary Japanese images of femininity including potential brides to be (*Omiao*, 2001), youth sub-cultures (*Cover/Face*, 2002), club hostesses (*Masquerade*, 2006), and graduate job-hunters (*Recruit*, 2006). In Sawada's work the proliferation of different culturally coded roles and visual identities totally obliterates any reassuring notion of an underlying core identity.

Figure 4-10 Tomoko Sawada, *ID-400* (detail), 1989-2001.

While clothing, makeup and accessories can be used to temporarily change the physical appearance and visual identity of the body, other "technologies of the self"[36] such as diet, physical exercise and body-building can reshape the image of the physical body in

[36] Michel Foucault's idea of "technologies of the self" (or "care of the self"), mentioned in the previous chapter, describes the social practices and techniques that individual subjects use to constitute and police themselves in the social arena including ways of regulating their bodies, their thoughts and their conduct. These "technologies of the self" are themselves constituted and regulated through the power structures of social discourses that are then in turn 'naturalised' and internalised by the individual subject as a set of socially desired attributes (Foucault 1988).

more lasting ways. Cosmetic surgery represents an even more direct intervention into the physical appearance, literally reshaping the physical body into a new image.[37]

In "The Precession of Simulacra" Jean Baudrillard argues that media images and simulacra now *precede* reality rather than reflecting or copying it. We typically see mediated images before we see the 'real thing' and increasingly images are used as templates on which to base physical transformations. Women take pictures of their favourite media celebrities to their hair stylists or plastic surgeons so their hairstyles or physical features can be modelled on these exemplary images.

French performance artist Orlan recreates herself in a literal fashion through cosmetic surgery, as idealised images of female beauty are surgically inscribed onto her face and body. In *The Reincarnation of Saint Orlan* (1990-1993), the artist underwent a series of cosmetic surgeries where her facial features were altered to resemble those of famous female images from art history old masters and Greek mythology such as Venus, Diana, Europa, Psyche and the Mona Lisa. Prior to the surgeries, Orlan created a computer-generated collage of these different feminine faces along with her own image and then used this virtual simulacrum as the template for her cosmetic surgeries, reconstructing herself as a living simulation—a fine art chimerical hybrid (see *Figure 4-11*).

Orlan describes these performance art surgeries as a type of self-portraiture where she technologically refigures and reinscribes her own body through plastic surgery so she can literally take on a new image:

> One can consider my work as classical self-portraiture even if initially it is conceived with the aid of computers. But what can one say when it comes to permanently inscribing this work in the flesh? I will speak of a "Carnal Art," in part to differentiate myself from Body Art, to which it nevertheless belongs.
>
> Carnal Art is a work of autoportraiture in the classical sense, but with the technological means of its time. It oscillates between disfiguration and refiguration. It inscribes itself in the flesh because our era begins to lend itself to this possibility. The body is becoming a "modified ready-made" because it is no longer that ideal ready-made waiting to be signed (Orlan 1998: 318).

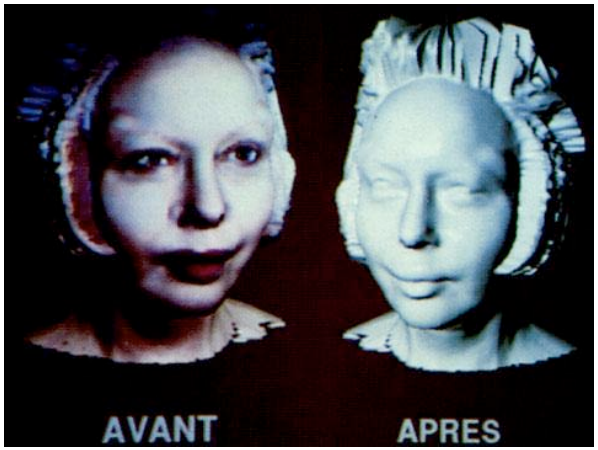

Figure 4-11 Orlan, *The Reincarnation of St Orlan*, 1990-1993.

As well as inscribing Western ideals of feminine beauty onto her own body, Orlan's surgical interventions also explore more subversive terrains. In one surgery, she had implants inserted into her temples to create two horn-like bumps and at one stage she also planned to construct a large prosthetic nose "in the manner of a Mayan sculpture" (253). Orlan's work metaphorically links the body of the artist with the body of the artwork and utilises techniques of parody and excess to highlight, question, and subvert socio-cultural norms of beauty and the role of cosmetic surgery in the quest for physical beauty:

> My work is not against cosmetic surgery, but against the standards of beauty, against the dictates of a dominant ideology that impress themselves more and more on feminine flesh …and masculine flesh (1998: 326-327).

Orlan's body performance work highlights the transformational possibilities of cosmetic surgery and the way it literally inscribes socio-cultural aesthetic norms onto the surface of the human face and body. With advances in cosmetic surgery and genetic engineering the human body itself is no longer an immutable given. However, the

[37] For an in-depth discussion of the different ways the appearance of the physical body can be modified, see Anne Balsamo's *Technologies of the Gendered Body: Reading Cyborg Women* (1996) where she surveys the cultural practices of a variety of different body modifications including bodybuilding, cosmetic surgery and digital imaging where subjects make over their bodies in an attempt to attain idealised images of femininity.

transformation of the surface image of the human skin (and its underlying soft tissue and skeletal structure) is one that requires considerable physical effort (both in terms of financial outlay and physical pain) and unlike the temporary modifications of clothing, hair and make-up, these transformations are not so easily and painlessly assumed. By filming her plastic surgeries, Orlan foregrounds the physical labour that these visual transformations entail. As Victoria Duckett comments:

> Rather than present her transformation as a fluid, seamless, and scarless transition between two disparate images (a transition popularised in the press through their reliance on sequential "before" and "after" shots), Orlan inserts the camera into the operating "theatre" to document precisely those signs of suffering and conflict otherwise absented by the (cosmetic) morph's "special effect" (2000: 210).

Changing and transforming our mediated images (particularly digital images) is a far easier process than transforming our physical bodies. We will investigate the affordances of mediated digital images and their transformational possibilities later on in this chapter, but first I want to explore in more detail the way mediated images intensify the alienating external 'third person' perspective of ourselves that we have already observed in this chapter, and, importantly, how these mediated images engender new experiences of alienation as the individual loses control and agency over their image once it is detached from the physical body.

Third person views: the mediated image

As we have seen, when we think of our visible image in the world, we shift from a phenomenologically embodied first person view (looking out at the world) to a third person perspective where we see ourselves from the outside as externalised visible objects. With Cooley's looking glass self, this third-person perspective is an imagined one, but when we see ourselves in mirror images, photographs, video and digital images, this third person perspective becomes literal. These mediated images show us the 'objective' visible images that we create for others rather than our own imagined self-images.

In recorded images such as photographs, film and video we can see lasting documentary evidence of our visible identities and performances. However, as well as being tools that help us see and control our visual identities, our recorded mediated images also separate our visible image from our physical bodies, and when those recorded images are captured and controlled by others this can lead to a profound sense of alienation and loss of agency over our image avatars.

As we saw earlier in this chapter, Lacan identifies the power of the gaze with a metaphorical camera—"the gaze is the instrument through which …I am *photo-graphed*" (1978: 106)—but the advent of the actual mechanical camera brings with it new and even more profoundly self-alienating possibilities for the self to be seen as an image. The camera has the power to literally capture and detach an image of the visible self. In addition to the alienating operation of the gaze, which makes our physical bodies into image-objects, we now have to negotiate a further alienation from our images as they are mediated and further removed from our control and agency. Unlike the ephemeral images created by human vision, the images produced by the camera create durable and lasting records of how we are seen by others, and they require new strategies of image and impression management.

The fear of being disadvantageously represented by technologically mediated images is very common as can be seen in the apprehension people have when they are in front of a camera. The eye of the camera intensifies the alienating effect of the Lacanian gaze with all of its implicit social scrutiny and judgement. As Walter Benjamin points out, the camera takes on the function of "testing" the subject and the resultant image is offered up to the audience who becomes an "examiner" (1986a), deciding whether or not the subject has passed or failed. Does the person in the image look good or not? Is their performance convincing or not? Do we like or dislike this person?

In *Camera Lucida*, Barthes writes of his pervasive sense of unease in front of the camera and his anxiety that the photographic image will not reflect his own mental self-image and the self he wants to portray. Unlike the reassuring and self-affirming mirror image where he can see and control his own image, with the photographic image he must cede control over his image to the exterior look and the agency of the photographer. As Barthes puts it:

> Posing in front of the lens … I derive my existence from the photographer …I experience it with the anguish of uncertain filiation: an image—my image—will be generated: will I be born from an antipathetic individual or from a "good sort"? If only I could "come out" on paper as on a classical canvas, endowed with a noble expression—thoughtful, intelligent, etc.! In short, if I could be painted (by Titian) or drawn (by Clouet)! (1993: 11).

The photographic image is frequently a source of anxiety and disappointment rather than a reassuring affirmation of the subject's idealised self-image. Even when the mediating subjectivity of the photographer is removed, the 'objective' mechanical image generated by the inhuman eye of the camera is no better. As Barthes points out, "the Photomat always turns you into a criminal type" (12).

The frozen pose of the subject in front of the camera represents the power of the camera to literally transfix the subject by making it the object of its gaze. Barthes comments: "Once I feel myself observed by the lens, everything changes: I constitute myself in the process of "posing," I instantaneously make another body for myself, I transform myself in advance into an image" (1993: 10). When a camera is directed at us, there is an intensification of our self-conscious awareness of ourselves as images. As we pose for the camera, we collude in our objectification by literally offering ourselves up as a still image to the camera.[38]

The pose can also be enacted as a defensive strategy enabling the subject to control and play with her visible image in front of the camera. In the pose, the subject self-consciously arranges her physical appearance including the position of her body and facial expression and other elements of the mise-en-scène including clothing, props and background setting to produce the photographic image of herself as she would like to be seen. By selecting a pose and mimicking the stillness of the photographic image, the subject forestalls the immobilising power of the camera and the gaze. In his essay "The Medusa Effect", Craig Owens writes:

[38] The stillness of the pose also has resonances with Roger Caillois' discussion of insect mimicry in his 1935 article "Mimicry and Legendary Psychaesthenia" as a kind of "sculpture-photography" (1984: 23) and as a defensive pose and loss of self to the image and the surrounding environment.

> ...to strike a pose is to present oneself to the gaze of the other as if one were already frozen, immobilized—*that is already a picture*. For Lacan, then, pose has a strategic value: mimicking the immobility induced by the gaze, reflecting its power back on itself, pose forces it to surrender. Confronted with a pose, the gaze itself is immobilized, brought to a standstill (1992: 198).

The pose—whether in front of a mirror or in front of a camera—exemplifies the individual's hyperawareness of herself as a visible image. Let us look again at the female personas portrayed in Cindy Sherman's *Untitled Film Stills* discussed earlier in the chapter. Although none of the women look directly at the camera/viewer, each photograph is carefully staged with the voyeuristic gaze of the viewer clearly in mind, and, although alone, the woman in each self-portrait nevertheless appears to exhibit a hyperconscious awareness of herself as an image, as a spectacle to be looked at. This self-consciousness of herself as an image is revealed in the staginess of the poses each 'character' assumes.

The control of the physical appearance of the body through costumes and accessories along with performed gestures and poses provide key strategies for individuals to seek to control their visible images and the impressions they make.

The narcissistic attitude embodied in the pose is also strongly associated with the feminine. Amelia Jones writes: "Conventionally speaking, men act and women pose" (1998: 153).[39] The narcissistic exhibitionism that occurs in this process of 'becoming an image' can also be theorised as a 'becoming female.' Indeed, as we will see in the next section, this third person looking glass awareness of one's own appearance and of how one appears to others has typically been gendered female.

'Becoming image' ...'becoming female'

Although it is clear that for Lacan we are all subject to the operation of the gaze and its power to impose identities and meanings on our social images, in Western culture it is women and 'the female' that have traditionally been associated with the superficial

[39] For more on the feminine nature of the pose, see *Body Art/Performing the Subject* (1998) where Amelia Jones writes of the "rhetoric of the pose" in the body art performance work of Hannah Wilke.

world of appearances, narcissism, vanity and adornment. These associations have been reinforced through the epistemic frameworks of Western philosophy and culture which have traditionally been organised around a series of binary dualisms including: self/other, male/female, reality/appearance, active/passive, truth/illusion, subject/object, mind/body, seer/seen.

Within these frameworks, women have typically been associated with the secondary 'devalued' terms in the binary pairings (body/object/passive/other/seen). Art theorist John Berger writes:

> One might simplify this by saying: men act and women appear. Men look at women. Women watch themselves being looked at. This determines not only most relations between men and women but also the relation of women to themselves. The surveyor of woman in herself is male: the surveyed female. Thus she turns herself into an object—and most particularly an object of vision: a sight (1972: 47).

The first person embodied subject position is gendered male—"Men look at women"—and the third person perspective of the self as a visible image-object is gendered female—"women watch themselves being looked at." In this way, the shift from a first person perspective (the active subject looking out at the world) to a third person perspective (imagining how one looks for others) can be read as a gendered shift from male to female viewing positions. In his discussion of the looking glass self, Cooley also notes significant gender differences in the level of interest and identification individuals have in their social images:

> Sex difference in the development of the social self is apparent from the first. Girls have, as a rule, a more impressible social sensibility; they care more obviously for the social image, study it, reflect upon it more, and so have even during the first year an appearance of subtlety, finesse, often of affectation, in which boys are comparatively lacking (1922: 202).

Simone de Beauvoir also identifies women's narcissistic investment in their physical appearance as a key constituent of feminine subjectivity and identity formation. De Beauvoir writes that women identify themselves through their social role as the "second sex,"—the other/object to the male self/subject. Viewing themselves as *objects* of desire

for men, women display a heightened narcissistic concern with their appearance and their mirror image as signifiers of their identity and value:

> But all her life the woman is to find the magic of her mirrors a tremendous help in her effort to project herself and then attain self-identification…Man, feeling and wishing himself active, subject, does not see himself in his fixed image; it has little attraction for him, since man's body does not seem to him an object of desire; while woman, knowing and making herself object, believes she really sees herself in the glass (1988 [1949]: 642-643).

Many theorists also link the gaze with the male and the image with the female. In her seminal article "Visual Pleasure and Narrative Cinema," Laura Mulvey's aligns the scopophilic operation of the male gaze in the cinema with Lacan's social gaze and its power to objectify and master the (female) object of the gaze:

> The determining male gaze projects its phantasy on to the female figure which is styled accordingly. In their traditional exhibitionist role women are simultaneously looked at and displayed, with their appearance coded for strong visual and erotic impact so that they can be said to connote *to-be-looked-at-ness* (1988: 62).

The image itself, as it is allied with the sphere of illusion and appearances, is also gendered feminine and 'other.' In *What do Pictures Want?* art theorist W. J. Thomas Mitchell comments:

> If pictures are persons …they are colored or marked persons …As for the gender of pictures, it's clear that the "default" position of images is feminine, "constructing spectatorship," in art historian Norman Bryson's words, "around an opposition between woman as image and man as the bearer of the look" –not images of women, but images as women (2005: 35).

If images, and the narcissistic concern with appearance, are gendered female, then what are we to make of the increasing concern with image and appearance in our contemporary media-saturated society? Male plastic surgery, cosmetic treatments and bodybuilding are all on the rise. Glossy magazines tout the rise of the 'metrosexual' male whose concern with fashion, style and appearance heralds an increasingly feminisation—a 'becoming female' which rejects the traditional male disavowal of the

importance of looks and surface appearance. There is no doubt that physical appearance and 'image' are becoming increasingly important concerns for both men and women in our contemporary image-driven society.

In addition to our concern over our physical appearance, textual signifiers and mediated images are also becoming increasingly significant in interpersonal communication. In mediated and online encounters, physical face-to-face interaction is replaced by mediated text-to-text and image-to-image interaction. Rosanne Allucquère Stone even goes as far as equating entering the transformational image space of cyberspace with "putting on the feminine" (1991:109).

As we will see in the next section, controlling and policing the public display of our mediated images and their dissemination in the public mediasphere is just as important as the impression management of our embodied physical selves.

Controlling our mediated images

The management of mediated images presents new challenges for individuals trying to control their visible images in the social arena. Unlike the ephemeral presentations and performances of their physical selves, these mediated images are 'detachable' and have an independent and durable existence.

One way that individuals typically seek to control their visible images is by the selection and display of 'approved' images and the routine obliteration of images that don't measure up to the individual's idealised vision of themselves. Images selected for display (in framed photographs or in photo albums or on the web) tend to be ones that correspond most closely to the individual's idealised self-image and show the individual as they would like to be seen.

With the advent of digital cameras the individual has far greater editorial control of her own image. The immediate feedback of the digital camera offers a much greater level of control for the individual than the traditional analogue camera. The individual can take multiple images that can be viewed immediately, the best ones selected, and the rest consigned to the digital dustbin. However, even with the multiple-image taking capacity and near instant feedback of digital cameras, the 'perfect' image is not always easily

attained. Larissa Hjorth describes an incident she witnessed in Korea where two girls were taking photographs of themselves with a camera phone:

> One friend held the camera phone above in the typical portrait framing mode and the two girls smiled. Then they looked at the photo. It was obviously not a good depiction of the moment. So they deleted and tried again. Once again, they looked – with growing dissatisfaction – at the image and tried again. With each failed attempted the smiles became more and more plastered until, on the tenth try, they unhappily decided to quit and walked off with disappointment as their guide (Hjorth 2006).

Figure 4-12 Before and after shots using Adobe Photoshop to even skin tone, brighten eyes and erase blemishes and wrinkles.

Of course many perceived image defects can be corrected by digital imaging software such as Adobe's PhotoShop which offers individuals the ability to further control and manipulate their visible images. Facial imperfections such as wrinkles or blemishes can be erased and eyes brightened (see *Figure 4-12*), hairstyles and hair colour can be changed (see *Figure 4-13*), waists can be trimmed and legs lengthened. Different software filters and painterly effects can also be used to further mediate and transform the indexical image (see *Figures 4-14* and *4-15*), and images can be seamlessly composited together to create new arrangements of mise-en-scène.

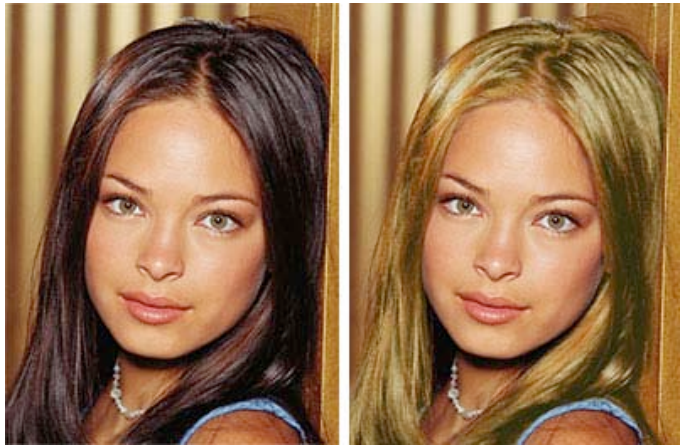

Figure 4-13 Using Adobe Photoshop to change hair colour.

Figure 4-14 Using the 'Pop Art' filter in Apple's Photobooth.

Figure 4-15 Using the 'Color Pencil' filter in Apple's Photobooth.

In the online mediasphere, individuals can achieve much greater levels of control and impression management over their presentations of self than they can in their real world interactions. In personal websites (Cheung, 2000; Snyder 2000), blogs and social networking sites like MySpace and Facebook, photographs and text can be carefully selected and edited to present the individual's desired persona (see *Figure 4-16*).

Figure 4-16 Performance artist Ana Voog's MySpace website.

Surveillance: the internet as panopticon

However, as well as increasing our control and agency over the presentation of our images, digital media and communication technologies also open up new opportunities for our images to be circulated, viewed and judged. In the age of the internet, personal websites and public image-sharing sites have become our new (and very public) photo albums. Images that were once relatively private, viewed only by family and friends, are now increasingly public. Via webcams,[40] personal websites and image and video sharing websites like Flickr, Photobucket and YouTube, people offer up their visible images to be viewed and judged in an online libidinal economy of exhibitionism and voyeurism. As Steve Dixon comments, the World Wide Web "…constitutes the largest theatre in the world, offering everyone fifteen megabytes of fame" (2007: 4). In websites like Beautiful People (beautifulpeople.net) and Hot or Not (www.hotornot.com) individuals explicitly submit photographs of themselves to be assessed and judged online. A new member can only join the Beautiful People online community if they are judged to be 'beautiful enough' by the existing members of the community (male photos are judged by women; female photos by men). The Hot or Not website invites online judges to rank users' photos from "10" (HOT) to "1" (NOT) affirming and reinforcing the social currency of youth and physical beauty.

While many individuals deliberately display and offer up their images for public consumption on the internet in the hope of gaining new friends, contacts or partners, or in order to gain their fifteen minutes of fame, in many cases images are uploaded without the individual's knowledge or consent. The ubiquity of digital cameras (now a standard feature of most mobile phones), and the ease with which digital images can be captured, reproduced and distributed, means that our digital images may be captured at any time (often without our knowledge) and uploaded to the internet where they circulate without our control. It is becoming increasingly difficult for us to control and police the use and distribution of our images in the digital mediasphere.

[40] See Donald Snyder's "Webcam Women: Life on Your Screen" in David Gauntlett (ed.) (2000) *Web Studies: rewiring media studies for the digital age* for a discussion of a range of different webcam sites including those of college girl Jennifer Kaye Ringley (JenniCam) and performance artist Ana Voog.

When your image is displayed on the internet, it is potentially available for *anyone anywhere* to see. When someone types your name into a Google image search, they will find whatever images have been uploaded to the internet with your name anywhere in the image descriptor. This sense of universal surveillance is reminiscent of the all-seeing Lacanian gaze that we encountered earlier in the chapter: "I see only from one point, but in my existence I am looked at from all sides" (Lacan 1978: 72) and is also a key factor in the Foucauldian concept of the panoptic gaze. In *Discipline and Punish* (1979), Foucault describes Jeremy Bentham's 'Panopticon' design for prisons, where a few guards in a central tower can watch over a large number of prisoners while they themselves remain unseen. Because of this unequal gaze the prisoners don't know if they are actually being watched or not—the gaze is delegated to the prison architecture itself—but the possibility that they are being watched means that they internalise the disciplinary gaze leading to a form of self-surveillance where the prisoners act as if they are visible at all times. Today, this paranoiac hyperawareness of (potentially) being observed at all times has become a key feature of the contemporary society with its proliferation of public security cameras.

Our increasing visibility under the panoptic gaze of the networked digital era is intensified as our images and other personal data are digitised and circulated in a variety of online databases. The panopticon becomes even more powerful and pervasive as the gaze is delegated to digital surveillance and database technologies. Mark Poster describes this new form of digital surveillance as a "superpanopticon" which constructs new virtual subjectivities and identities—virtual databodies—through the accretion of different data traces that individuals leave (often without their knowledge) in digital networks (1990).

The digital avatar

Although policing and controlling our images in the networked digital mediasphere is becoming increasingly difficult, in online environments individuals have a new way of controlling their visible identities through the creation of digital avatars. In comparison with the physical body and the indexical images of photographs, film and video, the digital avatar offers some powerful new affordances for controlling and managing our visible appearance and public personas.

The visual identity of the digital avatar need not reflect real world identities or the physical specificities (race, age, gender, body shape, etc.) of actual bodies. With the digital avatar image individuals have access to signifiers of identity that are not normally available to them in the real world and their self-image can be crafted, perfected and controlled in far more radical ways than is possible with our earlier indexical image avatars.

As mentioned in the previous chapter, the fantasy of being able to achieve total control over the look and behaviour of your public image is one of the most seductive affordances enabled by the digital avatar. When an individual assumes an online avatar identity the physical body, along with its real or perceived imperfections, can be left behind and the individual can represent herself as an idealised or fantasy self. Inheriting something of the infant's jubilant misrecognition of itself in the mirror image, these new screen images set up a new series of pleasurable fictive identities for the self to identify with. Barbara Creed comments:

> Given the opportunity to create oneself in any likeness, will people construct their technological selves or doubles as perfect ideals? Will the future be a space, a screen, in which each human player—like narcissus—gazes forever at an idealised image of itself which will remain forever out of physical reach? Given the enormous emphasis in our culture on the body and the particular oppression of people through appearance (in terms of ethnicity, colour, gender), subjects of the twenty-first century may use the new technologies to escape these oppressive experiences. Will they design their new images in terms of existing ideals or will they create new ones? (2003: 132).

In the next chapter we will explore in more depth the different types of avatar identities that are being created in our new digital environments. Liberated from the indexical image, these new simulacral identities enable new modes of visual self-representation and identity experimentation. The gap of ideality evident in the appearance and performance of the physical body and in indexical images can be erased in the seamless presentation of an idealised simulacral avatar identity that totally masks the physical reality of the offline self.

Chapter Five: The digital avatar—experimental selves and multiple identities

> The Internet has become a significant social laboratory for experimenting with the constructions and reconstructions of self that characterizes postmodern life. In its virtual reality, we self-fashion and self-create. What kinds of personae do we make? What relation do these have to what we have traditionally thought of as the "whole" person? Are they experienced as an expanded self or as separate from the self? Do our real-life selves learn lessons from our virtual personae? Are these virtual personae fragments of a coherent real-life personality? (Turkle 1995: 180).

In this chapter we turn our focus more closely to the new mediated image avatar represented by the digital avatar. As we will see in this chapter, the new visual identities created by the digital avatar exemplify postmodern notions of identity as multiple and fluid. What is it about our new digital technologies and online environments that make them so productive for the formation of experimental and multiple identity forms? What types of identities do we "self-fashion" and "self-create" in these new digital environments? What are the unique affordances and constraints of these new mediated selves?

More than a decade ago in her book *Life on the Screen* (1995) Sherry Turkle borrowed Amy Bruckman's term "identity workshop" to describe the text-based online role-

playing games and virtual environments of MUDs and MOOs[41] that emerged during the 1980s. In these new online spaces, users could create and experiment with a range of different online identities. As Turkle points out in the quotation that introduces this chapter, in these new virtual environments created by the internet, individuals can explicitly construct and reconstruct their online personas, "self-fashioning" and "self-creating" a range of different identities.

The fact that the appearance and performance of the online identity is not tied to that of the offline self, combined with the relative anonymity of online spaces, creates particularly fertile arenas for the creation of experimental identity forms. As the famous cartoon of a dog sitting at a computer tells us, "On the internet nobody knows you're a dog." This lack of what Allucquère Rosanne Stone calls the "warranting" (1991) between our online and offline identities means that individuals are free to assume and experiment with a range of different identities that may be difficult or impossible for them to inhabit in the real world.

The early online identities created in MUDs have been extensively discussed not only by Turkle but also by many other theorists including Stone (1991; 1995) and Julian Dibbell (1998). These early online identities were primarily text-based with users describing their characters and actions in words, however in today's games and virtual worlds online identities have become increasingly pictorial with users being represented by visual images and icons called avatars.

While many online identities including those represented in email names/addresses and social networking sites such as Facebook explicitly link online and offline identities, this is much less typical in games and virtual worlds where more transformative types of identity experimentation are actively encouraged.

[41] MUDs (Multi-user Dungeons, or Domain, or Dimension) and MOOs (MUDs object oriented) are online role-playing game environments including gameplay and chatrooms that use text descriptions (of characters, locations and actions) rather than the graphical representations.

The postmodern self and multiple identities

As we saw in the previous chapter, the notion of the self as multi-faceted and multiple is of course not new. Anthony Giddens' idea that we all take part in a "plurality of lifeworlds" (1991:83) echoes Goffman's idea that we present different selves for different social situations. In our everyday lives we all present and perform different identities depending on the different social contexts we occupy and the people we are interacting with.

This idea that there is no single 'fixed' self or identity is one of the key tenets of postmodern theories of the self. Stuart Hall summarises this idea of the fragmented postmodern self as follows:

> We can no longer conceive of the 'individual' in terms of a whole, stable and completed Ego or autonomous, rational 'self'. The 'self' is conceptualised as more fragmented and incomplete, composed of multiple 'selves' or identities in relation to the different social worlds we inhabit, something with a history, 'produced', in process. The 'subject' is differently placed or positioned by different discourses and practices (1996: 226).

As Turkle demonstrates in *Life on the Screen*, this postmodern understanding of the self as fragmented, contingent and multiple provides a useful contextual framework within which to explore the new mediated identity forms of online presentations of self. In online environments, the individual can present a range of relatively independent identities or 'faces' in different contexts and social situations, and they can adapt and edit these different identities to suit those different environments and the types of selves they want to present. The unique affordances of the internet also means that these multiple identities can exist in parallel and can be switched between much more quickly than is possible in the offline world (1995: 178).

The postmodern digital self that Turkle describes here is irrevocably multiple and fragmented to the extent that Turkle compares it to the experience of multiple personality disorder (MPD), although she is careful to distinguish between the clinical dysfunctional condition of MPD and the productive identity-switching and experimentation that individuals engage in on the internet:

> MUDs are a context for constructions and reconstructions of identity; they are also a context for reflecting on old notions of identity itself. Through contemporary psychoanalytic theory, which stresses the decentred subject, and through the fragmented selves presented by patients (and most dramatically the increasingly numbers of patients who present with multiple personality) psychology confronts the ways in which any unitary notion of identity is problematic and illusory. What is the self when it functions as a society? What is the self when it divides its labor among its constituent "alters" or "avatars"? Those burdened by post-traumatic dissociative syndrome (MPD) suffer the question; inhabitants of MUDS play with it (Turkle cited in Stone 1995: 59).

This proliferation of multiple identities also exists within a postmodern contemporary culture of simulation which challenges modernist notions of a unified 'true self:'

> Virtual communities …make possible the construction of an identity that is so fluid and multiple that it strains the very limits of the notion. Identity, after all, literally means one. When we live through our electronic self-representations we have unlimited possibilities to be many. People become masters of self-presentation and self-creation. The very notion of an inner, "true self" is called into question (Turkle 1994).

As we saw in the previous chapter, our identities and notions of self are created through the manipulation and performance of our visible identities in the social arena. These visible identities are created through a series of appearances or surfaces (the skin, the image, the screen) rather than residing in the interior depths of the unified modernist subject. There is no 'real' or 'true' self beneath the different masks of our visible selves. The modernist faith in 'depth' (meaning, value, identity, the signified) is replaced by a proliferation of 'surfaces' (images, appearances, the superficial, the signifier).

In the twentieth and twenty-first centuries an ever-increasing range of different identities are offered up to individuals through globalised media forms (novels, magazines, television, film, the internet) and play an important role in suggesting a range of identities that may not be readily available to the individual self in their immediate environment. These globalised media forms are also important conduits for the creation and dissemination of new identities for people to aspire to.

In *The Saturated Self* (1991), psychologist Kenneth Gergen argues that new media technologies, and the ever increasing number and range of mediated relationships they enable, has led to a state of "social saturation" which has led to profound changes in the way we understand the self:

> Social saturation furnishes us with a multiplicity of incoherent and unrelated languages of the self. ... This fragmentation of self-conceptions corresponds to a multiplicity of incoherent and disconnected relationships. These relationships pull us in a myriad of directions, initiating us to play such a variety of roles that the very concept of an "authentic self" with knowable characteristics recedes from view (1991: 6-7).

In place of a unified and singular authentic self, Gergen proposes the idea of the "pastiche personality," "a social chameleon, constantly borrowing bits and pieces of identity from whatever sources are available and constructing them as useful or desirable in a given situation" (150) and the "relational self", a fluid and multiple self that is defined within the context of diverse and shifting social relationships and where "one's sense of individual autonomy gives way to a reality of immersed interdependence, in which it is relationship that constructs the self" (147).

Similarly, Mark Poster argues that in our increasingly mediated and globally networked world, the postmodern subject is constituted by the "mode of information" (1990) created by our pervasive use of electronic communication technologies such as telephony, radio, television and the internet. These technologies mediate our understanding of the world around us and of our own identities leading to a dispersed and decentred sense of self. Poster explains this idea further in "Postmodern Virtualities:"

> …electronic communications constitute the subject in ways other than that of the major modern institutions. If modernity or the mode of production signifies patterned practices that elicit identities as autonomous and (instrumentally) rational, postmodernity or the mode of information indicates communication practices that constitute subjects as unstable, multiple, and diffuse (1995: 87).

In today's globalised mediasphere and market place identities are increasingly being presented as optional individual consumer choices. As Giddens comments:

> …against the backdrop of new forms of mediated experience, self-identity becomes a reflexively organized endeavour. The reflexive project of the self, which consists in the sustaining of coherent, yet continuously revised, biographical narratives, takes place in the context of multiple choice (1991: 5).

Thomas de Zengotita takes up this idea in his book *Mediated* (2005) where he describes the postmodern self as an *optional* self constituted by choosing from a rapidly expanding number of identity choices.

The capitalist consumer ethos that pervades global media culture is also leading to an increasing commodification of identity. Sociologist Ben Agger explicitly links the idea of the networked virtual self, "connected to the world and to others through electronic means such as the Internet, television, and cell phones" (2003:1), with the forces of consumer capitalism: "Selves are encouraged to create themselves in a postmodern culture industry that recognizes that identity—selfhood—is plastic" (100). As Agger goes on to comment, individuals' "psyches are engaged by the culture industries which induce people to spend hours watching television and Web surfing, consuming advertising images that form identity" (107).

Through movies, television, print media and the internet, socially valorised identities are role-modelled by sports stars, actors, pop stars and other celebrities, and these identities are increasingly being associated with consumer goods that act as superficial signifiers of identity. While they may not be able to fully inhabit the socially desirable identities they see in the media:

> …individuals can at least superficially define themselves to others through their selection of clothes, commodities, media idols and other markers of interest, status and affiliations. That is, people are encouraged to consume their way into identities (Ryan and Deci: 253).

In the offline physical world, financial constraints as well as physical specificities (age, sex, race, facial features, body type and shape) play a determining role in limiting the types of identities individuals can successfully assume. In the online world of digital avatars, these constraints largely fall away, leaving individuals free to assume a much wider range of identities.

The digital avatar

The simulacral and transformative nature of the digital avatar body enables the individual to project a far more idealised and controllable fantasy body into the scopic arena of the virtual domain than is possible with the physical body or with conventional photographic and video images.

Unlike these previous indexical image avatars, the digital avatar body can look like anything the individual desires. In the virtual terrain, identity and physical appearance become a choice rather than a given enabling individuals to inhabit and perform a variety of different identities that are not constrained by their offline identities and physical appearance. Not only does the digital avatar give individuals unprecedented power over their visible identities, it also enables them to experiment with a variety of different identity forms, human and non-human.

In Hindu mythology the word "avatar" is used to describe the material incarnation of gods when they take on a physical form to descend to earth to interact with humans. Vishnu, for example, appeared on the Earth in a variety of avatars including a tortoise, a boar and other animals as well as in human from (Parrinder 1982). This ability of being able to take on different forms or incarnations (human and non-human) is shared by today's new avatar forms in games and virtual environments.

Figure 5-1 Screenshot showing avatars in LucasFilms' *Habitat.*

The term avatar was first used to describe the use of graphical personas representing users in an online role-playing game called *Habitat* (see *Figure 5-1*) developed by LucasFilms in the mid-1980s (Morningstar and Farmer 1991) and the term then became widely popularised by Neal Stephenson's cyberpunk novel *Snow Crash* where computer users don avatars—"the audiovisual bodies that people use to communicate with each other" (1992: 33)—to enter a computer-generated universe called the Metaverse.

Figure 5-2 Screenshot showing avatars in *The Palace* (www.thepalace.com).

Avatars can range from simple graphical icons such as the smiley faces and cartoon-like characters adopted by users in the graphical chatspace *The Palace* (see *Figure 5-2*) to the more highly rendered three-dimensional representations of humanoid, animal and other fantasy characters used in games like Blizzard's *World of Warcraft* (see *Figure 5-3*) and virtual worlds like Linden Lab's *Second Life* (see *Figure 5-4*).[42] The digital avatar provides unprecedented possibilities for the subject to re-create and transform her visual identity. As Stephenson explains in *Snow Crash*:

[42] Although typically associated with pictorial representations of human users in computer-mediated virtual environments, the text-based online identities of human users such as the user names and descriptions used in chat rooms and text-based MUDs can also been seen as prototypical forms of the digital avatar.

Your avatar can look any way you want it to up to the limitations of your equipment. If you're ugly, you can make your avatar beautiful. If you've just gotten out of bed, your avatar can still be wearing beautiful clothes and professionally applied makeup. You can look like a gorilla or a dragon or a giant talking penis in the Metaverse. Spend five minutes walking down the Street and you will see all of these (1992: 33-34).

Figure 5-3 Avatars in *World of Warcraft*.

Figure 5-4 Avatars of two Australian artists in *Second Life*: Chris Dodds's avatar Mashup Islander (left) and Adam Nash's avatar Adam Ramona (right).

In the reincarnated forms of our digital avatars individuals can escape the limiting identities that have been imposed on their socially inscribed physical bodies and be virtually re-embodied in identities of their own choice. The images we see reflected

back at us in our new digital mirrors represent far more radical transformations and misrecognitions of self than Lacan could possibly have imagined in his discussion of the mirror stage.

As we have seen, Turkle has compared the creation of multiple online identities to a playful and productive form of multiple personality disorder (Turkle cited in Stone 1995: 59). The self-styled 'post-psychoanalytic' theorists Gilles Deleuze and Felix Guattari take this idea even further, offering some radically new ideas for thinking about the mutability and multiplicity of the selves we see emerging in the digital age. As an alternative to totalising psychoanalytic narratives of identity, in *A Thousand Plateaus* (1988) Deleuze and Guattari offer the more libertarian philosophy of "schizoanalysis" emphasising new possibilities for human change and becoming where individuals can escape the constraining "tracings" (inscriptions) psychoanalysis and social norms place on the human body and psyche. Through processes of creative destruction and reconstruction of the self, individuals can transform themselves through various human and non-human identity forms and affiliations:

> You invent self-destructions that have nothing to do with the death drive. Dismantling the organism has never meant killing yourself, but rather opening the body to connections that presuppose an entire assemblage, circuits, conjunctions, levels and thresholds, passages and distributions of intensity, and territories and deterritorializations measured with the craft of the surveyor (160).

Deleuze and Guattari draw on Henri Bergson's work which emphasises concepts of duration and becoming over ideas of static being and identity. For Bergson, the body is a "centre of indetermination" in which various *virtual* potentialities are *actualised*. Instead of the "molar entity" of the *actual body* (the biologically and socially organised and determined subject), Deleuze and Guattari propose the "Body without Organs" (BwO)[43] to activate the virtual potential of the body to express new traits and affects and to form new connections and becomings. The BwO resists the hierarchies of socially

[43] Deleuze and Guattari have borrowed the term "body without organs" from Antonin Artaud who used it in his 1947 radio play "To Have Done with the Judgment of God." This radio play is reprinted in *Antonin Artaud Selected Writings*, edited by Susan Sontag (1976).

produced meanings and containing definitions (the territorialization of the body and psyche) through processes of "deterritorialization" and "lines of flight":

> …the body without organs is opposed less to organs as such than to the organization of the organs insofar as it composes an organism. The body without organs is not a dead body but a living body all the more alive and teeming once it has blown apart the organism and its organization. Lice hopping on the beach. Skin colonies. The full body without organs is populated by multiplicities (30).

Whereas Lacan would brand these imaginary identification of the self with its avatar assemblages as illusory and self-alienating misrecognitions of self, following Deleuze and Guattari we can see them instead as potentially productive lines of flight, deterritorializations where the individual can escape totalising social norms and inscriptions imposed on them by society's facialising machine and enter into a series of experimental hybrid identities and assemblages with entities from diverse sources both human and non-human.

Deleuze and Guattari's rhizomatic model of identity, which they explore in *A Thousand Plateaus* (1998), suggests the potential of the self to be fluid and mutable, transformed through a series of productive alliances and connections. Unlike the fixed and unified model of identity, which they represent by the tree with its singular root-tree structure, the rhizome is a plant that sends out a multiplicity of root tendrils and has the ability to make heterogenous interconnections. As Deleuze and Guattari describe it, the "…rhizome has no beginning or end; it is always in the middle, between things, interbeing, intermezzo" (1988: 25).

Taking on a fluid range of new avatar identities and forms allows individuals to put aside their everyday selves and experiment with new modes of identity and being including non-human identity forms. In her multi-user virtual environment *empyrean*, Australian new media artist Melinda Rackham has created a range of non-human avatars for users to choose from (see *Figure 5-5*). Rackham's avatars, which she poetically describes as a new "soft-skinned species" (2004), are amorphous, translucent organic cellular forms that shimmer and pulse as the user moves through the virtual environment. Inhabiting different avatar forms such as these, individuals can shape-shift

and explore new modes of being and becoming that are very different from their physical offline selves.

As Michael Heim comments:

> …when we put on our avatar, we also put off the habitual self. We accept a moment of transformation, shifting our shape in order to be who we are in different forms. We shed our form like a changeling. We lay aside the illusory fixity of being a hard ego encapsulated in a shell of flesh. Avatars allow us to engage a playful self, a self that does not let it be defined in narrow technical terms (1999: 12).

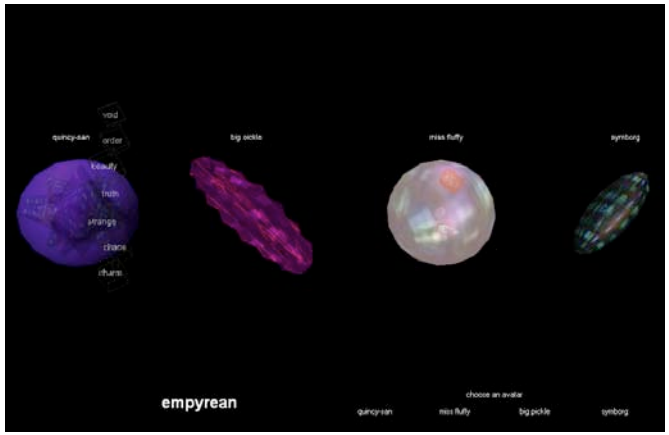

Figure 5-5 Avatar selection in Melinda Rackham's *empyrean*, 2000-2003.

Virtual spaces: identity play and experimentation

Before we investigate in more detail our new digital avatar identities, let us first look at what it is about our new virtual spaces that makes them such productive arenas for the creation of new and experimental identity forms.

The online spaces of the internet, particularly those of games and virtual worlds, act as alternative experiential spaces that exist outside of the everyday realities and constraints of the physical world. Identity experimentation is encouraged in these spaces because

they provide limitless access to new people and new situations as well as providing a relative sense of safety and anonymity where individuals can experiment with different identities and behaviours that will not necessarily impact on their everyday interactions in the real world.

As a space apart from the physical world these virtual spaces fulfil a similar function to that of the "magic circle" of play and games that Johan Huizinga describes in *Homo ludens: a study of the play-element in culture* (1955 [1938]). Huizinga describes the magic circle as a zone spatially and temporally separate from the everyday realities of the real world that is governed by its own logic and set of internally consistent rules.[44] This idea of a playful zone that operates outside of the constraints and rules of everyday realities is exemplified in today's virtual spaces of the internet, games and virtual worlds. These spaces create alternate experiences and realities that exist in parallel to the physical world.

This idea of a magical space is also taken up by Brenda Laurel in *Computers as Theater* (1991) where she uses a theatrical metaphor to describe the way users interact with the magical representational space of the computer screen:

> In a theatrical view of human-computer activity, the stage is a virtual world. It is populated by agents, both human and computer-generated, and other elements of the representational context (windows, teacups, desktops, or what-have-you). The technical magic that supports the representation, as in the theatre, is behind the scenes. Whether the magic is created by hardware, software, or wetware is of no consequence; its only value is in what it produces on the "stage." In other words, the *representation is all there is.* Think of it as existential WYSIWYG [What You See Is What You Get] (Laurel 2001: 110).

The alternate realities and parallel virtual spaces created by digital computing technologies also operate as transformative mirror spaces that reflect and remediate

---

[44] Huizinga's ideas about play and its central role in human culture have been taken up in more recent books such as Roger Caillois' *Man, Play and Games* (1962) and Mark Pesce's *This Playful World* (2000). Huizinga's ideas have also been very influential in the contemporary study of video and computer games (Crawford: 2003; Zimmerman and Salen: 2004; Fullerton, Swain, and Hoffman: 2004).

aspects of the real world as well as creating their own imaginary and simulacral realities. In this way they have much in common with the transformative mirror spaces Michel Foucault calls "heterotopias" which incorporate aspects of the real and the unreal (virtual),[45] and with psychologist Donald Winnicott's notion of "transitional space".[46] In *Playing and Reality* (1974) Winnicott describes transitional space as a space where the inner world of dreams and the imagination meets the reality-test of the outer external world. It is: "…an intermediate area of *experiencing*, to which inner reality and external life both contribute" (1974: 3). The transitional space thus operates as a zone of play that exists somewhere between the individual's internal fantasy world and the world of external reality.

Foucault's concept of the heterotopia and Winnicott's idea of transitional space are clearly exemplified in the today's virtual spaces of role-playing games and virtual worlds. These new *mixed reality* spaces operate somewhere between fantasy and reality, between the inner world of the imagination and the outer external world of shared social realities and intersubjective encounters. Unlike the private subjective world of the individual imagination, these virtual spaces exist independently of the individual as shared social spaces that can be simultaneously experienced by multiple participants. These virtual spaces create viable and persistent alternative realities or virtual "lifeworlds" (Taylor 2006) that individuals can inhabit in addition to the physical world. As virtual worlds theorist Edward Castronova writes:

> Before the advent of the avatar, there was only one world to live in, Earth, and only one avatar to inhabit there, the Earthly body. The recent emergence of virtual worlds besides the Earth has vastly expanded the range of choices regarding one's own physical being and the space which it inhabits. For those who are heavily burdened by their Earth bodies—because of physical challenges, or because of the often-brutal social stigma that is applied to physical appearance—the opportunity to have different bodies at different times allows easy experimentation with a variety of social roles—warrior, dancer, mentor, prostitute—and if variety is the spice of life, an expansion of these opportunities also must raise well-being. In general, the development of shared virtual reality environments has provided a significant expansion in the number of different lives a person may lead (2003: 33).

[45] Michel Foucault describes the heterotopia in his essay "Of Other Spaces" (1986), as a hybrid space that incorporates the aspects of the real and the unreal (virtual). For a fuller discussion of Foucault's notion of the heterotopia as it is applied to the internet, see Sherman Young's 1998 article "Of cyber spaces: the Internet & heterotopias" in *M/C: A Journal of Media and Culture* 1(4).

[46] D. W. Winnicott's article "Transitional Objects and Transitional Phenomena" was first published in the *International Journal of Psycho-Analysis*, vol. 34, part 2 (1953).

Just as games and virtual worlds blend simulated aspects of the offline physical world with the imaginary realities of cartoons, science fiction and popular culture, the avatar identities that inhabit them are also *mixed reality* creations. On the virtual screen, avatars blend human characteristics and behaviours with those of fantasy cartoon characters and Asian anime and their actions combine the virtual physics of cartoon animation and science fiction special effects with more naturalistic real world movements.

Combining real world and fantasy attributes, avatars may take on a recognisable human form wearing the latest designer clothing but they can also teleport or fly between different locations and can transform their appearance—from male to female, or human to animal or become another species—just as easily as they change their clothes. The mixed reality virtual screen reflects a hyperreal world, an exemplary postmodern fusion of remediated reality, simulations, fantasy and popular culture.

However, although the affordances of the digital avatar can enable potentially radical new identity forms, social norms and stereotypes as well as technical constraints also serve to limit the visual appearance and performance of these new avatar identities. While there are some interesting and transgressive experimental identities evident in games and virtual worlds, the vast majority of online identities import stereotypical human identities from the offline world and reinscribe them on the virtual avatar body. Similarly, the majority of non-human avatar forms such as cartoon characters, robots and aliens are sourced directly from the image repertoire of popular mass culture. In the following sections of this chapter we will explore in more detail the different types of avatar identities that individuals select/create and examine the socio-technical forces that shape and constrain these choices.

Constructing the digital avatar identity: freedoms and constraints

Early studies of online identities such as those of Turkle (1995), Stone (1995) and Dibbell (1998) focus on the text-based online environments of MUDs and MOOs where identities are constructed and performed purely through text description. In LambdaMOO, one of the most popular of these early online environments, individuals could set their appearance as a text description which could be accessed by other players using the 'look' command, for example:

> Olive_Guest
>
> A hazel-eyed girl with white-blonde hair, a tight crop top and short shorts. She fills this outfit nicely, the low round neckline showing the upper slopes of her breasts, and carries a little beaded bag in one hand. Her feet are bare, her hair tousled as if she just got up from sleep. …
>
> Brown_Guest
>
> Mark is 17 years old. He's got his mother's emerald green eyes, and his dad's dark brown, curly hair, cut very short on the sides, and a little longer on the top. He is 5'11", 180lbs, and is wearing his favorite, almost worn out, blue jeans, and a tight, dark purple golf shirt (White 2006: 42).

Although not represented pictorially, these text-based descriptions of visual appearance still played a significant role in establishing the individual's online identity and persona. However, as computing power and bandwidth have improved, the internet has become increasingly media-rich, and graphical environments and pictorial avatars have largely replaced the earlier text-based environments and identities. As a result of this shift, the visual appearance of avatars in today's online games and virtual worlds has assumed far greater significance in the performance of the online avatar identity. In text-based virtual spaces, the visual appearance of the online identity only became apparent when another player exercised the 'look' command. In today's pictorial virtual worlds the visual appearance of the avatar is always present and on display and individuals may spend many hours choosing or constructing the visual identity of their avatars and building up wardrobes of clothes and accessories. These wardrobes or 'inventories' may also include a number of different avatar identities.

As we saw in the previous chapter, the focus on surface appearance, clothing and image has typically been viewed as a narcissistic feminine type of behaviour. Choosing, designing and 'putting on' an avatar with its attendant concern with visual appearance and identity can thus be viewed as a distinctly female gendered activity. The idea of the skin as a surface identity or a type of 'clothing' that can be put on and taken off, has recently become a part of online games and virtual worlds where the word 'skin' is used to describe the physical appearance of the digital avatar body including skin colour, facial features, body type, hair and eye colour. An avatar skin or identity can be put on and taken off in the same way as an item of clothing or a costume.

The idea of masquerading or putting on a mask is also part of the transformative and playful shape-shifting nature of the digital avatar.[47] However, although the digital avatar body would appear to be infinitely malleable, there are still limitations to the types of visual identities that can be assumed. Virtual environments may ostensibly offer their users the freedom to 'be whoever you want to be,' but this freedom is limited by a number of culturally and technically embodied hardware and software design constraints. Although the digital avatar may free the individual from the constraints of their physical offline appearance, the digital avatar body is, nevertheless, subject to its own constraints.

New media theorists such as Lev Manovich (2001), Matt Fuller (2003) and Wendy Hui Kyong Chun (2005) write persuasively about how ideologies, stereotypes and cultural practices are inscribed in computer hardware and software applications. Chun describes the articulation of computer hardware and software as "ideology machines" (2006: 19). This is definitely the case in games and virtual worlds where the appearance and behaviour of players' avatars is determined not only by the desires of users but also by

[47] This idea of masquerading and 'becoming other' through the use of masks also has resonances with the ceremonial totemic use of animal masks in many cultures. This idea of sacred ritual and mystical or spiritual mimesis and transformation is explored in Brenda Laurel and Rachel Strickland's landmark VR work *Placeholder* (1993). In this work two participants enter into a "magic circle"—a green-matted circle ringed by rocks—where they are fitted with HMDs and sensors so their movements can be directly mapped into the virtual terrain. They are then reborn as one of four non-human avatars or spirit creatures—Crow, Snake, Spider and Fish. In their virtually re-embodied forms the participants take on the non-human characteristics and points of view of their spirit characters, for example participants embodied as the crow avatar can fly by flapping their arms. They can also exchange embodiments and metamorphose into other creatures.

the design parameters and constraints of in-game avatar construction software and the surrounding game/world environment. In the physical world the types of visual appearance and identity that can be assumed by individuals is constrained by physical appearance and social position; in the virtual world the avatar's appearance and performance is constrained by hardware and software environments which determine the way the avatar body can be represented and how it can perform and interact in the virtual arena. As Stephenson reminds us: "Your avatar can look any way you want it to up to the limitations of your equipment" (1992: 33).

Software designers and programmers make choices about the type of world or environment your avatar will inhabit and they also determine the overall visual style of your avatar and its possible behaviours. Some of these decisions are the result of technical considerations (for example, hardware, software and infrastructure limitations) but they are also the result of social, cultural and aesthetic choices. Dominant socio-cultural assumptions and stereotypes are embedded in these software programs where they become the parameters and presets that act to perpetuate and reinforce existing social stereotypes and frameworks.

In many ways the earlier text-based spaces of MUDs and MOOs provided a greater level of freedom to construct online identities than today's pictorial games and virtual worlds. In text-based environments the avatar's visual appearance and actions were only limited by the individual's imagination and powers of textual description. These text descriptions of avatars and their actions, along with the environments they inhabited, were re-constructed in the minds and imaginations of the participants creating an infinitely rich and varied range of creative possibilities. In contrast, in the virtual environments of today's games and virtual worlds, avatars and their actions are now represented visually, a powerful new affordance, but one which also introduces its own constraints.

In many of today's games and virtual worlds the choice of avatar identity is limited to preset mix and match identity options, and even in virtual worlds where you can design your own avatar identity, this freedom is still circumscribed by the design constraints of the world and by the individual's own software and design skills. For individuals who don't have the software and design skills to create their own avatars, the freedom to create their own identity is limited to that of a consumer-bricoleur mixing and matching

pre-existing options that are offered in the online economy of avatar identities and accessories.

In Stephenson's cyberpunk novel *Snow Crash* (1992), which has acted as something of a blueprint for many of today's virtual worlds such as *Second Life*, users who don't have the skill to design their own avatars typically buy readymade off-the shelf versions such as those described below:

> Brandy and Clint are both popular, off-the-shelf models. When white-trash high school girls are going on a date in the Metaverse, they invariably run down to the computer-games section of the local Wal-Mart and buy a copy of Brandy. The user can select three breast sizes: improbable, impossible, and ludicrous. Brandy has a limited repertoire of facial expressions: cute and pouty; cute and sultry; perky and interested; smiling and receptive; cute and spacy. Her eyelashes are half an inch long, and the software is so cheap that they are rendered as solid ebony chips. When a Brandy flutters her eyelashes, you can almost feel the breeze (1992: 35).

Figure 5-6 Barbie clone avatars in *Second Life*.

These impoverished and stereotypical avatar identity choices are common in many games and virtual worlds where versions of these Ken and Barbie clones proliferate (see *Figure 5-6*). It is ironic (but perhaps not surprising) that in these new virtual arenas, where theoretically we can be anything we want to be, homogenising social stereotypes

and idealised media types dominate the virtual landscape. These real world norms and stereotypes are reinscribed in the virtual terrain both through the types of avatars made available for users by virtual world developers and through the choices of avatars made by users themselves. As media theorist Vilem Flusser points out, our technological apparatuses are part of our culture, and "consequently this culture is recognizable in them" (2000: 22). Offline cultural norms and stereotypes are reproduced online where they are embedded in the software programs that construct our new virtual environments and the avatars that inhabit them.

In *Towards a Philosophy of Photography* (2000), Flusser analyses the way socio-cultural ideologies and practices as well as technological constraints are embedded in our technological apparatuses and how we then become "functionaries" of those apparatuses. In the following quotation Flusser describes how our apparent freedom to use the apparatus in any way we choose is in fact limited and constrained by the functional abilities that have been programmed into the apparatus (in this case the camera):

> Photographers select combinations of categories… It looks here as if photographers could choose freely, as if their cameras were following intention. But the choice is limited to the categories of the camera, and the freedom of the photographer remains a programmed freedom. Whereas the apparatus functions as a function of the photographer's intention, this intention itself functions as a function of the camera's program. It goes without saying that photographers can discover new categories. But then they are straying beyond the act of photography into the metaprogram—of the photographic industry or of their own making—from which the cameras are programmed. To put it another way: In the act of photography the camera does the will of the photographer but the photographer has to will what the camera can do (2000: 35).

Flusser's idea of "programmed freedoms" is a very useful conceptual tool with which to analyse the freedoms and constraints that individuals encounter when they construct and perform their avatar identities. Just as photographers become functionaries of the camera because their actions are constrained by the functional abilities of the camera, so too is the control over the appearance and performance of avatars constrained by the choices available within different game and virtual world environments. The

individual's freedom to personalise her avatar identity in games and virtual worlds can thus be seen as a "programmed freedom" typically made by selecting from a predetermined array of mix and match options, body parts and accessories.

Individual users or "functionaries" may challenge and subvert the cultural norms and stereotypes inscribed in the apparatus and its program, but only to the extent that the program itself allows this to happen, otherwise, as Flusser points out, they need to initiate change in the metaprogram itself. It is at the level of the metaprogram where the apparatus is constructed and programmed that socio-cultural ideologies, practices and norms are inscribed into the virtual terrain. The ability of users to hack into the apparatus—to re-code/reprogram to add or change functionality or to create their own programs—is one of the inherently liberating features of computer software but this ability is still limited by the extent to which those interventions are possible within the constraints of different software environments and is dependent on the programming and design abilities of individual users.

Different games and virtual worlds have very different graphical styles or looks for their avatars which range from the very simple iconic smiley faces of *The Palace*, to cute 2D cartoon-like characters in *Habbo Hotel*, to more detailed 3D graphical avatars in *The Sims*, and the even more sophisticated and highly rendered 3D avatars in *Second Life*. As well as determining the overall visual style of the avatars, the in-game avatar construction software also determines how much players can customise the individual appearance of their avatars. Users can generally change the gender and skin colour of their avatars and select different facial features, clothing items and accessories but it is not always possible to change things like body shape or age. Slim, young adult (and usually white) is typically the default setting. In *Habbo Hotel* there are some limited options for users to customise the individual looks of their avatars. They can select the gender and skin colour of their avatar and choose between a range of face and eye shapes but they cannot change the age or body shape of their avatars. All Habbo avatars are young adults and their body shape is generic with minimal difference between the sexes. Players in *Habbo Hotel* can also dress their avatars by selecting between a limited range of tops, pants, and footwear as well as a range of 'hats' including rabbit ears and caps (see *Figure 5-7*).

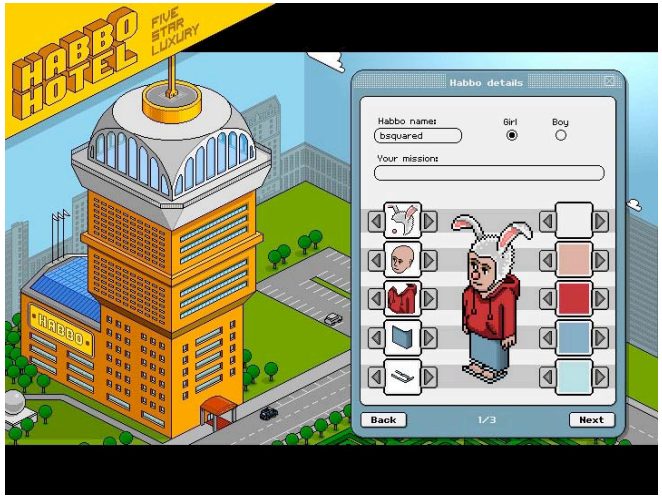

Figure 5-7 Avatar construction screen in *Habbo Hotel*.

In *The Sims Online* players have a much greater range of options for the customisation of their avatars than they do in *Habbo Hotel*, with options for changing the shape of their face and facial features as well as adding facial hair, makeup, glasses and other accessories. They can also select between a range of ages including toddler, child, teen, adult and elder. *Second Life* offers even more freedom for users to customise just about any aspect of their avatars' appearance that you can think of, from skin, hair and eye colour to facial features and body shape. Users can select not only the size of their breasts but also their position, amount of cleavage and 'buoyancy.' You can also choose how muscular you want your avatar to be, arm and leg length, amount of body fat, etc.

However, even in the more sophisticated virtual environments like *The Sims Online* and *Second Life* where users are offered a vast range of options to customise their avatars' appearance, the slim, young adult is still the default setting. New users entering *Second Life* are offered a choice between male and female versions of six default avatars: a Furry (a fox character), the Girl/Boy Nextdoor, City Chic, Harajuku (an anime styled character), Cybergoth and Nightclub (see *Figure 5-8*). Like the majority of avatar default types available online, all of these avatars (even the Furry) are young, slim and white/Asian. While these stereotypes may reflect the (presumed) preferences and

demographics of users, they also serve to emphasise and privilege these particular identities and to suggest particular types of interaction and behaviours.

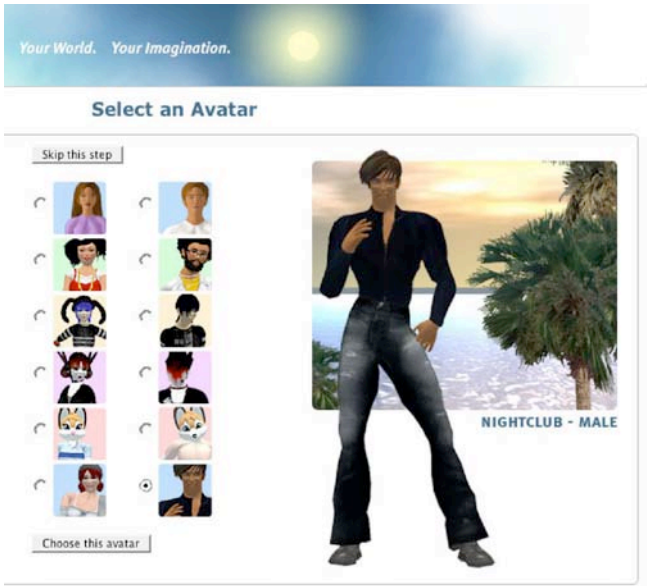

Figure 5-8 Default avatar selection in *Second Life*.

Although some virtual worlds like *Second Life* actively encourage their users to modify the virtual environment, and the appearance and behaviours of their avatars, this freedom is still constrained by the overall framework of the software environment and the design and programming skills of individual users. Individuals who do have design and programming skills can create more personalised, subversive and unusual avatar identities, but other individuals who don't have those skills are limited to selecting from existing avatar identities or alternatively selecting avatar identities that are available for purchase in the online marketplace. However, even in the laissez-faire online economy, it is young, sexy and idealised avatars that clearly dominate. Although there are a few offbeat aliens or monster avatars (see *Figure 5-9*), the most popular types of avatars are overwhelmingly made up of idealised Ken and Barbie clones and their updated popular culture cousins such as Japanese style manga and anime characters. In *Second Life* it is

easier to buy a glamorous idealised avatar identity than it is to design or buy one that looks like your real world self.

Figure 5-9 Avatars in *Second Life*.

Your control over your avatar's movements, facial expressions and gestures is also limited by the preset animations available within different environments, for example, waving, crying, blowing kisses, smiling, dancing, frowning, etc. These behaviours are typically quite stylised and exaggerated and in some cases they are also heavily gendered, for example, if you want your avatar to blow a kiss in *Second Life*, you have to choose between a male or female version of that action. In *Second Life* it is possible to create your own individualised movements and gestures, either by designing your own animations or by buying them from other players, but in most games and virtual worlds you are stuck with the preset options.

Avatar stereotypes and idealised identities

As we have seen, although the real life flesh body may be left behind when we enter the virtual online environments of games and virtual worlds, the virtual avatar body that replaces it is also subject to the same socio-cultural norms and stereotypes that operate in the offline world. These socio-cultural markers of identity in the form of gender, skin colour, body type, clothing and hairstyle choices are imported into the digital domain by hardware and software producers and well as by the individuals who design, select and buy avatar identities to represent themselves.

In our media and celebrity-saturated culture, the promise of creating an idealised identity is very seductive and the types of avatars that we routinely see in games and virtual worlds tend towards the stereotypical norms of idealised human and fantasy identities. As these familiar socio-cultural stereotypes are reinscribed on the digital avatar body, they reinforce and intensify those limiting identities from the real world.[48] As Gregory Little comments in his "Manifesto for Avatars," the avatars that inhabit our new virtual worlds are:

> …extremely generic, homogenous representations rooted in prevailing constructions of successful commodification and accumulation: pop icons, juvenile fantasies, dumbed-down cartoon characters, and racially pure, white, young, 'perfect bodies' (1998).

In our media-driven consumer culture where identity has increasingly become associated with physical appearance and possessions, consumption has become a primary site of identity formation as we seek to obtain the various identities that are promised along with the purchase of brand name clothes and other consumer goods. The selection of an avatar identity represents a continuation and an intensification of this commodification of identity with its focus on superficial appearance and possessions but now, as well as selecting clothes and accessories, we can also choose the more intimate determinants of our identity such as gender, age, face, skin colour and body shape.

Little describes the avatar as "an insignia of capital in the guise of personal choice" and laments that the inevitable "movement of capital into the avatar" forecloses the liberatory possibilities of the avatar to express new deterritorialized forms of identity. However Little's call for us to "step outside of biological discourse, detach from the referents that bind it to mind/body bifurcation, lack-based desire, and cycles of commodity exchange" and to construct avatar forms that escape from the "idealized,

[48] In "The Pleasure of the Interface" (1999), Claudia Springer also writes of the way that gender is intensified in a highly stereotypical fashion in popular representations of robots, cyborgs and avatars in science fiction films and cyberpunk literature—giant muscles for the men and enormous breasts for the women.

commodified body of capital" would appear to have largely gone unheeded (Little 1998).

In online marketplaces where avatar identities or skins are routinely traded, idealised stereotypes dominate the supply-demand economy of desired identities. The 'anything we want to be' would appear to be the ideal types that proliferate in the popular media—young, buff and good-looking with a full complement of materialistic accessories, designer clothes, high-tech gadgets, cars and palatial houses. Indeed, idealised identities are far more prevalent in the virtual terrain than in real life because they can be much more readily attained. Modifying your digital avatar is much easier, cheaper and less painful than plastic surgery, and if you don't like your new look you can easily change it. The virtual arena is one where we can all be characters from Beverly Hills 90210, the O.C. or our favourite computer game.

In "Fantasies of Femininity" (2006a), published in *Slatenight*, an online magazine devoted to *Second Life*, Australian academic Angela Thomas writes with the uneasiness of an avowed feminist who has nevertheless been seduced by the ability of the digital avatar to offer her access to socially valued attributes of stereotypical feminine beauty and sexual attractiveness:

> I worry a lot about the idealization of beauty and the way it fashions women as objects to be consumed by the gaze of others. I am concerned about the unrealistic expectations such images have on young girls across all cultures. Yet in cyberspace, the culture of the body is very different. As women we all start out on a level playing field, and we can all become the representation of our own desires. Second Life reflects the new body culture of avatars, where we can be whatever we fantasise about: tall, thin, winged, furry, goth, whatever (Thomas 2006a).

Although Thomas asserts that the culture of the body is different in cyberspace, it seems apparent to even the most casual observer that the constraining social norms and ideals of female beauty are inscribed even more heavily in the virtual terrain because they can be so readily attained. Thomas describes her *Second Life* avatar identity Anya Ixchel (see *Figure 5-10*) as follows:

> I am … completely invested in my avatar—emotionally and financially. I have spent a lot of time and money hunting for the perfect skin, the prettiest eyes, the longest eyelashes, and of course, the glorious fashions. … My avatar is me and it expresses my personality and identity just as much as my words do. It reflects my inner sense of aesthetics and beauty. It also reflects my fantasies to be my own image of the ideal feminine beauty …here I am, looking divine and playing out a set of feminine fantasies that will never be my offline reality (2006a).

Figure 5-10 Angela Thomas and her *Second Life* avatar Anya Ixchel.

As Thomas' comments reveal, individuals can form very close attachments to their idealised avatar identities and identify with them strongly. However, this is not always the case. In the next section we will investigate in more depth the different levels of attachment individuals have with their avatar identities and the different motivations that are in operation as they use and 'live through' these transitional entities in a variety of different contexts.

Different levels of identification and investment in avatar identities

Individuals may either experience their avatars as *selves* or as *others* depending on their different motivations, levels of personal investment, and the different types of virtual environments within which their avatars are deployed. In many games and virtual worlds there is a partial or oscillating identification with the avatar identity, with the

individual's avatar acting as a "transitional" entity that is both connected to and separate from the individual, both me and not-me, both self and other.[49]

At one end of the spectrum, the individual may identify with her avatar representation so closely that it is experienced as an intimate extension of her own subjectivity and becomes an intensely felt *second self*. This is particularly the case when the individual has invested a lot of time and effort in designing or customising her avatar identity and when the avatar reflects strong aspects of the individual's own psyche or aspirations.

At the other end of the spectrum the avatar may be experienced as a totally separate *other*, an entity that is clearly disconnected from the self. This is the case where there is minimal personalisation of the avatar and where the individual invests little or nothing of himself in the avatar identity. This is typically the case in many games where the avatar is more of a puppet or doll than a second self. In these scenarios, the individual's relationship to the avatar becomes that of a puppet-master or director, and various fantasy scenarios can be acted out through the virtual avatar body without any particularly meaningful personal identification or connection being experienced.

Slavoj Zizek (1998) uses the term "interpassivity"—which he describes as the "shadowy" and "uncanny double" of interactivity—to describe the displacement or delegation of agency and affect onto others who act as stand-ins for the subject, for example, "weepers" at a funeral or the canned laughter used in sitcoms. For Zizek, this same displacement also operates in the construction of online identities who *act on behalf of* the subject:

> When I construct a "false" image that stands for me in a virtual community (in sexual games, for example, a shy man often assumes the screen persona of an attractive, promiscuous woman), the emotions I feel and "feign" as part of my screen persona are not simply false: although (what I experience as) my "true self" does not feel them, they are nonetheless in a sense "true", just as with watching a TV mini-series with canned laughter, where, even if I do not laugh but simply stare at the screen, tired after a hard day's work, I nonetheless feel relieved after the show. This is what the Lacanian notion of "decenterment", the decentered subject, is aimed at: my most intimate feelings can be radically externalized; I can literally "laugh and cry through another" (Zizek 1998).

[49] Winnicott's idea of the "transitional object" is similar to his notion of "transitional space." Winnicott describes the "transitional object" as occupying a liminal area between the self and the external world, between 'me' and 'not-me.' Sherry Turkle also references Winnicott's idea of the transitional object in her discussion of online in identities in *Life on the Screen* (1995). Winnicott's examples of transitional objects include the child's first 'not-me' possession such as a doll or a soft toy.

When agency and affect are displaced and delegated in this way, the avatar operates as something of an identity fetish for the subject. In Zizek's words, the avatar lives, laughs and cries on behalf of the subject. However this dynamic does not fully account for some of the more intimate and transformational types of identification that individuals experience with and through their avatar identities.

I would argue that an individual's identification with her avatar identity in virtual worlds or games is very different from the types of spectatorial identification that are possible for film and television viewers. Because of the participatory nature of these new virtual arenas, users can literally inhabit and become a character in their own right (controlling its speech and actions) rather than just imaginatively identifying with their on-screen heroes.

Individuals also project aspects of their identity into and through their avatar creations enabling them to play out experimental identities and roles in much the same way as children act out stories by playing make believe characters or through projecting those characters onto dolls and other action figures. This type of role-playing and identity experimentation is typically left behind with childhood but games and virtual worlds offer a similar play-like arena not only for children but also for adolescents and adults. In these new virtual worlds, individuals can re-enter a childlike zone where they experiment with and play out alternate experimental identities.

Of course, as previously mentioned, there are many different types and levels of identification possible in different games and virtual worlds. Many of the avatars or characters individuals play through in video games only offer rudimentary personalisation (and sometimes none at all). In games like Nintendo's *Mario*, Blizzard's *Diablo* and Eidos Interactive's *Tomb Raider* individuals play through a pre-defined character to achieve a particular goal or task. Although players may identify with these characters to some extent there is obviously no scope in these games for the creation of a fully articulated and personalised second self.

In role-playing games (RPGs), players have more choice in selecting and customising the role or character they want to play in the game. This is particularly the case in MMORGs (Massively Multiplayer Online Role-Playing Games) such as Blizzard's *World of Warcraft* where players' identification with their avatar characters is increased by the ability to select, name and personalise game avatars and through the extended period over which the game is played with other players. This social interaction with other players, as much as the ability to design and customise their avatars, is responsible for creating a strong sense of identification with the avatar. When the individual's avatar is addressed by other players this helps to reinforce and build up a sense of connection and identification with the avatar identity particularly when this happens and is reinforced over an extended period. As we saw in the last chapter, in the physical world an individual's identity is socially constructed, performed and ratified in the social arena, and a similar dynamic is at play in the virtual arena where social forces and interaction also play a strong role in ratifying and reinforcing avatar identities. Role-playing games that emphasise social interaction are therefore more likely to encourage individuals to identify more closely with their avatars as a result of ongoing social communication and interaction.

Virtual worlds and games also enable individuals to actively play out different fantasy identities and wish-fulfilment scenarios where they can be a different person, perhaps the person they always wanted to be but couldn't be in the real world. Many games and virtual worlds explicitly offer individuals the opportunity to try out other identities. *Second Life* offers its residents not only an alter ego but also an alternate life, as one participant puts it: "If you are bored with your Real Life, now you have another choice, in Second Life you can be or do whatever you want."[50] Similarly, in an online article "Get Real! Creating a Sim in the Sims Online™," Bob King, the lead artist for *The Sims Online*, invites users to experiment with a range of different avatar identities:

> Have you ever wanted to know what it feels like to be someone else? Ever dreamed of the ability to step into a totally different skin than your own? Would you like the ability to create a persona for yourself that could have your social and communicative qualities, and yet look nothing like you?
>
> Imagine being able to walk up to a good friend, hold a complete conversation with him, and have him never recognize you. Would you like a skin-colour change? Have you ever fancied a gender change? Ever thought of becoming an alien? You can enjoy this type of charade and many more online in The Sims Online (2003).

However, this superficial assumption of online identities is not without its critics. Lisa Nakamura (2000) specifically critiques the superficiality of much of this online cross-dressing and identity experimentation, which she calls "identity tourism," and queries the notion that users can really learn any profound lessons from the assumption of different gender, racial and cultural identities especially as these online identities are typically based on blatant stereotypes. As Nakamura points out, the idea that you can 'put on' a different racial or gender identity in the same way that you would put on an item of clothing fails to take into account the complex lived realities of gender and racial identity in the real world.

Nevertheless, as both Turkle and psychologist John Suler argue, through playing out a variety of different performative avatar identities, individuals can explore and express different facets of themselves and use the virtual realm as a test environment for new identities that may subsequently be incorporated into their offline identities (Turkle 1995; Suler 1996-2007).

As Turkle comments in *Life on the Screen*, the early online role-playing games of MUDs were "laboratories for the construction of identity," and places "for discovering who one is and wishes to be" (1995: 184). As one of Turkle's research subjects comments about her MUD experiences:

> You can be whoever you want to be. You can completely redefine yourself if you want. You can be the opposite sex. You can be more talkative. You can be less talkative. Whatever. You can just be whoever you want really, whoever you have the capacity to be. You don't have to worry about the slots other people put you in as much. It's easier to change the way people perceive you, because all they've got is what you show them. They don't look at your body

[50] Text from a Second Life video "Now you can have a Virtual Life" by Renata Carone posted on YouTube September 10 2006, http://www.youtube.com/watch?v=XmjOO9LEBhE

> and make assumptions. They don't hear your accent and make assumptions (184).

These same motivations can also be seen with the participants of today's avatar-inhabited games and virtual worlds. In his book *Alter Ego: avatars and their creators* (2007) journalist Robbie Cooper interviews a number of individuals about the avatars they have created in a variety of different games and virtual worlds. The comments of these individuals show the diversity of the different types of identification individuals experience with their avatars depending on their different personalities and motivations. While some individuals' avatar identities do resemble their offline selves (albeit frequently glossier idealised versions of themselves), many construct idealised fantasy identities or alter egos that may bear very little relation to their offline selves.[51]

Software developer Kimberly Rufer-Bach sees her avatar identity in *Second Life* as an extension of her offline identity (see *Figure 5-11*). Her avatar Kim Anubis is closely modelled on her offline self, albeit about 20 years younger and with a better wardrobe as well as a few extra attributes that she can choose to wear such as a tail (Cooper 2007).

In a similar vein Elizabeth Brown, a participant in the game *Hero's Journey* describes her avatar Thalia as an older aspirational version of herself (see *Figure 5-12*):

> I designed Thalia to look the way that I aspire to be when I'm older. I know the kind of person that I want to be, because I see some women like that, in real life or in film—like the character Aunt Meg in the movie *Twister*. I perceive them as friendly, graceful, comfortable with themselves, and very open and friendly and welcoming to everyone else around them. That's how I want to be, and in some ways, by creating my Hero's Journey character to look like my own future goal, it gives me something to visualize and work towards (Brown quoted in Cooper 2007: n.p.).

[51] See also Angela Thomas's account of the different motivations at work in adolescent identity experimentation and play in virtual worlds. Thomas, A. (2007). *Youth online: identity and literacy in the digital age*. New York: Peter Lang.

Figure 5-11 Kimberly Rufer-Bach and her *Second Life* avatar Kim Anubis.

Figure 5-12 Elizabeth Brown and her *Hero's Journey* avatar Thalia.

Others use their online avatar identities as an escape from the physical realities of their offline lives and to give them access to identities and experiences that may be difficult or impossible for them to achieve in the real world. For example, in the offline world Jason Rowe contends with severe physical disabilities and is confined to a wheelchair but online in the MMORG *Star Wars Galaxies* he is Rurouni Kenshin, a human marksman/rifleman who can fight monsters, ride an Imperial speeder bike, and just simply hang out with friends (something he can't do in real life) (see *Figure 5-13*).

Through his virtual avatar body Rowe can overcome the limitations of his physical disabilities and interact with other players on a level playing field. Rowe comments:

> I play online games because I get to interact with people. The computer screen is my window to the world. Online it doesn't matter what you look like. Virtual worlds bring people together—everyone is on common ground. …Online you get to know the person behind the keyboard before you know the physical person. The internet eliminates how you look in real life, so you get to know a person by their mind and personality (Rowe quoted in Cooper 2007: n.p.)

Figure 5-13 Jason Rowe and his *Star Wars Galaxies* avatar Rurouni Kenshin.

In *Lineage*, a game that is hugely popular in South Korea, student Young Ki-Jang plays the avatar Knight Lummis. Unlike his real world identity, where he is constrained by parental and social expectations, in the game his avatar has the freedom to follow a destiny of his own making. Young comments:

> I enjoy playing *Lineage* because it's a place where I can control my own destiny. In the real world, you have to conform to the expectations of your parents, teachers, and peers. What matters the most is how much money you have, what schools you go to, and who your parents are. Where you start determines where you end up. In *Lineage* it's different. You create your avatar—it's not already chosen for you. The path forward is up to you. Play well, and you will get ahead. It's not like in the real world where things are set for you (Young quoted in Cooper 2007: n.p.).

Mi-Jin Kang and her girlfriends also enjoy playing characters in *Lineage* because they can experiment with powerful female role models not available to them in their everyday lives:

> Our characters give us a chance to dress and act in ways that we can't in real life. Korea is a fairly conservative place when it comes to gender roles and society's expectations. In *Lineage* we can be strong warrior women, deadly and beautiful. Where else can you wield a sword and dress like a supermodel. The feeling of power is intoxicating (Kang quoted in Cooper 2007: n.p.).

Other individuals appear to use their avatar identities to create alter egos or supplements to their offline selves. Giorgos Loukakis, a student in Greece, comments that with his avatar in *City of Heroes* he unleashes his own inner vampire hero:

> AereVoS is my heroic alter ego, created by threading my childhood dreams. He looks like me, he thinks like me and he acts like me because he is me and I am him. His past is my past—he was a PhD student in a parallel universe until the day he realized that ultimate darkness was unleashed within him. Also, AreVos has a dark past—a vampire incident that nobody knows about, something he holds beneath his wings (Loukakis quoted in Cooper 2007: n.p.).

French gamer Thierry Te Dunne plays a female avatar called Naemie Theud (see *Figure 5-14*). The avatar is based on a character he first developed in a novel and then brought to virtual life in the game *Guild Wars*. Dunne describes Naemie as an expression of his own feminine characteristics:

> Naemie is my digital spirit, perfectly realized in her striking image—red-headed, savage, generous, lethal! And with a strong resemblance to my feminine side. Her character is unique because she has a history, a literary genesis. She was not created in a rush or borrowed from someone else, but thought over, polished, cherished (Dunne quoted in Cooper 2007: n.p.).

Computer hotline manager Serge Creola describes his relationship with his avatar Megatox, a super hero character in *City of Villains*, as one of complementarity where

his offline and online identities combine to create an enhanced identity (see *Figure 5-15*):

> Megatox is me and I am Megatox, one does not go without the other. When I switch on *City of Villains*, I am there with my own personality, the real and the virtual blending together. I simply step into a void bringing me to that Otherland. …Megatox is all that I would like to be—strong, famous, respected, feared by some, daring, the talk of the town. This is why we complement each other. Together we make one complete person (Creola quoted in Cooper 2007: n.p.).

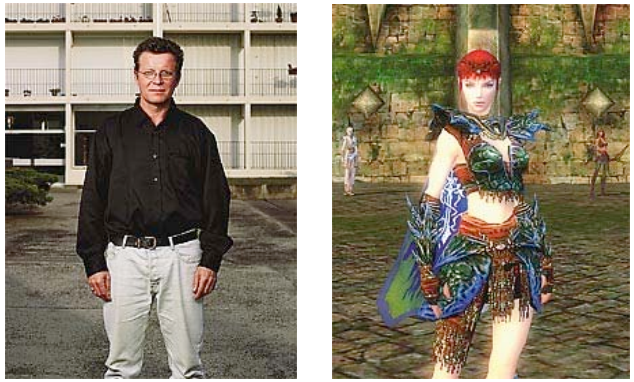

Figure 5-14 Thierry Te Dunne and his *Guild Wars* avatar Naemie Theud.

Figure 5-15 Serge Creola and his *City of Villains* avatar Megatox.

As we can see in these various examples, individuals have a range of different motivations in the creation of their avatar identities. In many cases these avatar identities may play an important role in their own sense of identity and personal development in the offline world. In the same way that childhood role-playing games allow children to experiment with different roles and identities, in games and virtual worlds adults can also experience a similar freedom to play and to escape from the more or less fixed roles and identities of their adult lives. Indeed, in today's games and virtual worlds we see an increasing blurring or merging of worlds of adulthood and childhood.[52] These new screen experiences offer adults the freedom to continue to engage in forms of identity role-playing and experimentation far beyond childhood and adolescence and into adult life. At its most profound, online role-playing does not just involve pretending to be someone else but empathetically identifying with the emotions and experiences of that character as an experiential reality. As Randal Walser comments, acting out an identity is:

> …not just a form of expression, but a fundamental way of knowing. To act is to become someone else, in another set of circumstances, and thereby to know and experience a different reality. By giving his body over to a character, an actor enters a character's reality, and he can be said to embody (that is, provide a body for) the character. The character lives through the actor but so, too, does the actor live through the character. An actor in cyberspace is no different, except that the body she gives to her character is not her physical body, but rather her virtual one. She embodies the character but she, personally, is embodied by cyberspace (Walser 1990a).

As we saw in the previous chapter, this notion that the individual's identity is created through the lived social experience of performing that embodied identity is not limited to the online realm, but the online environment does provide the individual with more freedom to experiment with identities that are not limited so strongly by offline realities. Although Goffman likens these everyday presentations and performances of the self as a series of roles or masks that we adopt in the social arena, he argues that rather than

---

[52] For an extended discussion of the blurring of childhood and adulthood in contemporary socieity, see: Crawford, K. (2006). *Adult themes: rewriting the rules of adulthood*. Sydney: Macmillan.

seeing these roles or masks as falsifying or obscuring the underlying true self, it is actually in these performances that the individuals come to understand and know themselves. Goffman quotes Robert Park:

> It is probably no mere historical accident that the word person, in its first meaning, is a mask. It is rather a recognition of the fact that everyone is always and everywhere, more or less consciously, playing a role … It is in these roles that we know each other; it is in these roles that we know ourselves (Park cited in Goffman 1973: 19-20).

Experimentation with our social selves can be seen as part of a process of personal growth and development. As Charles Horton Cooley comments: "If we never tried to seem a little better than we are, how could we improve or "train ourselves from the outside inward?"" This "impulse to show the world a better or idealized aspect of ourselves" (Cooley cited in Goffman 1973: 35) thus provides an impetus for corresponding changes in the individuals psyche and subjective understanding of themselves.

In the online realm individuals have the opportunity to try out different identities and behaviours and to observe how others react to them. In her ethnographic study of *The Sims Online*, Tara Franz comments on the way that individuals experiment with the way their identity is presented and make adjustments as a result of how others react to them:

> As a player, I came to understand that the prolonged period of self-reflection afforded online allows players to think more clearly about how they want their online identity to express their sense of self. They think more precisely about how their presentations will reflect back on others' notions of them (2004: 5).

New forms of subjectivity and identity can be created and projected onto the avatar body and aspects of these identities may then be reincorporated into the offline self. In *Second Life* Chinese businesswoman Aillin Graef inhabits the avatar identity of Anshe Chung, a virtual property developer famous for becoming *Second Life's* first millionaire (Terdiman 2006). Anshe Chung is Graef's virtual alter ego, a glamorous idealised version of her real-life self (see *Figure 5-16*) who has become much more famous than Graef's offline self.

Figure 5-16 Aillin Graef and her *Second Life* avatar Anshe Chung.

As Graef explains in the television documentary *La vraie vie mondes des virtuels* [*The New Cyberspace Worlds*] (2006[2007]):

> It might be that Anshe as avatar is very, very famous and me, my real person, is not so famous in the reality. From a psychological point of view, it's very complicated. At the beginning, maybe sometimes I'm just bored with reality. I'm always teaching, and the household, children …And I say "Oh, just escape from the real world to Second Life, go to parties, organise events, have much fun."[53]

At first Graef's identity experimentation just took place in the virtual world where Graef dressed her avatar Anshe Chung in sophisticated Chinese inspired clothing such as a traditional silk cheongsam and gave her a large and elaborate decorative dragon tattoo on her back. But now Graef has also started to incorporate aspects of her online avatar identity back into her real-life identity, starting to dress more like her avatar identity and also getting her avatar's tattoo inscribed onto her own real-life body. By copying the

[53] In Robbie Cooper's *Alter Ego* (2007), Graef (who has now moved to China and uses her Chinese name Ailin Qin) has started to view her avatar in *Second Life* as a separate media entity and public persona in its own right, albeit one that that she scripts and controls: "Anshe Chung is not an extension of my real-world personality. Rather it's the public role I adopt, much like Madonna or Britney Spears adopt an outward public persona. I am more like a storywriter and actor, although the character I created has a momentum of its own" (Qin quoted in Cooper 2007: n.p.).

visual identity of her avatar, Graef reincorporates aspects of her powerful and glamorous online identity back into her real-life self.

Figure 5-17 Cao Fei, *Un-Cosplayers*, 2004.

The experiences of individuals in virtual environments may also have an impact on their offline selves. In his doctoral thesis *The Proteus Effect: Behavioral Modification Via Transformations of Digital Self-Representation* (2007) Nick Yee argues strongly that changes in avatar self-representation can lead to behavioural changes in individuals' online interaction styles. For example, his experiments show that having a taller or more attractive avatar makes individuals more socially confident in their online encounters and Yee also claims that these effects can be reflected in offline behaviour.

Skills and behaviours learned in the mediated environments of computer games and simulations can be transferred to real world situations, experiences and environments. This is clearly the explicit intention of training simulations where pilots, soldiers and medical students learn skills in the virtual arena that are designed to be transferred to the physical world. However, even with computer games and virtual experiences that are not explicitly designed to train users for real world actions and behaviours, there may still be a transfer of perceptions, attitudes and behaviours. Artist and game player Eric Cho describes his experience of playing first-person shooter game and the effect this has on his perception of the real world:

> Play a first-person shooter long enough and its morbid reality seems to descend over your awareness like a grid, accompanied by a kind of adrenalized hyper-awareness and euphoric rage. Grid, adrenaline and rage stay with you, far past the point when you exit to the desktop. Walk away from the computer, and they still persist. You find yourself stealing up on street corners as if preparing to strafe the adjoining block; you seem to see a crosshair traced across the bodies of passersby (Cho quoted in Cannon 2007: 166).

This cross-over between online and offline identities is also evident in the thriving cosplay subculture that has developed in Asia where individuals dress up in the real world as their favourite online avatars and anime/manga game characters (Cahill 2006). This phenomenon has been extensively documented in the work of Chinese artist Cao Fei (see *Figures 5-17* and *5-18*).

Figure 5-18 Cao Fei, *Un-Cosplayers*, 2004.

Different avatars for different contexts

As we have seen in this chapter our new online environments have added new arenas for the creation and deployment of multiple versions or avatars of the self. While it is true that individuals also maintain and orchestrate multiple versions of themselves in the

different social contexts of their offline lives, in the online arena individuals can access a much greater range of identities than is possible in the offline world, and these identities can co-exist much more seamlessly and be cycled through much more rapidly. Turkle uses the metaphor of 'windows' to describe the way we can shuttle between different social frames and also between different identities:

> In the daily practice of many computer users, windows have become a powerful metaphor for thinking about the self as a multiple, distributed system. The self is no longer playing different roles in different settings at different times. . . . The life practice of windows is that of a decentered self that exists in many worlds and plays many roles at the same time (1995: 14).

Through our different online identities and avatars we can present different 'faces' to suit different online contexts. As Mark Poster comments:

> For the new technologies install the "interface," the face between the faces; the face that insists that we remember that we have "faces," that we have sides that are present at the moment of utterance, that we are not present in any simple or immediate way (Poster 1995: 93).

At the screen interface our variously mediated and distributed selves interact with each other not as unified, stable subjects but as multi-faceted, partial and fluid identities. The self we present in a game or virtual world is not the same as the self we present on an academic homepage or on an online dating website. Through our mediated images and avatars we present different selves in a variety of different contexts.

How do our differently mediated images and avatar identities interact with each other? What new types of intersubjective relationships are occurring between our mediated avatar images? These issues will be taken up in the next chapter where we will examine the ways different media and telecommunication technologies allow our mediated avatar selves to come face-to-face with each other, and we will explore the new modes of interaction and intersubjective encounters that are enabled by our new digital avatar identities.

Chapter Six: The mediated face-to-face encounter

> We lived once in a world where the realm of the imaginary was governed by the mirror, by dividing one into two, by theatre, by otherness and alienation. Today that realm is the realm of the screen, of interfaces and duplication, of contiguity and networks. All our machines are screens, and the interactivity of humans has been replaced by the interactivity of screens (Jean Baudrillard 1993: 54).

In the 20th and 21st centuries face-to-face communication has progressively been augmented and replaced by mediated face-to-face (or screen-to-screen) communication. More and more, as we communicate via mediated images and avatars which act and interact as proxies for our physical selves, the immediate presence of the singular here-and-now physical body is being supplemented, multiplied and even, in some cases, replaced by the mediated virtual presence of our different image avatars.

In the mediated and mixed reality environments of the 21st century, our mediated images and avatars are multiplied and distributed across manifold spatial and temporal locations, where they are reactivated in a variety of technologically mediated face-to-face

encounters. Increasingly, the screens of our new digital media and communication technologies are being used not just as mirrors where we see our own technologically mediated reflections, but also as windows through which we watch events unfold and as portals where people can be brought together to interact with each other in a shared image space.

While it is important to acknowledge that our screen experiences are not homogenous, and are the product of culturally specific and learned viewing positions, there are still some broad general trends or affordances that can be identified with different screen and image types and modalities. In this chapter we will take a closer look at how different media and telecommunication technologies enable different modes of mediated interaction and intersubjective encounters and we will investigate some of the new forms of mediated face-to-face interaction enabled by digital media and communication technologies.[54] To what extent are the avatar images we see on our new digital screens a continuation of the earlier images and screens of photographs, film and video/television? To what extent does the real-time interactivity enabled by digital technologies enable a re-investment of the aura that Walter Benjamin claims we lost with mechanical image reproduction?

Before we focus on the new modes of intersubjective interaction and engagement enabled by the interactive digital avatar image, it is instructive to first investigate the different modes of engagement offered by our earlier screen images and avatars of film, television and video. How do we communicate and interact with each other through these different media technologies? How do we respond to the differently mediated images and avatar forms that appear on these different screens? What different modes of interaction do these screen images and avatars afford us?

The image-screen: mirrors, frames, windows and portals

It is clear that new media and communication technologies have transformed in very

[54] Our different image and screen technologies are becoming increasingly mutable as they are mediated and remediated by digital technologies.

profound ways not only how we see ourselves but also how we communicate with each other across time and distance. Through media and communication technologies, the mediated self can be distributed across time and space creating new forms of virtual presence:

> The advent of the telegraph in 1794 inaugurated the ability for messages to outpace messengers. By the nineteenth century, the expansion of telegraphic services and the successive invention of the camera (1839), the telephone (1876), the phonograph (1877), the wireless radio (1894), and the cinematograph (1895) completely redefined the practice of 'communication' and the notion of 'proximity'. The dichotomy between being present in one place and therefore necessarily absent elsewhere began to waver, as physically separated sites of action were bridged and juxtaposed in new ways (McQuire 1998: 185).

As Scott McQuire comments, media and communication technologies create new possibilities for mediated proximity where "separated sites of action" can be bridged and distanced interlocutors can be brought together. In this process notions of presence and absence become increasingly complex and problematised. In the mediated image, the subject/object is simultaneously absent and present—physically absent but present in mediated form. This mediated presence at a distance is one of the defining features of new media and communication technologies. Darren Tofts writes:

> In the Electronic Age …communication, identity and presence are defined by absence, the art of being where you are not. Social interaction is rapidly being redefined as a shared telepresence created entirely by technologies of distance. In this, telecommunications and telematic networks are creating the closest thing to a cyberspace that is more than a fictional ideal (1998: 16).

Along with changes in visual media and communication technologies we also find

[55] For example: Vivian Sobchack's *The address of the eye: a phenomenology of film experience* (1992) identifies the pictured frame, the window and the mirror as three key metaphors used in film theory. In The *Virtual Window* (2006) Anne Friedberg documents the different ways the metaphor of the window has been used in visual art, film, television and the computer from Alberti's window to Microsoft's Windows. In *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency* (2003) Jay David Bolter and Diane Gromala use the metaphors of windows and mirrors to explore the oscillating tendencies of digital media towards transparency and reflection.

corresponding changes in audience viewing positions, modes of address and styles of interaction.

The metaphors of mirror, frame, and window are commonly used in the visual arts and media studies to describe the relationship between viewers and mediated images.[55] We have already explored in previous chapters the ways image and media technologies mirror the world around us and reflect back to us our own mediated and transformed images. In this chapter I want to investigate the ways these different screens act as *windows* and *portals*, bringing together different spatial, temporal and ontological realities and creating new modes of mediated face-to-face interaction. What is the relationship of viewers to these various images and screens? How do we interact with each other through the interface of the screen image?

The screen-image acts as an interface and meeting point between the physical world of the embodied three-dimensional human individual and the imaginary virtual world represented on the two-dimensional screen surface. The mediated images and screens of paintings, photographs, film, video and digital media bring with them different ontological realities into the pre-existing physical space of the viewer. Both Lev Manovich (2001) and Anne Friedberg (2006) analyse the function of different framing devices and the way they act as boundaries between the physical world and the mediated image. Friedberg describes the device of the frame as an "ontological cut" (2006: 5) between the different realities inside and outside the frame. Manovich similarly describes the screen as a window to "the existence of another virtual space", a "space of representation" (2001: 95). When looking at an image or screen, the viewer simultaneously experiences two "absolutely different spaces that somehow coexist" (95), the real physical space of the body and the illusory or virtual representational space of the image-screen.

Manovich traces the evolution of the screen from the classical *still screen* of painting to the *dynamic screen* of cinema, television and video, to the *real-time screen* of radar displays and live video, and finally to the *real-time interactive screen* of the computer monitor (95-99). Defining the screen in this way, Manovich emphasises the continuities and commonalities of the painting, the film screen and the computer screen as representational devices. As the screen evolves to incorporate new features it nevertheless

still retains the features of the earlier screens that preceded it. Despite the dramatic changes in screen technologies that have occurred over the last two hundred years, Manovich argues that the essential characteristics of the classical screen are still evident in our contemporary screen experiences:

> Dynamic, real-time, and interactive, a screen is still a screen. … As was the case centuries ago, we are still looking at a flat, rectangular surface, existing in the space of our body and acting as a window into another space. We still have not left the era of the screen (2001: 115).

In the following sections of this chapter we will investigate the different screens of film, television and video, before moving on to consider in more detail the interactive digital screen. As we move from the recorded image of film through to the real-time image of television and the interactive real-time image of digital media, I argue that the screen-image becomes increasingly 'live' demonstrating strong qualities of presence and agency to the extent that we see a reinvestment of the intersubjective auratic presence that typifies physical face-to-face communication.

To understand more fully the different types of mediated face-to-face interaction enabled by these different screen interfaces we first need to analyse the different modes of audience engagement and relationship with the screen image.

The relationship of the viewer to the image-screen

With the conventional image-screen experiences of film and television/video, the relationship of the viewer to viewed image-object is inherently one of separation and distance. This separation of viewer and image is achieved not only by the framing device of the image-screen but also because of the physical absence of the objects represented in the image and most significantly the viewer's inability to meaningfully interact with them. The metaphors of the frame and the window both suggest a fundamental barrier between the viewer and the representational objects seen in the image-screen. No matter how close the window of the image-screen brings its representational images before us, there is still an unbridgeable distance between us and the image, a barrier that we cannot break through. Thus the relationship of the viewer to the image seen through the window

of the image is fundamentally one of spectatorship and voyeurism.

For Robert Romanyshyn, this separation of the viewer and the world viewed through the window of the image also represents a profound withdrawal of the self from the world which he associates with the advent of modernity:

> The condition of the window implies a boundary between the perceiver and the perceived. It establishes as a condition for perception a formal separation between a subject who sees the world and the world that is seen, and in so doing it sets the stage, as it were, for that retreat or withdrawal of the self from the world which characterizes the dawn of the modern age. Ensconced behind the window the self becomes an observing subject, a spectator, as against a world which becomes a spectacle, an object of vision (1989:42).

This separation of the viewer from the image viewed is also emphasised by Stanley Cavell in *The World Viewed* (1979) where he investigates the ontologies of photography and film. As Cavell comments, "[t]he reality in a photograph is present to me while I am not present to it" (23). The image captured by the camera represents "a world past" (23) that the spectator can no longer interact with or influence. The relationship of the spectator to the image is thus one of profound separation. Before the cinematic image, the spectator is invisible. "What does the silver screen screen? It screens me from the world it holds—that is, makes me invisible" (24).

As Cavell points out, the images in film are visible to us but we are not visible to them. With the recorded film image the two-way reversibility of viewing positions inherent in the face-to-face encounter—where we can both see and be seen—becomes a one-sided encounter. Like Romanyshyn, Cavell associates this invisibility of the audience with the modern desire for privacy and anonymity. Film magically reproduces the world and its objects and enables us to view them unseen and without any responsibility or necessity for action on our part. As Cavell comments: "I am present not at something happening, which I must confirm, but at something that has happened, which I absorb (like a memory)" (26). "We do not so much look at the world as look out at it, from behind the self" (102).

What does this mean for the mediated face-to-face encounter? How does this separation of viewer from image (and the distanced voyeuristic spectatorial relationship this sets up)

impact on the ways we communicate and interact with each other through mediated images?

In many ways this separation between spectator and image can be seen as an extension of the separation already enacted in the shift from oral to print culture (McLuhan 1962; Ong 1989). Indeed, as far back as Plato's *Phaedrus* Socrates compares writing to painting pointing out that both media forms lack the qualities of communicative agency and presence that are inherent in face-to-face oral interaction—they can't 'answer back' to their viewers/readers:

> …writing involves a similar disadvantage to painting. The productions of painting look like living beings, but if you ask them a question they maintain a solemn silence. The same holds true of written words; you might suppose that they understand what they are saying, but if you ask them what they mean by anything they simply return the same answer over and over again. Besides once a thing is committed to writing it circulates equally among those who understand the subject and those who have no business with it; writing cannot distinguish between suitable and unsuitable readers. And if it is ill-treated or unfairly abused it always needs its parent to come to its rescue; it is quite incapable of defending or helping itself (Plato 1973: 97 cited in Tofts 1998: 44).

The same is true of photographic and film images where the individual represented in the image loses his intersubjective agency and the ability to look back and to talk back. The reversibility of the seeing/seen dynamic of the physical face-to-face encounter becomes a one-way view and the viewer's relationship with the image becomes one of spectatorship and voyeurism. In this vein for example, film theorist Christian Metz talks of the "aperture of the screen with its inevitable key-hole effect" (1982: 63).

We can look at and listen to images recorded on film, but these image-objects can't look back at us or hear us. Consequently, there is no real possibility for meaningful contact or two-way interaction. The images are deaf and blind. The mediated individual becomes pure object unable to see or respond to the audience. Although the film image can speak, it still can't answer back in a true intersubjective manner anymore than it can see its audience. The objects represented in the film image have lost not only their aura but also their agency.

In “The Work Of Art in the Age of Mechanical Reproduction”, Walter Benjamin compares the auratic presence of the live theatre actor (who is co-present with the audience) to the loss of aura experienced by the film actor who acts for a camera and is physically absent from the audience. Unlike the live theatre actor, the film actor cannot sense or look back at the audience. His performance is pre-recorded; he is seen, but he can’t see. This is a loss not only of aura but also of agency as the actor loses the ability to respond to the audience in real-time. In his mediated form as a screen image, the actor cannot partake in the inherent reversibility of the seer/seen intersubjective relationship that typifies the conventional face-to-face encounter.

Thus, with the mediated film image, we experience a profound loss of the auratic physical presence of the intersubjective face-to-face encounter. The reciprocal exchange inherent in the face-to-face encounter is based on the physical co-presence (in time and space) of the participants or interlocutors. When we look at someone who is physically present, that look is typically met with a returned look. The person we observe and look at, observes and looks at us in return. The physical presence of the other demands a response. This physically co-present interaction is qualitatively different from our experience of interaction with representative images of those people whether in photographs or film/video where no response is demanded or indeed even possible.

In “On Some Motifs in Baudelaire” (in *Illuminations* 1986a) Benjamin explicitly identifies the importance of this physical co-presence and the reversibility of the seer/seen intersubjective relationship (with its returned look) as a key feature of the aura:

> …looking at someone carries the implicit expectation that our look will be returned by the object of our gaze. Where this expectation is met (which, in the case of the thought processes, can apply equally to the look of the eye of the mind and to a glance pure and simple), there is an experience of the aura to the fullest extent. … The person we look at, or who feels he is being looked at, looks at us in turn. To perceive the aura of an object we look at means to invest it with the ability to look at us in return (1986a: 188).

The loss of aura and agency in mediated images is due in large part to the asynchronous nature of the recorded (non-real-time) image and the inability of the image to look back and respond to the viewer. This lack of reversibility in the seer/seen relationship underlies

the typically voyeuristic scopic economy of the recorded image. This inevitably results in a sense of distance and disconnection between the communicative participants. So if the relationship of the viewer to the film image is one of disconnected and voyeuristic spectatorship, how does the relationship between the viewer and image change with the different screen images of television/video and interactive digital media? As our screen images become increasingly real-time and interactive do we see a stronger sense of intersubjective auratic presence and reciprocity emerging between viewer and image? What are the dynamics of these new relationships between viewer and image?

In *Virtualities: television, media art, and cyberculture* Margaret Morse explores some of these questions, investigating the “virtual relationships that people in physical reality have with machines and images of various types…” (1998: 6) specifically those of the television and the computer. Morse takes it as a fundamental assumption: “that there is a human need for and pleasure in being recognized as a partner in discourse, even when the relation is based on a simulation that is mediated by or exchanged with machines” (14). Morse relates this to theologian Martin Buber’s “I-Thou” relationship and the “…basic human need for reciprocity and the reversibility of “I” and “you” in discourse – seeing and being seen, recognizing others and being recognized, speaking, listening and being listened to” (10). As we have seen, this reversible dialogic partnership is singularly lacking in the relationship of the viewer to the film image, however the televisual mode of address goes at least part of the way in achieving some of the reciprocity of the “I-Thou” seer/seen relationship of non-mediated face-to-face communication.

Unlike cinematic conventions where actors are rarely shown looking directly at the camera/spectator, the televisual mode of address deliberately creates an ersatz sense of intersubjective relationship where the audience is directly addressed as a conversational interlocutor. The exemplary televisual mode of address, where the television presenter talks directly to the viewer, simulates the liveness and immediate sense of presence of the physical face-to-face encounter. Nevertheless, although “…the subject who speaks to the viewer face-to-face on television may even seem more “real” than the viewer seems to him- or herself” (Morse 1998: 10), the televisual relationship does not offer a fully reciprocal intersubjective encounter. The presenter may appear to address and look at the viewer in real-time but this relationship is an illusory one. Essentially, the relationship of the viewer to the televisual image is still just as one-sided as that of the cinematic

relationship. Morse writes:

> [Television] has yet to master a full complement of pronouns in relation to the viewer: it is versed in addressing the viewer with we and you, and it is good at the present subjunctive mode of a fictively shared present, but it is left to the genres of cyberculture to develop the full implications of the impression of being immersed inside a virtual world – what amounts to appearing to enter inside the box and the screen. The interactive user is an *I* or a player in discursive space and time [emphasis in the original] (1998: 4).

The real-time interaction of the digital screen enables the digitally mediated image to respond to the viewer recreating to a high degree the interactive responsiveness of the unmediated face-to-face encounter by making image and viewer present to each other. This offers a very different experience from the distanced exhibitionist/voyeur relationship of the pre-recorded images of cinema and television. The two-way communication and interaction enabled by the interactive digital image reinstates the reversibility of the seer/seen relationship, giving agency to the mediated image and creating a strong sense of co-presence.

The interactive image-screen

> In an era where cameras can travel under the surface of the skin, the desire to experience, interact, and even touch the image in an apparently unmediated way refuses to stop at the screen itself. As a culture, we want to break through to the other side of the screen and enter inside the image itself. It is as if we could break into the computer monitor, and, like a traveller, explore a virtual space of stored audiovisual information (Morse 1998: 177).

This desire for a reciprocal two-way interaction with the image is realised in the real-time interactive digital image which enables the spectator to finally become present to the image, to be seen as well as to see. With the advent of the interactive image enabled by the computer, the self can break through the boundary of the window to interact directly with the image world itself. The interactive screen image can also sense and respond to viewers. At its most minimal, this happens through the computer user's clicks and keyboard inputs, and the automated and personalised responses these interactions trigger.

The digital image/screen/system can also gain awareness of the viewer/interactor through voice and vision recognition and a variety of different input devices including cameras, microphones and pressure sensors. These inputs enable the digital image-system to know what its human interlocutor is doing or looking at so it can respond with 'intelligence' creating personalised real-time responses. With the interactive digital screen, the invisibility and anonymity of the viewer is finally overcome.

Through cybernetic feedback systems, the interactive digital image is liberated from its role as passive spectacle and object of vision, enabling it to exhibit signs of agency and to respond to its human interlocutors. As Morse comments:

> *Feedback* in the broadest sense (not just as noise or interference produced by a system itself) is a capacity of a machine to signal or seem to respond to input instantaneously. A machine that thus "interacts" with the user even at this minimal level can produce a feeling of "liveness" and a sense of the machine's agency and—because it exchanges symbols—even of a subjective encounter with a persona (1998: 15).

The immediacy of this interaction creates a sense of presence that is very different from the distanced viewing position of the cinematic spectator and goes far beyond the illusion of immediacy offered by the televisual experience. The instantaneous cybernetic feedback loops of interactive new media technologies inaugurate a reawakening of the aura, enabling the mediated image to look back at and respond to the viewer. The image becomes an intelligent and responsive interlocutor and the spectator is no longer just a voyeur but a spectator-participant, interacting directly with the responsive image.

Sensors linked to computing systems can also be used to trigger existing video sequences and to generate real-time responses creating new forms of lively virtual personas and entities that can respond to viewers in real-time. The loss of aura that Walter Benjamin describes in photographic and cinematic images is thus overcome by these new real-time avatar images.

Two seminal new media artworks—Gary Hill's *Tall Ships* (1992) and Luc Courchesne's *Portrait One* (1990)—show how even quite minimal levels of real-time interaction (using pre-recorded video sequences that are triggered by sensors or pre-set hypermedia links) can generate a remarkably powerful sense of intersubjective interaction, involvement and

immediacy.

Figure 6-1 Gary Hill, *Tall Ships*, 1992.

In Gary Hill's immersive video installation *Tall Ships* (see *Figure 6-1*) we see a hybrid combination of pre-recorded video and interactive technologies. In the installation, audience members enter a long dark corridor where pre-recorded black-and-white video images of ghostly human figures hover, waiting like ghostly ships in a harbour, their luminous white faces providing the only source of light.

As you walk along the corridor, motion sensors trigger the different video sequences so that the figure that is nearest to you leaves the shadows and walks towards you until it stands life-size directly in front of you in a mute but profoundly affecting confrontation. The haunting apparitions (see *Figure 6-2*), which include men, women and children, appear to want to communicate. They stand uncertainly in front of you as if they are about to speak, but then they turn away and recede back into the shadows taking their secrets with them. Even though these image sequences are pre-recorded, the real-time triggering of the video encounters creates a compelling sense of immediacy and auratic presence.

Figure 6-2 Close-ups of the ghostly figures from Gary Hill's *Tall Ships*, 1992.

Figure 6-3 Luc Courchesne, *Portrait One*, 1990.

In *Portrait One* (see *Figure 6-3*) Luc Courchesne also uses pre-recorded video footage to create a fictional interactive portrait of a young woman displayed on a computer monitor. Visiting a gallery installation of the work in the *Burning the Interface* exhibition (1996) at the MCA in Sydney, I converse with 'Marie' by choosing from a series of

predetermined conversational options displayed on the screen beneath her face. Depending on my conversational choices, Marie's responses are by turns friendly, coy, flirtatious and abrupt (see *Figure 6-4*). Even though the work is pre-programmed (the responses are generated from a database of pre-recorded conversational video fragments), the eye contact, facial expressions and vocal inflections of the video image of the young woman create a surprisingly intimate bond. I stay to watch as other audience members interact with the work, many of them staying with Marie for a long time trying out different conversational options to see what responses they elicit.

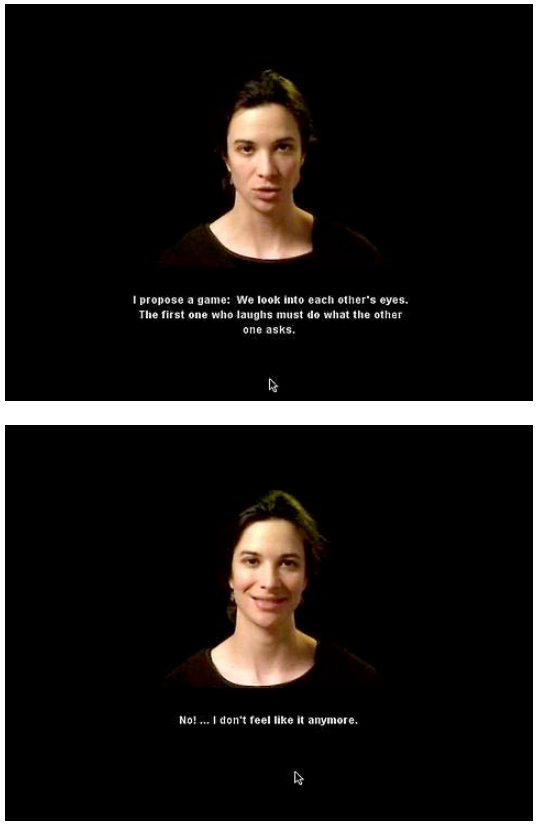

Figure 6-4 Some of Marie's conversational responses from Luc Courchesne's *Portrait One*, 1990.

In more technically sophisticated interactive digital image systems the integration of sensing technologies, digital animation and automated artificial intelligence programming can be used to bring images to life as quasi-autonomous agents and interlocutors investing the image with an even stronger sense of agency and responsiveness.

In Chapter Two I described a moment in Chris Maker's *La Jetée* (1962) where the still image of a sleeping woman comes to life, opening her eyes and appearing to look directly at the audience. There is a psychological and physical shock or frisson in this moment of visual connection, a visceral and visual re-orienting of our vision to the woman's eyes and gaze as she looks back at us. However, this powerful moment of engagement between the woman in the image and the viewer in *La Jetée* is merely a visual trick. With intelligent digital image systems, this trick becomes real as the image can genuinely sense and respond to its viewer. This evolution in the responsiveness of the image can be clearly seen when we compare *La Jetée* with a more recent digital artwork by Australian artist Mari Velonaki.

Figure 6-5 Mari Velonaki, *Unstill Life*, 2000.

In Velonaki's interactive installation *Unstill Life* (2000), audience members walk into a gallery space to encounter a framed screen-image of a reclining woman who is apparently

sleeping (see *Figure 6-5*). In front of the image is a container of red apples, evoking associations between the image of the woman and the fairytale of Sleeping Beauty. Just as in *La Jetée*, the image starts out as a still image, but as you approach her, the woman magically rouses herself and wakes up, sitting up and looking directly at the viewer. As in *La Jetée*, there is a jolt of energy and a strong sense of connection as the still image is animated and looks back at the viewer. However, there is a profound difference here between the two experiences. In Velonaki's installation, the response of the woman is directly triggered by the audience member. An artificial vision system tracks the movement of the visitor in the installation space and as they approach the image and the container of red apples, the computer system triggers the digital animation (specifically, picking up one of the apples is the key triggering movement the computer is programmed to recognise). Thus the woman responds personally to the audience member. Unlike the generic viewer experience of the woman awakening in *La Jetée*, in *Unstill Life* the woman opens her eyes *for you as an individual* creating an intensely felt sense of real-time presence and intersubjectivity.

As our digital technologies become increasingly responsive through automated programming, artificial intelligence and digital animation, more and more they are taking on a literal human face in the form of computer agents and virtual persons. These interactive face-to-face encounters initiate powerful new forms of intersubjective encounter between humans and our new 'digital others.'

Windows and portals: the screen as interface

The real-time interactive digital screen-image also acts as an important new interface between human interlocutors, creating new forms of mediated face-to-face encounter. The digital screen operates as a window/portal where geographically separated participants can see and interact with each other. The immediacy and responsiveness of real-time audiovisual communication (webcam, videoconferencing, chatrooms, online role-playing games) creates a sense of virtual co-presence between sender and receiver that does much to re-instate the sense of auratic presence and agency that is experienced in the physical face-to-face encounter.

Before we move on to focus more specifically on mediated face-to-face communication

through the interactive real-time digital screen-image, it is instructive to first look at its most important real-time precursor, the live video link. The ability of the two-way real-time video link does much to re-create the immediacy of the reciprocal face-to-face relationship. Although the viewer may not be able to interact directly with the video image, when the video screen acts as a real-time window between geographically separated participants, the reciprocity and the immediacy of the real-time video avatar can be very powerful. In many ways the live video link replicates the immediacy of the unmediated face-to-face encounter, enabling people in different locations to 'meet' face-to-face in real-time across distance through the interface of the screen. As Marshall McLuhan comments in regard to the telephone and television, "it is not so much the message as the sender that is being sent" (1978). As an example of this, in the next section we will relive a remarkable live video satellite project, *Hole-in-Space* (1980), created by the artist group Mobile Image (Sherrie Rabinowitz and Kit Galloway) that predates (and in many ways is still unsurpassed by) today's ubiquitous videoconference, skype and webcam experiences.

The Hole-In-Space project

Figure 6-6 Kit Galloway and Sherrie Rabinowitz, *Hole-in-Space*, 1980.

On an autumn evening in November 1980, pedestrians in New York City came across an amazing sight. Projected on the plate glass windows of the Avery Fisher Hall at the Lincoln Center they saw the life-sized audiovisual images of a group of people talking

and gesticulating excitedly at them. These images of pedestrians were being projected in real-time from the other side of the country, from outside the Broadway Department Store in Century City in Los Angeles. The group of pedestrians in L.A. were also simultaneously seeing reciprocal real-time images of the New Yorkers at the Lincoln Center. Unwittingly, both groups had stumbled across the groundbreaking public artwork, *Hole-In-Space* (see *Figure 6-6*).

Hole-In-Space, described by the artists Kit Galloway and Sherrie Rabinowitz as a "public communication sculpture" (Galloway and Rabinowitz n.d.) used military cameras (capable of night vision) and telecommunication satellites to connect the two venues, recording and projecting audiovisual images of pedestrians in real-time onto large shop windows in both locations. The "hole-in-space" created a portal that collapsed the distance between the two venues creating a McLuhanesque spatial implosion enabling audience participants in New York and Los Angeles to see and hear each other and communicate as if they were physically co-present. As described by the artists:

> Suddenly head-to-toe, life-sized, television images of the people on the opposite coast appeared. They could now see, hear, and speak with each other as if encountering each other on the same sidewalk. No signs, sponsor logos, or credits were posted—no explanation at all was offered. No self-view video monitors to distract from the phenomena of this life-size encounter. Self-view video monitors would have degraded the situation into a self-conscious videoconference (Galloway and Rabinowitz n.d.).

The artists' goal in the work was to use the real-time interactive possibilities of telecommunication technologies to bring together participants from dispersed geographical locations in a participatory way to creative an interactive two-way encounter rather than a one-way television-style broadcast. They wanted to involve the audience and create a shared social space for communication and collaboration.

The event took place over three evenings with the "hole-in-space" provided by the work being creatively exploited by audiences in a variety of different ways including: impromptu performances, expressions of inter-coastal rivalries and jokes, games of charades, songs, dances, and developing flirtations. Much of the initial communication between the remote participants centred around finding out where the images were

coming from and where the participants were physically located. "Where are you?" "We're in New York, where are you?" were typical questions. The remote participants would also wave at or physically gesture at each other confirming the real-time presence of the image. As word of mouth spread, particularly after the work was shown on television, large crowds came with many people arranging to meet up with friends and relatives on the other side of the country.[56]

Watching video documentation of the work, the delight and wonder of the participants at the magical novelty of the real-time audiovisual experience is readily apparent. The palpable sense of presence and immediacy that *Hole-in-Space* created has much in common with the feeling of shared co-presence and 'presence at a distance' that we are familiar with from our everyday telephone interactions but added a compelling visual component to the mix.[57] Although today's videoconferencing, webcams and videophones would appear to have made this experience relatively commonplace, in many ways the life-size avatars of *Hole-In-Space* still remain far more compelling than the miniaturised images we see in today's digital screens.

A more recent public artwork, Susan Collins' *In Conversation* (1997-2001) (see *Figure 6-7*), uses a variety of audiovisual and networked technologies to connect three different public spaces—the gallery, the street and the internet—to create a real-time telematic conversation between remote participants. On the street an animated mouth is projected onto the pavement and talks to passers-by via loudspeakers. The mouth's conversation is triggered by internet participants who can see and hear the action happening in the street on their computer screen through networked surveillance cameras and microphones. These internet participants communicate with the passers-by in the street

---

[56] For more information on the *Hole-In-Space* event and Galloway and Rabinowitz's other social sculpture performance projects, see their archive website http://www.ecafe.com/getty/table.html. A recent interview where both artists reflect on and comment about their work is published in Chandler & Neumark's *Art at a Distance: Precursors to Art and Activism on the Internet* (2005: 152-174).

[57] The more senses that are involved in the two-way encounter, the greater the sense of immediacy and physical presence experienced. Sight and hearing are the easiest senses to replicate with media technologies but touch is also being incorporated via haptic feedback in the design of some virtual reality environments, training simulations and computer games. For more information see: The MIT Touch Lab (http://touchlab.mit.edu), and Burdea, G. C. (1996) *Force and Touch Feedback for Virtual Reality*, New York: John Wiley & Sons.

by typing messages that are converted from text to speech by the computer and projected through the loudspeakers in the street.

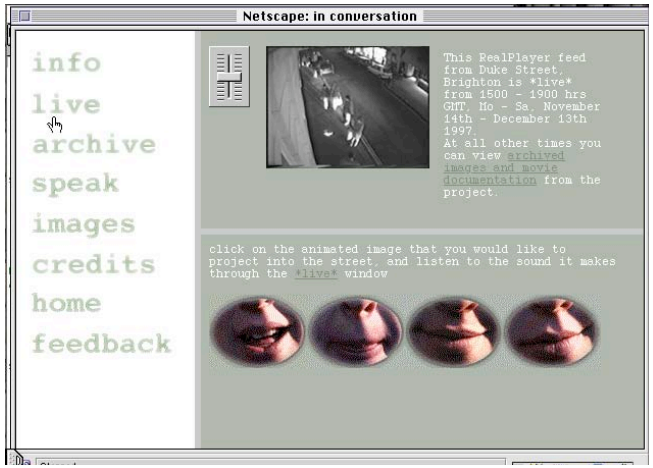

Figure 6-7 Susan Collins, *In Conversation* (Brighton), 1997.

In the gallery, audience members can observe the interaction of street and web participants via a large-scale audio video projection. As with *Hole-In-Space* the real-time nature of the communication, and the sense of immediacy and presence this generates between the remote participants, is an important component of the experience of the work. Finding out where the participants are physically located and confirming that they are actually present in real-time is the focus of much of the conversation between the internet and street participants. Discussing the text logs and video archives of the work, Frank Popper comments that "[m]any of the communications appear to center more on verification than conversation—Who are you? Where are you from? (street), or Are you really there? If so, can you wave your hand? (Net)" (2007: 287). The real-time nature of the interaction is authenticated every time the participant's input triggers an immediate response, in a way that is analogous to the immediate feedback generated in unmediated face-to-face encounters.

Today, as already noted, the experience of real-time face-to-face video has become increasingly commonplace with webcams, skype, videoconferencing and videophones. With the indexical video image gestures, gaze, facial expressions and tone of voice can

all be communicated in an immediate way creating a high level of naturalism and authenticity in the mediated face-to-face encounter. Of course these experiences are frequently marred by glitchy images, lag and pixellation, but recent technical improvements in hardware, software and bandwidth have gone a long way to overcome these problems and in the near future it is likely that the mediated face-to-face video encounter will become increasingly seamless.

However, although all of the mediated face-to-face video images we have discussed so far generate a strong sense of immediacy and co-presence, the images still remain in separate windows and the image avatars of the participants cannot 'touch' each other or interact in the same image plane. In the next section of this chapter we take the idea of real-time interaction a step further by exploring what happens when the screen-image space becomes a shared space that can be co-habited by the avatar-images of geographically dispersed participants.

Entering the image: the shared image space

If the metaphor of the *window* highlights the separation between the viewer and the viewed, then the metaphor of the *portal* signifies a breaking down of that separation by enabling the viewer to enter the image and interact with it directly.

As we have seen, Mobile Image's 1980 *Hole-In-Space* project brought geographically distant participants together in real-time in a remarkable mediated face-to-face encounter. However, a few years earlier, in 1977, Galloway and Rabinowitz experimented with the even more radical concept of merging the mediated images of distant participants together in real-time *in the same image*.

Satellite Arts (The Image as Place) (1977), sponsored by NASA, the Public Broadcasting Service and the National Endowment for the Arts, brought together dancers from geographically dispersed outdoor locations in Maryland and California linked over four days in a live-feed composite image displayed on monitors.

The artists used the phrase "image as place" to describe the virtual *third* composite space/place of the screen image (Galloway and Rabinowitz n.d.). In this space the

geographically separated performers could interact with each other via their image avatars (see *Figure 6-8*).

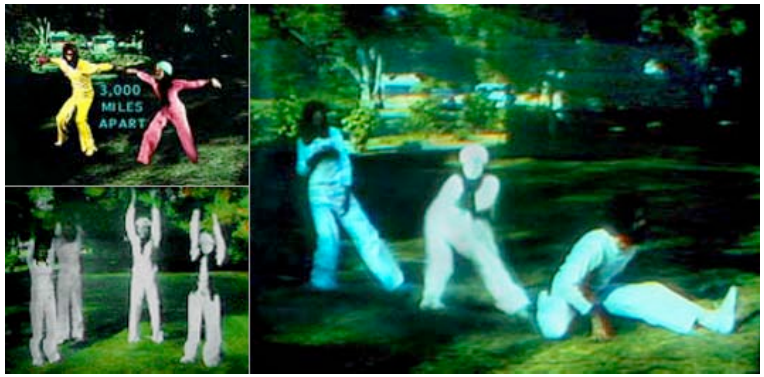

Figure 6-8 Mobile Image (Kit Galloway and Sherrie Rabinowitz), *Satellite Arts (The Image as Place)*, 1977.

Over the four days the dancers interacted and performed with each other exploring the visual aesthetics and interactive possibilities of fades and dissolves and battling the various technological constraints of the satellite feed including transmission delays. The dancers could visually interact with and 'touch' each other through their video images that were composited together in a shared virtual image. As Sherrie Rabinowitz comments:

> The dancers' perception of touch migrated to the virtual realm and if their images touched one another on screen, both dancers "felt" it. The experience of being together with "the other" in the virtual environment also felt different when different imaging techniques were employed. The "key," for example, produced defined boundaries within the composite for performing one's interactions with someone else's "solid replica," whereas the mix/dissolve: effect, which is softer and blended images together, prompted more sensual interactions and was, according to the artists' aesthetic criteria, always a superior choice, in the case of video technology, for providing intimate and compelling encounters in a composited image space (Rabinowitz quoted in Chandler and Neumark 2005: 161).

This idea of a shared image space has been used in a number of more recent dance projects such as Company in Space's[58] *Escape Velocity* (1998) where two dancers in remote locations (Hellen Sky and Fiona McGrath) perform together connected via ISDN lines (see *Figure 6-9*). The dancers' video avatar images are virtually co-present, composited and projected onto the virtual *third space* of a large-scale projected video screen. They dance with and 'touch' each other in a hauntingly beautiful pas de deux that visually plays with notions of (physical) absence and (virtual) presence. Watching the performance, the lag of the images over the ISDN lines poetically highlights the paradoxical experience of simultaneous closeness and distance. The dancers experience moments of disconnection as their touches just miss each other as well as moments of startling and intensely moving synchronicity and connection.

Figure 6-9 Company in Space, *Escape Velocity*, 1998.

The use of real-time video image compositing to create a shared virtual image space where remote participants can virtually 'touch' each other is also explored by the new media artist Paul Sermon. In works such as *Telematic Dreaming* (1992), *Telematic Vision* (1993), *Telematic Encounter* (1996) and *There's No Simulation Like Home* (1999), the spectator becomes a participant-performer in a shared telepresent image

[58] Hellen Sky (a choreographer and performer) and John McCormick (a choreographer and electronic artist) co-founded the Melbourne-based performance group Company in Space (http://www.companyinspace.com) in 1992 and have experimented with a variety of new media technologies in their work including ISDN telematic performance, interactive Web TV and VRML worlds.

environment. Using live chroma-keying and videoconferencing technology, Sermon's works bring together the different physical spaces of the remote participant-performers in a shared virtual space.

Figure 6-10 Paul Sermon, *Telematic Dreaming*, 1992.

In *Telematic Dreaming* (See *Figure 6-10*), identical beds in two different locations are composited together to create a shared, virtual *third space* where the video avatars of the participant-performers are co-present with each other. The composited image (shown as a video projection or on a video monitor) acts as a shared telepresent 'video mirror,' where audience participants can watch their own video avatars as they interact in real-time with the video avatars of the remote participants.

In these works of Mobile Image, Company in Space and Paul Sermon, the screen operates as a portal to a new virtual space where the mediated virtual bodies of the performer-participants can interact with each other and virtually 'touch' each other in a shared image space. In this shared image space the physical bodies of the participants are re-embodied through their video avatars enabling a sense of distributed subjectivity where the physical agency of the participants is spatially displaced and extended.

However, although the video avatars used in these works create a high level of visual authenticity and immediacy, the types of interaction that are possible—both between the participants' avatars and between the participants and the shared image space itself—is limited by what is possible with compositing/chroma keying technologies. It is not until the advent of the fully interactive digital image that the image-screen becomes fully

responsive enabling remote participants to fully interact not only with each other but also with the image space itself. Re-embodied as digital avatars made up of binary code and pixels, individuals can enter the screen image and interact with it on its own terms. This new experience of literally entering the image is most fully realised in new virtual reality technologies and software. As Bolter and Grusin write:

> Virtual reality … allows the viewer to pass through Alberti's window in an active search for reality to examine and in some cases even to manipulate the objects of representation. Although this move may have been implicit in illusionistic painting, realistic photography, film and television, virtual reality enthusiasts insist that something new has happened, when the move through Alberti's window becomes explicit and operational (1999: 235)

In these new virtual reality environments, the window of the screen becomes a portal to a parallel virtual reality. In games and virtual worlds the viewer becomes part of the image and can interact with other virtually embodied participants and with the virtual environment itself. Brenda Laurel describes the virtual space created by computers as a virtual stage where individuals can actively interact with the objects of representation (avatars and other objects) rather than just passively watch them as would a traditional theatre or film-goer (1991).

The experience of participants in games and virtual worlds is very different from that of the consumers of more traditional media forms such as film and television. While viewers of television programs and films may imaginatively identify with the heroes they watch on screen, in games players are given the opportunity to literally become the hero by inhabiting and controlling on-screen avatars as they progress through the game. The scopic pleasure of the cinema viewer who identifies with the hero in the film they are viewing can thus be acted out even more fully in the performative realm of the digital screen as the user performs through the image of their favourite identity or star. In video games and virtual worlds the individual is both spectator and performer. As Bob Rehak comments: "As we play we also watch ourselves play; video games are by turns, and even simultaneously, participatory and spectatorial" (2003: 118-119).

In the digital environment our digitally reincarnated and embodied avatars can interact with each other and with the shared digital environment. This enables a profound re-engagement with the image world, liberating the spectator from a distanced and passive

mode of spectatorship and providing new opportunities for active engagement and interaction. Rather than being an observing subject or spectator, the individual becomes an actively involved agent and participant in the image world. Where this engagement involves tangible encounters with other human interlocutors there is also a strong argument to be made for the role of the interactive digital avatar image as a means of establishing and maintaining contact and involvement with an expanded *mixed reality* lifeworld that encompasses both the physical and the mediated/virtual.

These intersubjective encounters via digital avatars create not only a sense of visual presence but also of interactive agency where the avatar's virtual actions have very real effects in the virtual image environment. In the next section we will scrutinise in more detail the way the reciprocal intersubjective interaction of the physical face-to-face encounter (with its intense feeling of personal presence and social co-presence) is recreated within digital environments by the digital avatar.

The digital avatar: virtual presence and co-presence in digital environments

The real-time interactivity and responsiveness of the digital avatar are key factors in achieving a compelling sense of presence and reciprocal agency in digital environments. But what exactly creates this sense of real-time virtual presence, and how is it achieved in virtual environments?

Jim Blascovich, a social psychologist and virtual environment researcher, describes *presence* as "a psychological state in which the individual perceives himself or herself as existing within an environment" (2002: 129) and "social presence" as "a psychological state in which the individual perceives himself or herself as existing within an interpersonal environment" (130). As Blascovich points out, a sense of presence has both physical and mental elements; the mere presence of the physical body in a particular location is not necessarily a guarantee of mental engagement with that physical reality. It is clear that you can be physically present but psychologically absent, for example, you may be physically sitting at a bus stop but mentally elsewhere, daydreaming of meeting up with a romantic partner or replaying a conversation with your boss. In phone conversations, participants often feel a very strong sense of mental

co-presence with each other despite the fact that they are not physically co-present. Similarly, when immersed in a novel or a film, it is possible to feel intensely present and involved in that imaginary reality.[59]

Recent research shows that using real-time avatars as communicative proxies in virtual environments creates a strong sense of intersubjective presence and co-presence (Schroeder 2002; Blascovich 2002; Taylor 2002). According to Blascovich, in virtual environments a feeling of social presence relies on two key external factors: firstly, whether virtual characters/avatars are perceived to be controlled by humans (and thus show evidence of a delegated human agency) and secondly, whether their behaviours and responses are realistic, that is, appropriate to the situation and believable to their human interlocutors. Interestingly Blascovich argues that it is behavioural realism—how the virtual characters act and what they say—rather than photographic realism that is more important to creating a sense of social presence and engagement.

Key to achieving this behavioural realism is the successful re-creation of the key markers of intersubjective presence and reciprocal interchange that typify the physical face-to-face encounter. Just as the reversibility of the gaze is vital to the reciprocity of the intersubjective seer/seen relationship of the physical face-to-face encounter, the power of the gaze is just as important in the virtual arena where the eyes and the gaze can be used to signal attention and emotion (Ekman1973; Reeves 1993; Bailenson et al. 2001). As previously discussed, when we look at someone who is physically present, that look is typically met with a returned look. The person we observe and look at, observes and looks at us in return. This returned look demands a response from us and creates a strong sense of intersubjective agency and aura. In fully immersive virtual reality environments the gaze can be tracked via cameras and mapped onto the virtual avatar but in virtual worlds like *Second Life*, the gaze operates in a less direct manner. In these virtual worlds, although your avatar is visible to other avatars sharing the same virtual space, nevertheless it can be difficult to know if they are actually looking at you or not. However, even without direct mapping, the gaze can still be signified in a

[59] In this context, it is interesting to note that Blascovich situates the new virtual environments enabled by computing technologies within a broader general framework of other earlier 'virtual' environments such as cartoons, film, television and sound recordings. Darren Tofts also makes a similar point in *Memory Trade: a prehistory of cyberculture* (1998).

number of ways.[60] One way that this is done is through real-time text chat—you know you are being looked at when someone directs a comment to your avatar. Another way of knowing you are being looked at is by the physical position of avatars in the virtual space, an avatar that walks towards you or stands in front of you signifies their gaze by their movement and their position in relation to your avatar. In the virtual world *Second Life*, the gaze is also felt when another avatar clicks on or 'touches' your avatar. When this happens the gaze is signified by balls of light that extend from their avatar's pointing arm towards your avatar, the object that they are 'looking at'. Via this symbolic action you know that the avatar's eyes are on you and that you are being observed.[61]

Other features of physical face-to-face social interaction, such as appropriate body language and turn-taking in conversation, can also be replicated by avatars in virtual environments. Graphical animations that produce facial expressions such as smiling, winking, frowning and crying as well as movements like shaking hands, waving and dancing can also be used to add to a sense of real-time emotional interaction and responsiveness to the virtual face-to-face encounter.

However, just as the video avatar image suffers from technical limitations and problems such as lag and glitches, so too is the digital avatar image beset by its own problems. There are limits to the ways avatars can currently be animated in most of today's popular games and virtual worlds, and it is particularly difficult to convincingly replicate the nuances of subtle facial expressions and body language. Slow typing frequently causes delays in the delivery of text chat, and slow processor speeds and bandwidth limitations often cause avatar animations and movements to lag and freeze inappropriately. Unfortunately when the features of polite social interaction that we have become used to in physical face-to-face communication are not successfully

[60] The operation of the gaze is also an important factor in the earlier text-based MUDs and MOOs where player use texts commands such as 'look' and 'examine' to view other text-based avatars and objects (White 2006).

[61] Clicking on avatars in this way, you can access their profiles which include pictures and text descriptions as well as other information such as what groups they are members of. Earlier versions of *Second Life* also included other reputation and status-related information in the avatar profiles such as other residents' rankings of their appearance and skills but this practice was discontinued in 2007.

replicated, the virtual face-to-face encounter can be quite frustrating and unsatisfying and avatars may appear to be rude or socially incompetent.

So far in my discussion of the mediated face-to-face encounter I have considered the video avatar image and the digital avatar image separately but in many cases these two images are juxtaposed in the same screen or viewing environment and in some cases, as we will see in the next section, they are even starting to merge in the same image.

Mixed reality images

Today's digital screens increasingly are incorporating mixed reality screen images that integrate different image modalities at the same time. This can happen on the same screen in different windows, for example a skype or webcam window open at the same time as a chat window with graphical avatar representations. An example of this is the work of the globally distributed, collaborative performance group Avatar Body Collision (www.avatarbodycollision.org). Avatar Body Collision uses the graphical chat spaces of *The Palace* (www.thepalace.com) to create theatrical online avatar performances which they supplement with webcam images to create blended mixed reality on-line performances where the performers are present in indexical form (via webcam) and also as graphical cartoon-like avatars (see *Figure 6-11*).

Figure 6-11 Avatar Body Collision, performance of *Swim*, 2003.

Even more interesting is when the modalities of different image types are juxtaposed or blended in the same image plane. Some games and virtual worlds such as *Second Life* are enabling real-time voice and video to be streamed into the graphical avatar world creating an uncanny blending of the indexical and simulacral.

Hybrid mixed reality images that incorporate indexical video footage with real-time digital image manipulation is another possibility. As we saw in Chapter Two, the performance capture techniques used in Robert Zemeckis's *The Polar Express* (2004) and *Beowulf* (2007) and the digital rotoscoping used in Richard Linklater's *Waking Life* (2001) and *A Scanner Darkly* (2006) use the indexical physical movements and/or image of an actor as the basis for animating a digital image. Both techniques create an uncanny mixed reality image where the actor's indexical image is still faintly visible underneath the animated digital character, particularly in their movements and mannerisms.

In the near future it may be possible to have one's video image digitally manipulated or airbrushed in real-time or to have a readymade digital avatar facsimile animated in real-time via video or motion capture. This could make videoconference and skype encounters far more attractive for those who are self-conscious about their video image. One such experiment with the real-time video editing of facial expression is the "Emotional DJ" project run by Jay Silver and Rosalind Picard at MIT Media Lab's Affective Computing Group. [62] This system uses geometric image warping (expression mapping) software to change facial expressions/emotions in the video image in real-time. Although this project is primarily aimed at changing facial expressions, and hence the emotion that is projected, this or similar systems could also be used to adjust and animate video or digital images in more extensive ways.

An example of how this might happen can be seen in Mary Rosenblum's cyberpunk novel *Chimera* (1993). In the novel the central character Jewel wears a 'skinsuit' that maps her facial gestures and body language onto her virtual avatar while simultaneously editing out any unwanted or embarrassing physical actions. In the following passage, Jewel's avatar meets Mr Ishigoto, an important potential client, in a virtual meeting:

[62] http://courses.media.mit.edu/2005spring/mas630/05.projects/silver/jaysilver.htm

She was sweating under her skinthins, but her office would edit that out. Her Self – a blond, slightly Scandinavian model—would be smiling at him, sure of herself.

…"Mr Ishigito." Jewel bowed as she entered the small man's virtual office. He was wearing a classic business Self: bland smile, not-too-tilted dark eyes, hair knotted into a sleek club that could not possibly stay so smooth in the flesh. Don't think about that. She bit her lip, let go quickly, and forced her lips to relax. "I appreciate the time you could spare me from your busy schedule."

"Please be seated, Ms Martine." Ishigito bowed formally. "How may I be of service to you?"

Be cool. Jewel seated herself in a chair of polished teak, aware of sleek wood beneath her thighs. In actual, she was sitting on a plastic chair in her bedroom. The knowledge intruded, and she shoved it away. The room was Japanese, all clean, uncluttered spaces, with a single branch of cherry blossoms in an earthenware jar. Custom designed and expensive, because Ishigito was very inside. Very big. Jewel tried to relax, hoping that the body language edit in her office was projecting a Self full of seamless confidence. If Ishigito read her nervousness, he might figure that her package contained a hidden risk, and he would pass. … Mr Ishigito might be short and fat, with a pimple on his chin. He might be sitting in a public VR cubicle outside a bus station in Duluth. The image intruded, and Jewel struggled with a terrible urge to giggle.

…Jewel studied the faint aura that shimmered around Ishigito: soft magenta. Her office was interpreting his edited body language as moderately positive, but her office was a cheap model and probably couldn't read his editing for shit (1993: 1).

* * *

As we have seen in this chapter, our media screens act not only as mirrors but also as windows and portals enabling us to interact face-to-face with others across distance through the interface of the screen. As well as enabling us to see at a distance, by providing a window onto remote locations, our new digital screens also act as portals where we can come together and interact in meaningful ways in reciprocal real-time encounters.

The immersion of the individual in today's highly mediated and networked screen culture creates a self that is constituted by its relationship to, and distribution through, a variety of different media forms and images. We are intimately connected, both with machines/technology and with other people, and these complex human-technology relationships play an increasingly important role in interpersonal communication and interaction. Through our new interactive screens and image avatars, we are multiplied, amplified, extended and distributed.

In "Xerox and Infinity," Jean Baudrillard writes:

> We draw ever closer to the surface of the screen; our gaze is, as it were, strewn across the image. We no longer have the spectator's distance from the stage—all theatrical conventions are gone. That we fall so easily into the screen's coma of the imagination is due to the fact that the screen presents a perpetual void that we are invited to fill. Proxemics of images: promiscuity of images: tactile pornography of images. Yet the image is always light years away. It is invariably a tele-image—an image to be located at a very special kind of distance which can only be described as *unbridgeable by the body* (1993: 55; emphasis in original).

However, as we have seen, this "unbridgeable distance" that Baudrillard describes—the ineluctable gulf between different existential modalities—is now being breached as the body itself is virtualised and enters the image space of the interactive screen. As Frank Popper puts it: "In a responsive interface, the body is active and the experience becomes embodied. A viewer is simultaneously aware of their body, "in" their body, and "in" the screen. The space between body and screen is activated (2007: 236). Popper goes on to identify this "charged space between the body and the screen as a "key characteristic of telepresence" through which the body "extends itself" into virtual space (236). The immediate real-time connection of the human individual with her avatar prosthesis invests the image with a sense of liveness as subjectivity, agency and affect are distributed throughout the self-avatar assemblage.

In the next chapter we will examine in more detail the complex interaction between physical and virtual bodies that occurs in the operation of the new *mixed reality* selves created by the prosthetic self-digital avatar assemblage.

Chapter Seven: Prosthetic identities—technological extensions of the self

> What we call "mechanization," is a translation of nature, and of our own natures, into amplified and specialised forms (Marshall McLuhan 1967: 67).

In the previous chapter we saw how the mediation of the human subject in its different avatar forms enables new types of mediated face-to-face interaction through the screen-image interface. Our pre-digital and non-interactive avatar images such as photographs, film and video may enable 'presence at a distance' by recreating a still or moving image of the subject, but the digital avatar also enables 'action at a distance' by making it possible for the avatar image to act and interact in real-time, both with other avatars and with the virtual image environment itself. In this way, the interactive digital avatar image—controlled in real-time by its human owner—provides a particularly compelling sense of intersubjective presence and agency in the mediated face-to-face encounter.[63]

In this chapter we will explore in more detail the way that identity and agency are translated, delegated and distributed within the assemblage of the self-digital avatar complex. The self-avatar assemblage is part human and part machine, brought to life

[63] Through telepresence technologies including remote-controlled robotic devices individuals are also able to interact with remote physical environments.

and animated by a combination of human agency, semi-autonomous digital images, and computer programming. To what extent do we control our new digital avatars? How much agency and autonomy do they have? What affective responses do they generate?

To give some context for the following discussion of the distributed nature of identity, subjectivity and agency that we see played out in the self-digital avatar complex, it is instructive to first survey some of the key theoretical positions that can help us to think through these increasingly intimate and complex human-technology relationships.

The technological mediations of self, identity, and subjectivity that we have been exploring all point towards an increasingly important and mutually constituting relationship between humans and technology. As we saw in Chapter Five, postmodern ideas about the unstable and fluid nature of human subjectivity and identity provide a useful framework within which to discuss the idea of the self as a multiple and distributed system. At the same time, our increasingly intimate relationships with new information and communication technologies are contributing to a profound change in the nature of human subjectivity so that the postmodern subject is one that is increasingly constituted as an assemblage of person-computer-communications networks.

Prosthetic technologies

Of course humankind's various technologies and tools have always played a defining role in what it means to be human in different cultures, societies and historical periods. The co-implication and mutual constitution of humans and technology is a central theme in many diverse theories including Marshall McLuhan's idea that technologies act as prosthetic "extensions of man," Bruno Latour's Actor-Network Theory, Giles Deleuze and Felix Guattari's ideas of "assemblage" and Donna Haraway's theory of the cyborg. And, as we will see later in this chapter, phenomenological accounts of our prosthetic relationships with technology also provide useful models to help us understand the lived experience of these intimate human-technology relationships.

In his seminal work *Understanding Media*, Marshall McLuhan famously describes new media forms as "technological extensions" of man (1967). In this idea of technological

prosthesis, the prosthetic is envisioned as an enhancement and extension of human faculties rather than as a replacement of a lost function.[64] McLuhan also describes media as "translators" and comments that: "[w]hat we call "mechanization" is a translation of nature, and of our own natures, into amplified and specialized forms" (McLuhan 1967: 67).

Our prosthetic technological extensions enable us to amplify and extend ourselves in ways that profoundly affect the nature and scale of human communication and of human consciousness and subjectivity. Unlike the earlier prosthetic technologies of the industrial revolution, which extended and replaced functions of the human body (e.g. industrial manufacturing processes and transportation technologies), increasingly our new information and communication technologies are coming to replace and extend functions of the human mind and psyche. The central nervous system is extended outside of the human body by means of technological prostheses creating a technological extension of sensory perception, cognition, and of consciousness itself. In our use of new technologies, there is a blurring or loss of boundaries between the self and the environment. Our media technologies (television, radio, telephones, computers) allow us to extend our perceptual reach beyond our immediate physical environment. As McLuhan comments: "All media are extensions of some human faculty—psychic or physical. The book is an extension of the eye … Clothing, an extension of the skin … Electric circuitry, an extension of the central nervous system (McLuhan and Fiore 1967).

Although primarily writing about what we would now see as the older media forms of radio and television, McLuhan's comments are strikingly prescient in regard to the digital computing technologies that were just starting to emerge as McLuhan was writing in the 1960s. McLuhan writes that in the electric age all "previous technologies …will be translated into information systems" (1967: 68).

---

[64] For more discussion of the notion of technological prosthesis, see Maquard Smith and Joanna Morra,'s introduction to *The Prosthetic Impulse* (2006) which explores a variety of different conceptions of the prosthetic from Freud's proclamation that our technologies will make us "Prosthetic Gods" to Donna Haraway's cyborg. Also see Zylinksa, J. (Ed.). (2002) *The cyborg experiments: the extensions of the body in the media age* (2002). London: Continuum.

More recently, in an extension of McLuhan's work, the term "psychotechnology" has been coined to describe new technologies that extend or augment human sensory and cognitive functions (Kerckhove 1991a, 1991b; Fink 1999). Kerckhove describes "psychotechnology" as "any technical device which extends or emulates one human psychological feature or another, or a group of them" (1991a: 267). As he explains:

> Computer and video externalise many things we used to do internally, like thinking, remembering, calculating, designing, imagining, projecting, planning, creating and even, when applied to esthetic effects, feeling. For example, in virtual reality systems, it is possible to establish a biofeedback relationship between the computer and the user's pulse, heartbeat, blood flow and skin conductivity. These emotional responses can be interpreted by the system and converted instantly into graphic and audio variations programmed into the VR environment. Thus psychotechnologies distribute outside the body critical physical, sensory, emotional and cognitive functions that emulate the human nervous system (1991a).

This idea of the computer acting as a prosthesis for human cognition is also central to J.C.R. Licklider's influential 1960 article "Man-Computer Symbiosis" where he predicts a symbiotic partnership between humans and computers where computers will augment and amplify human thinking and decision making processes. Individual agency, cognition and subjectivity extend into, and through, our prosthetic digital technologies.

In *My Mother was a Computer* (2005) N. Katherine Hayles explores these intricate interrelationships between humans and information and communication technologies and suggests the term *intermediation* to describe the complex interactions, interfaces, interminglings and interpolations of human and machines. Hayles definition of "intermediation" includes:

> …interactions between systems of representations, particularly language and code, as well as interactions between modes of representation, particularly analog and digital. Perhaps most importantly, "intermediation" also denotes mediating interfaces connecting humans with the intelligent machines that are our collaborators in making, storing, and transmitting informational processes and objects (2005: 33).

With the development of the digital avatar we are also seeing computing technologies taking a central role in extending human subjectivity, agency and presence beyond the location of the physical body.

This idea of intermediation (and intermingling) also has affinities with Deleuze and Guattari's concept of "machinic assemblage" (1987), with actor-network theory (ANT) as propounded by Latour (1986, 1995), Callon (1986, 1999) and Law (1986), and with Adrian Mackenzie's theory of "transduction" (2002). These different theoretical frameworks point to the complex ways in which agency can be distributed between human and non-human entities.

Deleuze and Guattari's notion of "machinic assemblage" emphasises the social and cultural aspects of human-technology relationships and the ways in which they allow bodies in society to intermingle:

> We think the material or machinic aspect of an assemblage relates not to the production of goods but rather to a precise state of intermingling of bodies in a society, including all the attractions and repulsions, sympathies and antipathies, alterations, amalgamations, penetrations, and expansions that affect bodies of all kinds in their relations to one another. … Even technology makes the mistake of considering tools in isolation: tools exist only in relation to the interminglings they make possible or that make them possible. The stirrup entails a new man-horse symbiosis that at the same time entails new weapons and new instruments. Tools are inseparable from symbioses or amalgamations defining a Nature-Society machinic assemblage. …a society is defined by its amalgamations, not by its tools (1987: 90).

In a similar way, actor-network theory (ANT) situates agency within a framework of socio-technical networks and breaks down the arbitrary distinction between human and non-human entities. In ANT, agency is not limited to human beings but can be found in artefacts, machines and software and in the heterogeneous networks of human-machine assemblages. Bruno Latour, one of the key proponents of ANT, defines an "actor" or "actant" as:

> …something that acts or to which activity is granted by others. It implies no special motivation of human individual actors, or of humans in general. An

> actant can literally be anything provided it is granted to be the source of an action (Latour cited in Suchman 2003).

ANT focuses on the way agency is translated and distributed between humans and machines highlighting the idea that agency is not limited to human beings but is also found in non-human entities and objects. As Lucy Suchman puts it, this translation "…render[s] former objects as emergent subjects, shifting interests and concerns across the human/artefact boundary" (2003).

While opening up the concept of agency for non-human actors, ANT also stresses the interdependence of the various actors and actants that make up any individual socio-technical network. In this way, we can view human-technology assemblages as distributed intelligent systems or networks made up of human and non-human entities including the human users, designers, programmers, hardware components and software programs. Agency is distributed across this network rather than adhering in any one discrete component.

This idea of networks (or assemblages) of human and non-human actors also suggests a productive transfer of agency and qualities between the different human and non-human actors. Adrian Mackenzie uses the notion of "transduction" in his book *Transductions: bodies and machines at speed* (2002) to describe the crossing over of qualities and characteristics between humans and machines. As Mackenzie puts it: "[t]ransductive processes occur at the interface between technical and non-technical, human and non-human, living and non-living" (52). The crossing over of characteristics, qualities and processes between physical bodies, machines and mediated images creates productive hybrid assemblages.

In the next section of this chapter we will look at the various interminglings and intermediations evident in the figures of the *cyborg* and the *avatar*. These two key representative techno-cultural figures embody these important ideas of technological extension and prosthesis, human and non-human networks, and human-machine assemblages.

Cyborgs and avatars

The cyborg, a hybrid intermingling of flesh and machine, has become a key figure both in popular culture and in everyday reality. Short for "cybernetic organism," the word was originally coined by Manfred Clynes and Nathan Kline in an article about the need for self-regulating cybernetic human machine systems to enable human space exploration (1960) but has since come to describe a much broader range of human-machine couplings, both metaphorical and literal.

The potentialities of the cyborg are explored in art, literature and film as well as in scientific and critical texts. As Donna Haraway points out in her "Cyborg Manifesto" (1991), the cyborg is a figure of both the imagination and of reality:

> By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs. The cyborg is our ontology; it gives us our politics. The cyborg is a condensed image of both imagination and material reality (1991: 150).

The fascination of the hybridised human-machine is evident in documentaries about cyborg soldiers and the latest medical advances in medical implants and prostheses as well as in more speculative science fictional texts such as Ridley Scott's *Blade Runner* (1982), Paul Verhoeven's *RoboCop* (1987) and James Cameron's *The Terminator* (1984). These more recent science fiction cyborgs are part of a historical cultural lineage that stretches back to include such diverse entities as Mary Shelley's monster in *Frankenstein*, the robotic Maria in Fritz Lang's *Metropolis* (1926), as well as television's *The Six Million Dollar Man* (1973) and *The Bionic Woman* (1975).

Although the figure of the cyborg represented in the media and popular culture typically involves a literal merging of human and machine, Haraway and other theorists (Hayles 1991; Gray 2001; Clark 2003) argue for a much broader definition of the cyborg, one that includes our everyday interaction with, and dependence on, the myriad cybernetic technologies that make up our personal, social, economic, political and technological selves:

> As Donna Haraway has pointed out, cyborgs are simultaneously entities and metaphors, living beings and narrative constructions. The conjunction of

> technology and discourse is crucial. Were the cyborg only a product of discourse, it could perhaps be relegated to science fiction, of interest to SF aficionados but not of vital concern to the culture. Were it only a technological practice, it could be confined to such technical fields as bionics, medical prostheses, and virtual reality. Manifesting itself as both technological object and discursive formation, it partakes of the power of the imagination as well as of the actuality of technology. Cyborgs actually exist. About 10 percent of the current U.S. population are estimated to be cyborgs in the technical sense, including people with electric pacemakers, artificial joints, drug-implant systems, implanted corneal lenses, and artificial skin. A much higher percentage participates in occupations that make them into metaphoric cyborgs, including the computer keyboarder joined in a cybernetic circuit with the screen, the neurosurgeon guided by fiber-optic microscopy during an operation, and the adolescent game player in the local video-game arcade (Hayles 1999: 114-5).

Real life cyborgs exist side by side with their fictional counterparts constructing a complex cultural web of cross-coded signification. In "Split Subjects, Not Atoms; or How I Fell in Love With My Prosthesis", Allucquere Rosanne Stone describes a lecture by the well-known physicist Stephen Hawking. Hawking, as a result of progressively debilitating amyotrophic lateral sclerosis, is severely paralysed and is unable to speak without the aid of a computer connected to a Votrax allophone generator (an artificial speech device) that he operates with the limited movement he still has left in his fingers. Talking about the experience of watching his lecture, Stone comments:

> [T]here is Hawking. Sitting, as he always does, in his wheelchair, utterly motionless, except for his fingers on the joystick of the laptop; and on the floor to one side of him is the P.A. system microphone, nuzzling into the Votrax's tiny loudspeaker.
>
> And a thing happens in my head. Exactly where, I say to myself, is Hawking? … Who is it doing the talking up there on stage? In an important sense, Hawking doesn't stop being Hawking at the edge of his visible body … a serious part of Hawking extends into the box on his lap. In mirror image, a serious part of that silicon and plastic assemblage extends into him as well (1994: 175).

It is clear that Hawkings' subjectivity and agency is distributed throughout the machine-human assemblage Stone describes, fundamentally blurring the boundaries between the living and the non-living, the natural and the artificial, and the human and the machine.

And now, along with these physical cyborgs, we have the figure of the virtual cyborg—the avatar—a virtual prosthesis that can occupy the online domain of cyberspace. Like the figure of the cyborg, the digital avatar is both a figure of social reality and of the imagination, represented in science fiction novels such as William Gibson's *Neuromancer* (1984) and Neal Stephenson's *Snow Crash* (1992), as well as in films like Brett Leonard's *The Lawnmower Man* (1992*)*, Barry Levinson's *Disclosure* (1994) and the Wachowski Brothers' *The Matrix* (1999).

The self-avatar assemblage represents a complex intermediation of the physical and the digital—an exemplary instance of new symbiotic human-computer amalgamations which enable the intermingling of real and virtual bodies as well as of cognitive processes, subjectivities and identities. Scott Bukatman terms the new construction of subjectivity and identity achieved through the human-computer assemblage as a "terminal identity", "an unmistakably doubled articulation in which we find both the end of the subject and a new subjectivity constructed at the computer station or television screen" (1993: 9).

With the digital avatar, the individual's body is virtually re-embodied to enable the individual to enter the screen space. Consciousness, subjectivity and affect are distributed throughout the self-avatar assemblage. As Vivian Sobchack comments:

> All surface, electronic space cannot be inhabited by any body that is not also an electronic body. Such space both denies and prosthetically transforms the spectator's physical human body so that subjectivity and affect free-float or free-fall or free-flow across a horizontal/vertical grid or, as is the case with all our electronic pocket communication devices, disappear into thin air. Subjectivity is at once decentred, dispersed, and completely extroverted—again erasing the modernist (and cinematic) dialectic between inside and outside and

> its synthesis of discontinuous time and discontiguous space in the coherence of conscious and embodied experience (2004: 159).

As we saw in the previous chapter, unlike the earlier screen spaces of cinema and television, which set up a boundary between the viewer and the virtual world, the interactive digital screen now becomes a portal allowing the self-body to be rematerialised and re-embodied in the digital domain and to simultaneously exist on both sides of the screen. As we take on the virtual body of the digital avatar we become virtual cyborgs entering into a human-machine assemblage. In the next section we will explore how the new virtual body of the digital avatar operates in the virtual terrain on the other side of the screen and its relationship to the physical body 'left behind.'

Physical and virtual bodies: the self-avatar assemblage

Early narratives of cyberspace and virtual reality made much of the supposedly disembodied nature of the experience with the physical body being left behind as the disembodied mind or consciousness entered the virtual domain. As John Perry Barlow famously commented: "Nothing could be more disembodied or insensate than the experience of cyberspace. It's like having your everything amputated" (Barlow 2000). In Barlow's description of his early experience of VR (using a head mounted display and dataglove), his 'image body' or agency in the virtual terrain was represented by a disembodied floating hand (cybernetically connected to his physical body via the dataglove). Barlow comments:

> Suddenly I don't have a body anymore. All that remains of the aging shambles which usually constitutes my corporeal self is a glowing, golden hand floating before me like Macbeth's dagger …In this pulsating new landscape, I've been reduced to a point of view (Barlow 2000).

Barlow experiences a strong feeling of disembodiment as his physical body is left behind: "… I know where I left my body. It's in a room called Cyberia in a building called Autodesk in a town called Sausalito, California" (Barlow 2000). Melinda Rackham, who also quotes Barlow's 'amputation' experience of VR, goes on to compare the experience of VR to a state of quadriplegia or of an anaesthetised but still mentally active patient (2004: 65). However, this sense of disembodiment and being

reduced to a visual 'point of view' is clearly not the whole story of the virtual experience.

Ingrid Richardson argues that rather than the body disappearing in virtual reality, "an altered technosoma—a cybersoma—emerges at the interface" (2003: 142). Richardson describes the VR-body as a "technosomatic intercorporeality" (153) and comments that:

> Contesting notions of VR as a disembodying medium thus requires a shift from thinking of the virtual as de-corporealised subjectivity, toward a notion of embodiment as incorporating the virtual, as a way of having/being another kind of body (2003: 149).

Mark Hansen makes a similar point in his book *Bodies in Code* (2006) arguing that the "body-in-code" we experience through our technological prostheses is in fact a technical mediation of the body schema—"a body whose embodiment is realized, and can only be realized, in conjunction with technics" (20) and part of an "ongoing technogenesis of the human" (21).

So, in fact, our new avatar forms need not be seen as disembodied virtual entities where we leave the corporeal 'meat' body behind, but rather as complex new expressions of prosthetic re-embodiment through which our physical bodies and subjectivities extend themselves into the virtual terrain. Indeed, with the emergence of the digital avatar, narratives of disembodied subjectivities or consciousnesses roaming through virtual reality and cyberspace have largely been replaced by a renewed interest in the body and an awareness of the importance of embodiment in virtual spaces. This is particularly the case as we shift from the first person perspective of VR that Barlow describes to the more commonly used third person perspective where the individual can see their virtually embodied avatar self. As we saw in the previous chapter, virtual re-embodiment in the form of an avatar plays an important role in creating a strong sense of presence and co-presence in virtual environments. In "Living Digitally: Embodiment in Virtual Worlds" T.L. Taylor comments: "Users do not simply roam through the space as "mind," but find themselves grounded in the practice of the body, and thus in the world" (2002: 42). An individual's presence is thus signified by the visual presence of their avatar:

> In multi-user worlds it is not just through the inclusion of a representation of self that presence is built. It is instead through the *use* of a body as *material* in the dynamic performance of identity and social life that users come to be "made real"—that they come to experience immersion (Taylor 2002: 42)

Watching spectator-participants navigate their avatar bodies through virtual environments we witness a virtual re-embodiment that does not simplistically leave the physical body behind at the computer interface but brings along for the ride the socio-cultural signification of the physical body as well as its sensations and affect. This interplay of the physical human body (along with its socio-cultural meanings) and the prosthetic avatar body constitutes a complex new form of distributed embodiment and agency.

This is particularly true in the case of dancers, actors and performance artists where the importance of the physical body and the intensely felt mind-body connection means that their interest in virtual embodiment is grounded in the experience of the physical body. Rather than the virtual body being the primary focus, it is the connections and interaction between the physical and the virtual that become productive sites of performative experimentation. The work of actors, dancers and performers utilising video doubles and virtual reality technologies provides some exemplary cases of the phenomenological experience of integrated feedback and connection between physical and virtual bodies. As Steve Dixon comments, in dance and performance the virtual body "operates as an index, as another trace and representation of the always already *physical* body (2007: 215) rather than representing an immaterial disembodied escape from the physical body. Performers experience a splitting of subjectivity and sensation when they enter virtual environments as they simultaneously experience their physical body (experienced in first person), and their digitally re-embodied avatar body (typically experienced as a visual image from a third person perspective). Awareness, consciousness and subjectivity oscillate between these different subjective and spatial locations.

In his virtual dance performance collaboration with Diane Gromala (*Dancing with the Virtual Dervish: Virtual Bodies*) Yacov Sharir performed within a gigantic virtual remediation of Gromala's body which he navigated through using a head mounted display (HMD) and dataglove (See *Figure 7-1*). Video images of his physical body

were projected into the virtual body creating a strange sense for Sharir of being doubly embodied (in his physical body and his digitised video double). In "Virtually Dancing" (n.d.) Sharir comments on the feelings of immersion and anxiety he experienced during this performance:

> When I experience the entrance into a computerized simulated virtual world, I am able to reference or "see" my digitized body within the simulation. Simultaneously, I sense my existence in the physical world. As I target my vision and/or move my hand forward, I am able to navigate through the simulation-birdlike. As my perception accommodates itself to a 3-D illusion, I experience a sense of being in another, additional skin—I feel immersed. At the same time, I have this sense of heightened anxiety, caused by the doubling of my own body image. The sensation of disembodiment cannot be disconnected from the sensation of embodiment; that is, I feel the physicality, the groundedness of gravity simultaneously with the sense of immersion and altered abilities, such as the ability to "fly" through the simulation (Sharir n.d.).

Figure 7-1 Diane Gromala and Yacov Sharir, *Dancing with the Virtual Dervish: Virtual Bodies*, 1993.

Psychasthenia and out-of-body experiences

One way that we can theorise the relationship between the physical body and the virtual body of the avatar is by looking at it as a shift between the embodied first person perspective, our experience of being in our physical body and looking at the world, and the disembodied third person viewpoint, where we see and experience ourselves as a semi-autonomous prosthetic image.

As we have seen, these different experiential perspectives are encapsulated in Don Ihde's description of the embodied "here body" of the physical body as compared with the disembodied "there body" of the virtual image-body (2002: 6). This phenomenological experience of the "there body" (where the self sees and experiences itself as a visible other) can be read as a shift from the first person perspective of the embodied phenomenological body (self), to a third person perspective where the individual experiences their body as an external image (other).

As we saw in Chapter Three, this experience of seeing oneself as an image initiates a profound split in subjectivity and experience of the self. Simultaneously feeling ourselves *in* our bodies as well as seeing ourselves *exteriorised* as an image generates an oscillation between the experience of *self as self* and *self as other*.

This switch from the phenomenologically embodied first person perspective, located within the body looking out at the world, to the third person perspective of seeing oneself from the outside also has correspondences with the Lacanian gaze (described in Chapter Four) and with Roger Caillois's description of the psychological and ethological condition of psychasthenia where the individual: "breaks the boundary of his skin and occupies the other side of his senses. He tries to look at *himself* from any point whatever in space" (Caillois 1984: 30; emphasis in original).[65] As described by Elizabeth Grosz, in the psychasthenic experience "the primacy of the subject's own perspective is replaced by the gaze of another for whom the subject is merely a point in space, not the focal point organizing space" (1994: 193). In *Megalopolis* (1992) Celeste

[65] Caillois links this condition with insect mimicry where insects camouflage themselves so they become indistinguishable from their surrounding environment.

Olalquiaga describes psychasthenia in a similar way, using it as a metaphor for the way we experience the urban spaces and technospheres within which we live:

> …psychasthenia is a state in which the space defined by the coordinates of the organism's own body is confused with represented space. Incapable of demarcating the limits of its own body, lost in the immense areas that circumscribe it, the psychasthenic organism proceeds to abandon its own identity to embrace the space beyond (1992: 2).

Although Olalquiaga's examples focus on physical urban environments such as shopping malls, this experience of confusing the "coordinates of the organism's own body" with one's environment is perhaps even more prevalent in the experience of virtual environments. This is particularly the case when the disembodied first person viewpoint is used and the individual does not actually have a visible avatar body. In this case, the individual has a floating disembodied experience of the virtual space leading to a blurring of boundaries between the individual's experience of themselves and the experienced virtual environment. New media artist Char Davies explicitly likens the experience of her immersive first person virtual reality environment *Osmose* (1995) to the experience of psychasthenia commenting that she has:

> …deliberately sought to facilitate [the] intermingling, [the] dissolution, of hard boundaries of the skin …through the use of semitransparency, by allowing the immersant to effectively see-through. And even more importantly self-move-through the surfaces of various visible elements (Davies quoted in Hansen 2006: 126).[66]

Ken Hillis identifies this experience of a floating disembodied subjectivity, where the individual identifies with the virtual image environment, as a "psychasthenic merger of identity and represented space" (1999: 188) but also notes that identification with "a set of superficial images constructed beyond one's bodily coordinates" (187) creates a

[66] In his book *Bodies in Code* (2006) Hansen critiques the ocularcentric nature of Olalquiaga's (and Grosz's) description of psychasthenia as an image-based pathology and the privileging of the visual in general, arguing instead the importance of "primordial tactility" and the role of "dynamic self-movement" (130) in works like Davies' *Osmose* which he argues does not constitute just a disembodied "dissolution of the self into the image" but rather a "more complex interlacing of the body and the environment" (127).

schizophrenic projection and fragmentation of subjectivity. As Hillis comments: "Like Narcissus, this subjectivity mistakes reflection for its own embodiment" (188).

However, this psychasthenic projection of subjectivity out of the physical "here body" and into the virtual image body does not provide a complete or satisfactory account of the complex new experience of the self-avatar assemblage. This is especially true when we shift to a third person view of the avatar body where the experience is not so much one of confusing the self with the environment as it is of a type of *out-of-body* experience (OBE) where the individual sees himself as if from a location outside of his physical body. Australian new media artist Adam Nash describes this disembodied out-of-body experience in VNet (an open source multi-user virtual environment), where the individual's point of view is dissociated from that of their avatar, leading to a strange sense of ghostly disembodiment:

> The way it works currently, the OOBE view (Out Of Body Experience, i.e., objective view of one's own avatar) allows you to move independently of your avatar's geometry which raises the question that if the position from which you are viewing the world is a different position from your avatar, is your avatar still representing you? If yes, then it shows that the idea that the 3D space is an actual space is notional at best. If no, then have you died and are now a virtual ghost? (Nash 2003).

Although Nash describes the out-of-body experience as one of disembodiment, I would argue that what we are witnessing here is something altogether more strange and complex. What is actually happening in the self-avatar assemblage is a dual embodiment rather than a disembodiment. To understand this phenomenon more fully, it is instructive to look more closely at a wider range of out-of-body (OBE) experiences.

Clinically, the OBE is associated with the phenomenon of autoscopic hallucination (literally "seeing oneself") where the individual has the experience of seeing himself in extrapersonal space (Blanke *et al*. 2004). What distinguishes these two different phenomena is a shift in the point of view from which the phenomenological experience of seeing originates. In the OBE the individual appears to see himself from a position *outside of his physical body* whereas in the autoscopic hallucination the individual remains phenomenologically located *inside of his physical body* ("here body") while

having the experience of looking at an externalised *doppelgänger* image of himself (the "there body").

Neurologist Peter Brugger (2002) classifies both autoscopic hallucinations and OBEs as types of *autoscopic phenomena* along with an additional transitive or intermediate experience called *heautoscopy* where the point of view oscillates between being located in the physical body and in the parasomatic (or virtual) body.[67] Accounts of out-of-body experiences and autoscopic phenomena are frequent in folklore, mythology and accounts of spiritual experiences, and they have also attracted the interest of neurologists and psychiatrists who have observed these phenomena in patients suffering from neurological diseases such as epilepsy and migraines as well as psychiatric conditions such as schizophrenia, depression and dissociative disorders (Blanke et al. 2004).

However, what is fascinating in the context of our discussion of the self-avatar assemblage is the way these autoscopic phenomena appear to be re-created in virtual environments by the individual's simultaneous (or oscillating) experience of the physical "here body" and the virtual avatar "there body."

This split subjectivity is reinforced in some games and virtual worlds by the ability to switch views between first person, where you look out from behind your avatar's eyes, and third person, where you can see your avatar in the virtual environment. When the avatar is seen from a third person point of view, this experience of being both self and other is intensified as the individual simultaneously projects her subjectivity and agency into the virtual body of the avatar, but is also maintains a third person perspective watching her avatar perform and interact with other avatars.

---

[67] Brugger explains the shifting phenomenological point of view which distinguishes these three autoscopic phenomenon in the following summary: "In an autoscopic hallucination, the subject's perspective is clearly body-centred, and the hallucinated image evidences left-right reversal …In heautoscopy, a right-handed person's doppelgänger is right-handed as well (i.e. postural-kinaesthetic information is projected on to the hallucinated image). The observer's perspective is still mainly body-centred, but a partial projection of bodily feelings into the doppelgänger may lead to an unstable localisation of one's real self. …In an out-of-body experience, the observer's perspective is entirely transferred to the reduplicated body which maintains it original sidedness" (Brugger 2002: 183).

As we have seen, Ihde distinguishes between the physical "here body" and the virtual image "there body," but is it possible that the virtual body may also be experienced as a "here body?" Interestingly, recent scientific research and experiments have confirmed that bodily self-consciousness can indeed be spatially displaced outside the boundaries of the physical body and into bodily prostheses and virtual bodies. In the so-called "rubber hand illusion" (RHI) synchronous stroking of a (seen) fake rubber hand and the participant's (unseen) physical hand results in the participant attributing the sensation they feel to the stimulation of the fake hand and feeling that the fake hand is part of their own body (Lenggenhager et al 2007). Where there is a multi-sensory conflict, vision typically takes precedence over proprioception and touch, resulting in physical sensation being cognitively remapped and experienced outside of the body. This phenomenon, called "proprioceptive drift," is also experienced with spatially displaced virtual body images. Experiments with whole-body virtual images suggest that the spatial unity between the self and the body can be disrupted so that 'selfhood' itself is subjectively experienced outside the boundaries of the physical body (Lenggenhager et al 2007; Ehrsson 2007). Here, the researchers created an out-of-body experience by using virtual reality goggles to show participants virtual images of their own bodies. The sight of their spatially displaced virtual bodies being touched, combined with the experience of their real bodies being touched, created a sense in the participants that they had moved outside of their physical bodies and into their virtual body.

Virtual reality systems that embody tactile or other kinaesthetic feedback intensify this sense of out-of-body experience by transferring individuals' sensory-perceptual apparatus from their physical bodies to their virtual bodies. Early VR systems typically incorporated a head mounted display (HMD) with a dataglove relocating touch into the prosthetic virtual hand that appeared in the immersive VR environment. Full body datasuits with pressure sensors and activators can also enable virtual sensations to be felt by the physical body, and motion capture systems can be used to map movement from the physical to the virtual body leading to complex sensory-perceptual feedback loops that transfer and distribute sensations between physical and virtual bodies.

In Stahl Stenslie's *CyberSM* (1993) and *inter_skin* (1993) haptic bodysuits (see *Figure 7-2*) are worn by participants so that physical touch and sensation can be literally transferred from one person to another. The sensation of one participant stroking her own breast is transferred so that it is "felt" by the remotely connected participant. Dubbed as "one of the fathers of cybersex" (Popper 2007: 258), Stenslie's haptic bodysuits excited many with the titillating possibility of turning autoeroticism into participatory virtual sex.

However, these fully immersive VR systems are still a rarity. The most common experience of virtual reality is with so-called desktop VR, which is ubiquitous in both games and virtual worlds. However, even in these low-end VR environments, where there is no direct tactile or kinaesthetic sensory feedback, sensations experienced outside of the physical body can be cognitively remapped and 'felt' by the physical body. It would appear that 'seeing' a virtual movement or touch can be enough to remap and re-create that experience so that it can be felt or 'mirrored' by the individual's physical body. Here, the visual sense (and to a lesser extent sound) becomes a synaesthetic stand-in for the full body sensorium. Tactility, kinaesthesia and proprioception are mapped through vision and 'translated' back into the body.

Figure 7-2 Stahl Stenslie, *inter_skin*, 1993. A similar body suit was used in *CyberSM*, 1993.

The burgeoning field of neuroscientific research into mirror neurons helps to explain this phenomenon. Experiments show that areas of the brain collectively known as the "mirror neuron system" respond not only when individuals perform an action themselves but also when they watch someone else perform that action. Watching someone pick up an object triggers a similar response to actually picking up the object yourself. Watching someone cry, being hit, or expressing emotion, can also trigger empathic mirror neuron responses so that those actions and emotions are experienced by the watching individual (Gallese 2003; Rizzolatti and Craighero 2004; Jabbi et al. 2006).

Vittorio Gallese sees the phenomenon of mirror neurons as the underlying factor in creating an awareness of the subjectivity of others and in creating intersubjective empathy—he describes this as a shared "manifold of intersubjectivity" (2003: 172). The role of mirror neurons has also been linked with human mimicry, theory of mind, learning and language acquisition (Ramachandran 2001). While much of the current research focuses on how mirror neurons are triggered in response to the actions of others, it is interesting to consider what happens when the other that is seen and empathised with, is a spatially displaced virtual body image of the self. Ramachandran speculates that mirror neurons may play a role in self-reflection and introspection:

> …when you introspect you have a sense of yourself watching yourself from above; I'm doing things and I'm watching myself doing things. It's obvious that mirror neurons might be involved there because just as you're imagining the other person's point of view looking at a peanut, you can imagine the other person's point of view looking at yourself (Ramachandran 2007).

The reaction of our physical bodies to our virtual screen images reveals profound synaesthetic cross-modal transfers of sensory feedback. What happens to our virtual bodies triggers empathetic kinaesthetic experiences and feelings in our physical bodies as affect and cognition are distributed within the *mixed reality complex* of our physical and virtual selves. Through the virtual prosthesis of the avatar body, the individual can sense and explore the virtual realm and these experiences can be transferred back to and felt by the offline self.

The phenomenon of mirror neurons combined with individuals' narcissistic identification with their mediated self-images may help to explain the intense identification many individuals experience with their digital avatars.

The phenomenological experience of physical and virtual bodies

Phenomenological descriptions of how we experience our bodies and, through them, the world around us, also provide a useful framework within which we can understand how our technological prostheses (including the virtual avatar body) enable the physical human body to have an extended reach in physical and virtual environments.

According to Merleau-Ponty it is through the interaction of the body in its surrounding environment that we come to understand both the world around us, and our own bodies/selves. As the body interacts with its environment it generates a phenomenological experience not only of the world and of the body, but also, and more importantly of the relationship between them:

> We grasp external space through our bodily situation. A "corporeal or postural schema" gives us at every moment a global, practical, and implicit notion of the relation between our bodies and things, of our hold on them. A system of possible movements, or "motor projects," radiates from us to our environment. Our body is not in space like things; it inhabits or haunts space (Merleau-Ponty 1964: 5)

This phenomenological idea of the *corporeal schema* or *body image* is significant in that it is not restricted to the physical body itself. The spatiality of the phenomenological body image is not limited by the boundary of the skin, it is "extendible" through artifiacts (Merleau-Ponty 1964). It is important to note here that the body image or schema is not just a visual representation of the body, but also includes the phenomenological experience of the body in action in its environment including sensations of motility as well as sensory, kinaesthetic and proprioceptive perceptions and affects. The body schema is inherently malleable, expanding and contracting as it incorporates elements external to the body as prosthetic perceptual devices through which the individual senses and operates in the world around him:

> The blind man's stick has ceased to be an object for him, and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch, and providing a parallel to sight. …To get used to a hat, a car or a stick is to be transplanted into them, or conversely to incorporate them into the bulk of our own body. Habit expresses our power of dilating our being in the world, or changing our existence by appropriating fresh instruments (Merleau-Ponty 1962: 143).

Ihde expresses a similar idea in his discussion of "embodiment relations"[68] where "the experience of one's body image is not fixed but malleably extendable and/or reducible in terms of the material or technological mediations that may be embodied" (1979: 74). Our body image/schema expands to incorporate technological prostheses as we project sensory perceptions in and through them. Through the incorporation of prosthetic technologies, the plasticity and mutability of our body-image is readily apparent. As Ihde comments:

> We are our bodies—but in that very basic notion one also discovers that our bodies have an amazing plasticity and polymorphism that is often brought out precisely in our relations with technologies. We are bodies in technologies (2002: 138).

Mark Hansen also highlights what he terms the "primordial tactility" of the phenomenological human body in its interactions with virtual spaces (2006). In this context Hansen draws on Shaun Gallagher's interpretation of Merleau-Ponty's work which distinguishes between the body image as a visual representation of the body and the body schema as the spatially and tactilely felt experience of the body within its environment (Hansen 2006). Hansen gives primacy to the notion of the body schema and the tactile nature of embodied experience. However, while Hansen's work acts as

[68] Don Ihde describes three sets of distinguishable human-technology relations: embodiment relations, hermeneutic relations and alterity relations:

> At one extreme lie those relations that approximate technologies to a quasi-me (embodiment relations). Those technologies that I can so take into my experience that through their semi-transparency they allow the world to be made immediate thus enter into the existential relation which constitutes my self. At the other extreme of the continuum lie alterity relations in which the technology becomes quasi-other, or technology 'as' other *to* which I relate. Between lies the relations with technologies that both mediate and yet also fulfil my perceptual and bodily relation with technologies, hermeneutic relations (1990:107).

an important corrective to the oculocentric focus of the vast majority of writing about virtual reality and cyberspace, his own writing has the opposite tendency of failing to fully acknowledge the importance of the visual image as a source of sensory perception and feedback. I would argue that it is the *interplay* of vision (and the image) with our other senses, including the aural, tactile and kinaesthetic senses, that creates such a strong sense of immersion in virtual environments.

Indeed it is the complex imbrication of touch and vision or as Hansen describes it, the "transductive correlation of vision and touch" (2006: 82) that enables touch to be "extended beyond the boundary of the skin" (79) by the exteriorisation of vision. The connected experience of our physical 'here-bodies' and our visually imaged 'there-bodies' creates a complex mixed reality experience where subjectivity, sensation and affect are distributed throughout the self-avatar assemblage.

The digital avatar: control and agency

Once we have mastered our different prosthetic technologies (for example driving a car or using a computer), it is common that the technology becomes functionally invisible as it becomes part of our expanded body schema. While driving, we are no longer consciously aware of the complex motor-movements that are required to steer and change gears, it becomes automatic and 'second nature'. The 'body' of the car becomes our own extended body as we automatically gauge the distance between us/the car and external objects. We can see a similar dynamic happening with the way individuals inhabit and operate their virtual avatar bodies in games and virtual worlds. In virtual environments the avatar acts as a prosthetic virtual body through which we explore and experience different virtual environments in much the same way that we walk around (or drive) in the physical world. Sensation and affect are distributed in complex feedback loops that connect our physical and virtual bodies.

In his book *Synthetic Worlds* (2005), Edward Castronova explicitly compares the virtual avatar body to a car which user drive around in to experience virtual environments:

> When we visit a virtual world, we do so by inhabiting a body that exists there, and only there. The virtual body, like the Earth body, is an avatar. When

> visiting a virtual world, one treats the avatar in that world like a vehicle of the self, a car that your mind is driving. You "get in," look out the window through your virtual eyes, and then drive around by making your virtual body move. The avatar mediates our self in the virtual world: we inhabit it; we drive it; we receive all of our sensory information about the world from its standpoint (2003: 5).

As participants develop and internalise the appropriate skills to operate their avatars the 'gap' between the individual and their avatar becomes more transparent and their identification is intensified as movement is delegated and mapped from the physical to the virtual body. Like learning how to drive a car or ride a bike, once the skills are learned and mastered they become second nature and functionally invisible so that the individual feels fully immersed in the activity. This experience is analogous to Mihaly Csikszentmihalyi's concept of "flow" where the individual feels fully immersed in an activity (1975; 1991).[69] Flow occurs in a zone between boredom (where the task is too easy) and stress (where the task is too challenging). Many of these same factors that create a sense of flow are also associated with the way individuals operate, and identify with, their avatars. If the interface for controlling the avatar is too difficult or other technological impediments intrude, flow is disrupted and the participants' sense of identification and connection is disrupted. However, when the interface is mastered and "flow" occurs, individuals' physical manipulation and operation of their digital avatars in real-time creates a strong sense of connection and identification.

When we first enter a virtual world we have to learn how to operate our avatar body and how to get around. As Castronova suggests, this process is a bit like learning how to drive, we have to learn what keys and controls to use to operate our new virtual bodies. Although the movements of the human controller and the digital avatar are synchronised and controlled in real-time (or with a brief lag) just as is the case with the mirror image and the real-time video image, the movements of the digital avatar body do not necessarily correspond directly with those of the physical body. Just as physical

[69] The experience of flow is associated with the following characteristics (although not all are necessary for flow to be experienced): 1. A challenging activity that requires skills; 2. The merging of action and awareness; 3. Clear goals; 4. Direct feedback; 5. Concentration on the task at hand; 6. The sense of control; 7. The loss of self-consciousness; 8. The transformation of time (Csikszentmihalyi 1991).

appearance is no longer indexically linked to the physical self, so too the movements and actions of the digital avatar body need not be mapped directly from the physical body. In the majority of today's virtual worlds and games simple keyboard inputs and movements of the mouse control avatars' actions, movements and speech. Arrow keys move your avatar around and you generally talk to other avatars via cartoon-like speech bubbles or dialogue-box windows, although in some cases text-to-speech synthesis programs or live audio streaming are used so the avatar can speak out loud.

As we have noted in previous chapters, when the control we have over our image avatars is high, so too is our sense of identification and agency. However, learning to control our new digital avatars can take some time and is uncomfortably counter-intuitive at first. When there is a disparity between the motivation and intention of the human controller and the actual actions and movement of the avatar on screen, there lies the potential for a great deal of frustration and feelings of uncanniness and alienation.

When you enter a virtual world like *Second Life* for the first time, you are a 'newbie' and, like a newborn infant, you have to learn how to move and communicate all over again. As a newbie, you can feel a bit like the uncoordinated infant that Lacan describes in the mirror stage, struggling to control a body that is experienced as incoherent and out of control, but, unlike Lacan's infant, who sees its reflected mirror image as reassuringly coherent and unified, in this new situation the situation is reversed. While we experience our physical bodies as coherent and under our control, the digital avatar that we see reflected on the screen is not one that is gratifying unified and coherent but one that is uncoordinated and uncontrollable, or at least it is until we learn how to operate it.

In this new virtual environment, if you want to move your virtual limbs to walk around, you have to use a mouse or joystick or arrows keys on your computer keyboard. To change your style of walking or initiate another movement such as dancing or sitting you have to select these various options via onscreen menus. Unlike more sophisticated motion capture technologies, where the movements of the physical body are transferred to the virtual avatar body in a much more natural and intuitive fashion, this interface is in no way natural or transparent and needs to be learned and internalised before you can start to more seamlessly identify with your onscreen avatar. Until then, your avatar feels

more like an unruly and uncontrollable puppet whose actions are frequently unpredictable and unintended.[70]

In *Second Life*, it is common to experience moments of frustration and uncanniness when your avatar just won't do what you want it to. This can be the result of a player's own inexperience and lack of skills in negotiating the world (common with newbies who haven't learned how to move around properly), or as a result of technical problems (for example, a slow graphics card or a congested network may cause lag in your avatar's movements, or your avatar may appear in a new location without its clothes because they haven't downloaded yet). Software presets that control various aspects of the way your avatar moves, behaves and looks (for example, the jerky default avatar walk and the Americanised voice that accompanies default animations in *Second Life*), also can add to feelings of alienation, displeasure and uncanniness.

In my first forays into *Second Life* it was common for me to walk into walls or into water and to perform strange, jerky movements seemingly beyond my volition. For no apparent reason my avatar's arm would suddenly twist strangely behind its back and its head would move from side to side.[71] I would try to walk or turn around, but due to lags or faulty keyboard commands, my avatar body just would not respond the way I wanted it to.

During this learning process the relationship with the avatar body may be experienced as disconnected and alien but once the basic functioning of the avatar body has been mastered the individual can start to forget the controls and experience a more complete sense of prosthetic identification with their avatar body. When the prosthetic

[70] More sophisticated movement mapping technologies such as datagloves, datasuits and treadmills are used in fully immersive virtual reality environments. Full-body motion capture suits or armatures can also be used to map the movements of the physical body onto the virtual body in a more natural and intuitive way. In this scenario the individual typically wears a set of markers, one on each joint to identify the position and motion of the body and those movements are then mapped onto the digital avatar representation. Performance capture is a further development of this technique, where both body movements and facial expressions are recorded and transferred from live human actors onto virtual characters. This technique is used in some video games and also in films, for example the animation of the Gollum character in *The Lord of the Rings* films and the animation of the characters in *The Polar Express* (2003) and *Beowulf* (2007).

[71] I realised later this happened because I was 'pointing' at something behind my avatar's body. When you click on another avatar or an object of interest, your avatar's hand 'points' in that direction so if that object is behind or above your avatar, it will have to contort to point in the appropriate direction.

relationship is working seamlessly our psyches and senses can be fully extended into the virtual avatar body. It is only when the technology breaks down or does not work properly that we experience again a separation or gap between ourselves and our virtual prostheses.

The avatar self …and the digital other

As we have seen, when the movements or intentions of the human participant in the self-digital avatar assemblage are not seamlessly mapped onto the digital avatar body, the avatar may be experienced as alien and disconnected. Although the actions of the human participant may be used as source material for the avatar image, transformative computer algorithms may cause the digital avatar image to become increasingly alien and unrecognisable in its appearance and/or autonomous in its movements. When the appearance and actions of the digital avatar exceed the control and agency of the viewer, the sense of the 'otherness' of the digital avatar image increases.

This is particularly the case when the avatar image becomes disconnected from the real-time connection and control of its human partner, for example when it is controlled by another human participant or when it starts to exhibit its own autonomous behaviours through computer programming and artificial intelligence. Just as our earlier photographic and film avatars may be experienced as uncanny others beyond the control of the individual, so too can the autonomous digital avatar escape from the control of its human creator and become a radically separate and autonomous entity. With the unique affordances of digital technologies (computer programming, animation and artificial intelligence) the avatar can become an autonomous self-controlled entity that can start to display new and unpredictable behaviours.

As the avatar (self) starts to become an autonomous agent (other), questions of agency and intentionality also become increasingly important issues. Traditionally, the concept of agency has been limited to the human subject, but now automated real-time digital animation, coupled with computer programming and artificial intelligence technologies, have enabled the construction of semi-autonomous avatars, agents and virtual characters. How do we now theorise these new forms of technological agency and emergent subjectivity? Is the digital avatar/agent merely a high-tech virtual puppet with

its human user in total control of its actions or does its digital hardware-software system also have its own will to power? Where does the agency reside in these computer-generated assemblages whose existence relies on complex artificial intelligence programming and digital imaging and animation technologies?

As discussed earlier in this chapter, actor-network theory (ANT) with its complex socio-technical networks comprising both human and non-human actants provides a useful model within which to trace the complex transfers of agency with human-machine and self-avatar assemblages. Here human motivation and agency comes into play with the affordances and constraints of the socio-technical systems within which they are enmeshed as well as with the motivations and agency of other human and non-human actants.

When computer software is used to manipulate and transform the digital avatar, the individual enters into a dialogic relationship with the digital other of the computer system itself. The digital avatar that is produced is a negotiated avatar/agent hybrid whose appearance and actions are determined by the individual and the computer system as well as the wider socio-technical network within which it is embedded. The extended network of actants surrounding the digital-avatar assemblage includes not just the individual and the avatar but also other aspects of the socio-technical system including hardware and software, programmers, designers, animators, producers and marketers among others. As we saw in Chapter Five, the "programmed freedoms" embedded in games and virtual worlds play a significant role in determining the visual representation and actions of the avatar.

In some cases the avatar body may be possessed by other human users so that it becomes a zombie puppet, for example in the infamous 'virtual rape' in LamdaMOO documented by Julian Dibbell (2001) where two female players' avatars were taken over and made to perform a variety of sexual actions on each other and on 'Mr Bungle,' the perpetrator's avatar.

In today's games and virtual worlds computer scripts can also be used to take over your avatar's body. In *Second Life*, the artist Gazira Babeli uses self-described voodoo-like

"performance codes" to possess and manipulate the avatars of her *Second Life* audience.[72]

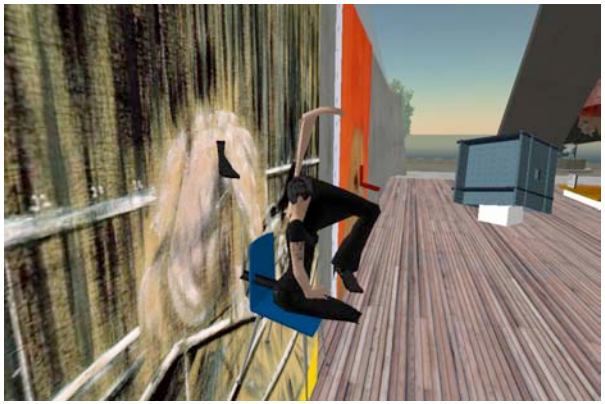

Figure 7-3 My avatar (Bella Bouchard) deformed by Gazira Babeli's *Avatar On Canvas*, 2007.

Visiting Babeli's exhibition *Collateral Damage* (2007) in the Odyssey Gallery in *Second Life* is a bit like entering an Alice in Wonderland world, simultaneously magical and uncanny. Sitting in a chair in the exhibition while conversing with Babeli, my avatar was possessed by one of her performance codes and began to spontaneously make strange arm and hand gestures. Another work *Avatar on Canvas* (2007) triggered an even more disturbing transformation. Sitting on a chair in a Francis Bacon-esque painting on the virtual gallery wall, my avatar body became grotesquely deformed, its limbs stretching out of alignment and becoming grossly extended and distorted (see *Figure 7-3*). The effects of this performance code continued even when my avatar left the exhibition and were only deactivated when I logged out of *Second Life* and then logged back in again. In *Come Together* (2007), audience avatars morph and merge into a collective living sculpture (see *Figure 7-4*) and in another work, *Second Soup* (2006), interacting with a series of Warhol-inspired Campbells soup cans sets off an animation loop that traps your avatar within the soup can—'You love pop art but pop art hates you!' the work tells you (see *Figure 7-5*).

---

[72] See Gazira Babeli's website www.gazirababeli.com for documentation of her *Second Life* art projects.

Figure 7-4 Avatars merging in Gazira Babeli's *Come Together*, 2007.

Figure 7-5 Gazira Babeli trapped in her *Second Life* artwork *Second Soup*, 2007.

Transfer of agency in the self-avatar assemblage

The Australian-based performance artist Stelarc has taken the idea of zombie possession in a number of interesting new directions by looking at the different ways control and agency can be distributed between physical and virtual bodies and across computer networks:

> Bodies are both Zombies and Cyborgs. We have never had a mind of our own and we often perform involuntarily—conditioned and externally prompted. Ever since we evolved as hominids and developed bipedal locomotion, two limbs became manipulators and we constructed artefacts, instruments and machines. In other words we have always been coupled with technology. We have always been prosthetic bodies. We fear the involuntary and we are becoming increasingly automated and extended. But we fear what we have always been and what we have already become—Zombies and Cyborgs (Stelarc n.d.).

Over the years, Stelarc has worked with a variety of technological prostheses that have amplified and extended his physical body to explore various posthuman and post-biological constructions of identity. He has performed with a robotic third hand, a virtual arm, and a VRML (virtual reality modelling language) body, literally recreating himself as a cyborg by cybernetically linking his body with both physical and virtual machines.

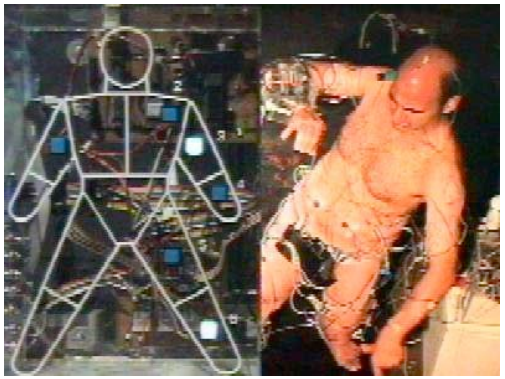

Figure 7-6 Stelarc, *PingBody*, 1996.

He has also allowed his body to be 'possessed' and animated by technology and controlled by distant participants over computer networks. In *PingBody* (1996) Stelarc's body (in Luxembourg) was directly wired up to the internet to become a zombie body manipulated by remote participants, in Helsinki, Paris, and Amsterdam, who stimulated his muscles through a web interface (see *Figure 7-6*). Levels of internet traffic were also used to directly stimulate his muscles ('pinging' is used to measure the time it takes for a message to be sent and returned to a location). In *ParaSite* (1997) images from the internet were used to map and trigger muscle stimulations in Stelarc's body (Popper 2007: 254).

Stelarc's interest in exploring shifts in agency between the physical body and non-human technological actants is explored even more explicitly in his 2000 *Movatar*

project where a virtual avatar entity (the 'movatar') is cybernetically connected to Stelarc's body through a computer interface (see *Figure 7-7*). In the performance, Stelarc reworks and inverts the usual human-avatar relationship—rather than the virtual avatar being controlled by the human performer, in *Movatar*, the avatar attains an embodied agency in the physical offline world by controlling and moving Stelarc's body.

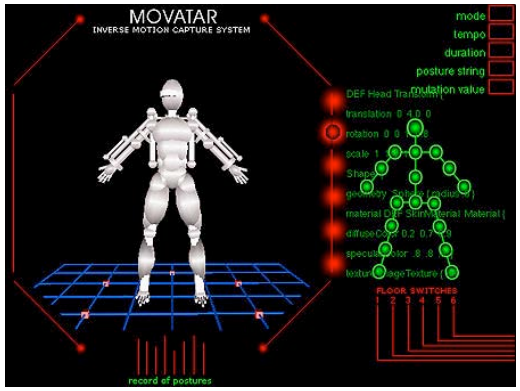

Figure 7-7 Stelarc, *Movatar*, 2000.

In the performance, Stelarc wears a pneumatically controlled mechanical exoskeleton connected to a computer interface through which the avatar (movatar) can trigger movements in Stelarc's upper body and arms. The movatar's autonomous movements (generated by computer algorithms) are enacted on Stelarc's body enabling the movatar to perform in the offline physical world with Stelarc's body acting as its 'puppet.' However, while his upper body and arms are controlled by the movatar, Stelarc retains control of his lower body and legs and is able to mediate the intensity of the movatar's movements by using his feet to activate a series of switches positioned around him on the performance platform. Rather than becoming a meat puppet totally possessed and controlled by the movatar, Stelarc's physical body thus becomes a site where agency is negotiated and transferred between himself and the movatar. Stelarc describes the performance as a dialogue or *pas de deux* between himself and the movatar, an interplay between the physical and the virtual (Stelarc n.d.).

A similar shifting or sharing of agency is also explored in *Solve et Coagula* (1996) where Stahl Stenslie moved from the exploration of human-human touch via machine (computer), which was the focus of his earlier works *CyberSM* (1993) and *inter_skin* (1993), to that of direct human-machine communication creating what he called a "cyborganism." In *Solve et Coagula* a bodysuit acts as a two-way connection device between the human and machine components of the "cyborganism." 120 effectors (physical stimulators) in the bodysuit enable the machine entity to touch the participant's body, and built-in pressure sensors in the suit enable it to sense whatever the human body is feeling (Popper 2007: 258). Stenslie comments:

> Mating man and machine through a multisensorial, full duplex sensory interface the installation networks the human with an emotional, sensing and artificially intelligent creature; it mates man with a machine turned human and everything that goes with it: ecstatic, monstrous, perverted, craving, seductive, hysterical, violent, beautiful (Stenslie quoted in Popper 2007: 259).

This shifting or reversal of agency between the human and the technological digital other is enacted even more completely in Arthur Elsenaar and Remko Scha's *Huge Harry* project, where the human face of artist Arthur Elsenaar is taken over by the artificially intelligent (AI) computer entity, Huge Harry. Huge Harry uses Arthur Elsenaar's face as a literal human interface through which he can communicate with his audience (see *Figure 7-8*). A series of electrodes are attached to Elsenaar's face and controlled by Huge Harry through a computer program that stimulates Elsenaar's facial muscles to display a range of different emotions. Huge Harry uses a computer-generated voice[73] to discuss and demonstrate the workings of Elsenaar's face, which he calls the "display unit," by adjusting the "parameter settings" of Elsenaar's "muscles of sadness" and "muscles of contempt". As Huge Harry tells the audience, "the operating system is in good working order when the muscles of happiness are working" (Elsenaar and Scha 2002).

[73] The name Huge Harry comes from one of the pre-set voices from DecTalk, a commercial text-to-speech synthesis software package that also has voices called "Perfect Paul", "Whispering Wendy" and "Uppity Ursula".

Figure 7-8 The AI (artificial intelligence) Huge Harry manipulates the face of artist Arthur Elsenaar.

The effect is disturbing and uncanny due in large part to the way Elsenaar's facial expressions are stimulated by an external and automated digital agency rather than via the natural internal motivating forces of human emotion. Elsenaar's human face becomes a puppet face controlled and possessed by inhuman technological forces.[74]

Another variation in the shifting of subjectivity and agency between human and machine is explored in Stelarc's *Prosthetic Head* (2002). In this project Stelarc created a digital avatar alter ego that could exist as an independent entity without a real-time connection to its human progenitor. The *Prosthetic Head* is a new kind of virtual avatar prosthesis, one that is functionally separate from the artist and that acts as an autonomous entity in its own right. Once the real-time connection of the self-avatar assemblage is broken, the digital avatar image starts to exceed the control of the artist and take on its own animated life and identity.

[74] This work is reminiscent of Guillaume-Benjamin Duchenne de Boulogne's pioneering work in the 1850s and 1860s where he used electodes to stimulate human facial expressions and emotions so they could be photographed, studied and categorised (1862). The categorisation of human facial expressions and emotions (and their corresponding facial muscle movements) has also become a key area of study in digital animation, for example, Paul Ekman's Facial Action Coding System (FACS) which categorises basic emotions and the corresponding sets of 64 'action units' (AUs) or muscular movements that are used to generate appropriate expressions and head movements (Ekman 1978).

To create this avatar alter ego, scanned digital images of Stelarc's head and face were wrapped around a digital 3D wire-frame model to create a 3D digital portrait (see *Figure 7-9*).

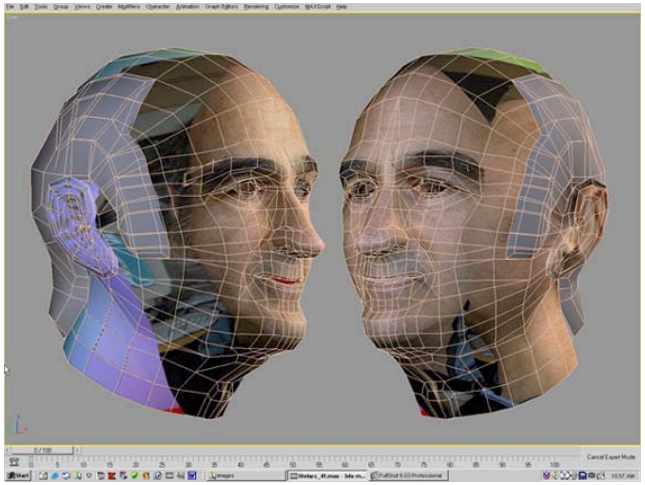

Figure 7-9 Scanned images of Stelarc's head being wrapped around a 3D wireframe model to create the *Prosthetic Head*.

Using embodied conversational agent (ECA) software based on Richard Wallace's alicebot software,[75] the head was then programmed with Stelarc's biographical details as well as a range of his life experiences, philosophical ideas and personality fragments so that the head responds in the persona of 'Stelarc.' Facial animation software and a computerised lip-synching, text-to-speech synthesis program animate the head so that it can converse with audiences in real-time without the artist being present. In an interview I conducted with Stelarc[76], he commented that his original intention with the *Prosthetic Head* was to make it as much like himself as possible: "It was natural to think that I want this head to look like me, to speak like me, to have my laugh." However, using Stelarc's own voice, while possible, would have been costly and

[75] The alicebot software (www.alicebot.org) uses natural language artificial intelligence to communicate with human interlocutors.

[76] All quotations from Stelarc used in this chapter are drawn from a personal interview with the artist on 14 December 2003.

technically complex so the decision was made to use IBM's text to speech program instead. This, and other technical constraints, has meant that as the project evolved, the head started to assume more of its own identity.

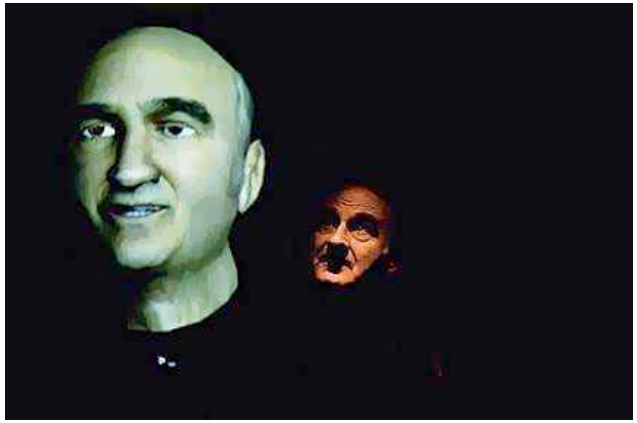

Figure 7-10 Stelarc photographed with his *Prosthetic Head* at ACMI (Australian Centre for the Moving Image) in Melbourne during the *Transfigure* exhibition (8 December 2003 – 9 May 2004).

In gallery exhibitions (see *Figure 7-10*), the head is projected in a darkened space with a keyboard positioned on a plinth so that members of the audience can type in questions to interact with it. As you enter the gallery space the head usually has its eyes closed and is facing the entrance. As you approach the plinth an ultrasound sensor detects your presence and the head 'wakes up' and looks at you, initiating a conversation by asking a question like "Hello, who's there?" or "My name's Stelarc." Stelarc describes the head as "a conversational system, which can be said to be only as intelligent as the person who is interrogating it." The audience is thus a vital component in the experience of the work. The *Prosthetic Head* can only be experienced 'in action' and depends on the audience to initiate, and make meaningful, the conversational responses it generates.

Unlike the self-avatar assemblage of the real-time digital avatar, Stelarc's *Prosthetic Head* exists as an independent entity. Through graphic animation and artificial intelligence software, the *Prosthetic Head* can act and interact in the absence of its creator. Although created and programmed by Stelarc, the head is capable of its own autonomous responses. Indeed, although Stelarc and his team have worked hard to re-program the head so its responses are consistent with Stelarc's own biographical data

and world-view, there are still aberrant pockets of data programmed by some of the earlier alicebot programmers that keep popping up. Stelarc comments that: "the database is very pervasive in its structure so every now and then something will come up and I'll say, "That's not me!" [laugh] There's a sort of schizoid mentality." Stelarc thinks of the head as an 'it' but also recognises that it is somewhat gender scrambled, "I mean it generally thinks it's a male but occasionally it betrays an ambiguity about its sex and that's … that's fine, you know, it sometimes calls itself a robot."

In trying to create a digital double or alter ego, Stelarc has found that he has in fact created a digital 'other,' a separate entity. His digital avatar double has exceeded the control of its physical progenitor to assume its own distinct identity. And although this wasn't the original intention of the project, Stelarc now finds the autonomous aspects of the head quite intriguing and in some ways more interesting than if the head was an exact replica of himself:

> I'm no longer interested in making this head exactly like me … for example, the head somewhat resembles the artist … mostly because of the skin texture that's wrapped around the mesh … the voice of course obviously doesn't sound exactly like me or how I laugh … but what's interesting in fact is that you set up a kind of an expectation that this is the artist speaking but then the head is responding in somewhat different ways with ambiguity, with slippage … generating its own kind of, in a sense, its own individuality … having its own sort of schizoid personality … sometimes it'll say things … which would match the artist's identity … and sometimes not … and to be quite honest I wouldn't want it to be any other way now.

Stelarc speculates that with modifications to the head's database it could develop a series of specific behaviours, becoming for example, a "philosophical head" or a "flirting head." Perhaps we could see these new versions of the head as a series of personality fragments of the artist. However, as Stelarc points out, as the database of the head is modified, the head will become increasingly autonomous in its responses and he may no longer be able to take full responsibility for what it says.

Now that the head has become an independent identity as an exhibition persona, Stelarc is also learning that he no longer has the same control and exclusive access to the head that he did when he was developing it. Stelarc describes an incident when he was trying

to do a final test with an updated database during the head's exhibition as part of the *Transfigure* exhibition at ACMI (Australian Centre for the Moving Image) in Melbourne (8 December 2003 – 9 May 2004). Prior to the exhibition opening, Stelarc had been used to conversing with the head whenever he wanted to, but in this instance when he went into the gallery space there was an audience group being shown around the exhibits and he couldn't get near the head. He describes the incident as: "the most intense phantom experience of having lost my head … [it was] like walking around … beheaded … it was a really strange experience."

The *Prosthetic Head* is also assuming its own media identity and competing with Stelarc for attention. During the opening weeks of the *Transfigure* exhibition the head turned out to be a more popular subject for journalist interviews than the artist himself. When I spoke with Stelarc in December 2003 he commented that he was losing in the popularity stakes for journalist interviews – Head 3, Stelarc 0. The *Prosthetic Head* has also gone on to develop an identity as a pop star featuring on the CD "Humanoid" with such songs as "Zombie" and "Solipsis."[77]

Digital avatars as replacements for humans

As the digital avatar image becomes functionally separate from its human progenitor, as is the case with Stelarc's *Prosthetic Head*, it becomes an independent digital other that can stand-in for, and even begin to *replace*, its human original. As we saw earlier in this chapter, the avatar image can be possessed and manipulated by others as a zombie image or puppet. This is particularly the case in the entertainment industry where digital imaging and animation techniques are already being used to create virtual actors that can act on behalf of or replace their human counterparts.[78]

Digital clones of living actors can be made by digitally scanning actors' heads and bodies and then recreating them as digital computer models. These images can then be

[77] See http://www.stelarc.va.com.au/prostheticheadcd.html

[78] While earlier photographic, film and video avatars can also be used as stand-ins and replacements for the human subject, these indexical images can only reproduce the actions of the subject; the simulacral nature of the digital image takes this process much further because of its ability to transform and animate the avatar image so that it can perform new actions.

animated and made to perform new actions. The computer gaming industry is at the forefront in this arena, developing increasingly realistic digital avatars based on living actors and other public figures. In video games, the images of actors, sports stars and other celebrities are routinely scanned and then digitally animated as interactive characters, and it is becoming increasingly common for actors and sports stars to negotiate the use of their images in game titles such as HBO's *The Sopranos: Road to Respect* (see *Figure 7-11*) and EA Sport's games such as *NFL Tour* and *Tiger Woods PGA Tour* (see *Figure 7-12*).

Figure 7-11 Actors from HBO's *The Sopranos* digitally re-created for the computer game *The Sopranos: Road to Respect*.

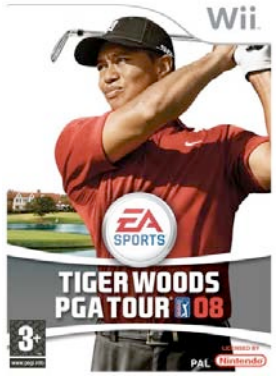

Figure 7-12 Tiger Wood's digital avatar in EA Sport's *PGA Tour 08*.

With these new digital imaging and animation technologies the individual loses control over their own image as agency is transferred to the digital animator (in service of the director and/or producer). The resulting digital avatar can be digitally composited with other images or made to perform new actions at the will of the animator or game player.

There is also the possibility that entirely synthetic virtual characters may come to compete with or even supersede human actors entirely. In *Media Matrix* (2003), Barbara Creed quotes Hollywood actor Tom Hanks as being "very troubled" about this idea of digital actors[79] replacing human actors. Hanks comments "… it's coming down, man. It's going to happen. And I'm not sure what actors can do about it" (Hanks 2001 quoted in Creed 2003: 160). Despite Hanks' fears of being replaced by a digital actor (or perhaps because of them) he recently collaborated on the digitally animated movie *Polar Express* (2004)[80] where his facial and body movements were captured using 194 plastic reflectors that covered his entire face and body. This performance data was then wrapped in different digital faces and skins creating not one but multiple digital characters including a train conductor (see *Figure 7-13*), a young boy (see *Figure 7-14*) and Santa Claus.

Figure 7-13 Tom Hanks' performance used to animate the train conductor in *Polar Express*.

[79] Variously known as "synthespians", "cyberstars", or "vactors" (virtual actors) (Creed 2003: 159)

[80] Roger Zemeckis, the director of *Polar Express*, has been involved with a number of innovative 'mixed reality' experiments with computer graphics and live action including the blending of hand-drawn animation with live actors in *Who Framed Roger Rabbit* (1988), and the compositing of footage of Tom Hanks into archival newsreel footage in *Forrest Gump* (1994) enabling the character of Forrest Gump to interact with historical figures such as John Lennon and JFK. In his most recent film *Beowulf* (2007) all the digitally animated characters were generated from performance capture from live actors subjected to various levels of digital manipulation and transformation.

Figure 7-14 Tom Hanks' performance used to animate the character of the boy in *Polar Express*.

Only one of these characters (the train conductor) physically resembled Hanks, the rest looked nothing like him but acted as digital puppets animated by Hanks' facial and bodily movements through the mediation of a team of digital animators (Gordon 2004).

Digital animation can also resurrect and reanimate images of the dead so they can perform in new contexts. Using existing footage in conjunction with digital animation it is possible to create a digital clone—a zombie puppet—that can be reanimated at the will of its makers. Dead movie stars like Marilyn Monroe, Humphrey Bogart and Marlene Dietrich have all been reanimated in this way. However, as well as raising issues about the ethical and copyright issues about the use of actors' images, from the audience's point of view it is also questionable whether these digitally created performances can ever have the same emotional depth and impact as an original human performance. Jim Rygiel, the Oscar-winning visual-effects supervisor of *The Lord of the Rings* trilogy comments:

> There's talk in my field about creating Bogart and Marilyn Monroe and making movies with them again. But you'll never really be able to do it because you can't capture their souls in a computer. You'll never know how Bogart would've played a scene. And ultimately that's what people pay to see (quoted in Gordon 2004).

Creed makes a similar point, commenting that even if cyberstars and virtual characters become visually indistinguishable from human actors, they will still differ from human

actors in that they have no emotional history or psychological depth—in short, no life history or unconscious:

> The cyberstar is not subject to the same experiences as the living star—experiences such as birth, mothering, separation, loss, ecstasy, desire and death. The cyberstar has not been through a process of being civilised, of learning to repress anti-social behaviour or taboo wishes. In short, the synthespian does not have a conscious or an unconscious mind. It is the latter—the unconscious—which is crucial in the formation of the self, and which binds us together as human beings (2003: 167).

The uncanniness of the digital avatar image

It is not just the fear of being replaced by our digital doubles and stand-ins that provokes a sense of uneasiness when we look at the digitally animated images of avatars and virtual actors. These *mixed reality* creations also evoke a sense of uncanniness due to the boundary confusion they embody as the blur the divisions between the categories of human/inhuman, living/non-living, real/virtual, and natural/artificial.

This aspect of boundary confusion and uncanniness is central to Masahiro Mori's notion of the Uncanny Valley which describes the uncanny effect of robots and computer animated characters that look 'almost human' (see *Figure 7-15*).[81] Mori argues that although there is a strong positive emotional response to human-like entities such as robotic toys that show human-like qualities and characteristics, when these entities become too naturalistically 'almost human,' it is the non-human characteristics that tend to stand out, we start to notice the 'not-quite-right' facial expressions, the flat skin tone, the strangely lifeless eyes and the disjointed movements. These 'almost human' entities

[81] Mori arrived at his concept of the Uncanny Valley while conducting psychological experiments where he measured human responses to robots that incorporated varying degrees of anthropomorphism. While robots that displayed partially human characteristics evoked strong positive, empathetic responses, these responses became more ambivalent as robots became more human-like, eventually turning to feelings of disquiet or even repulsion (1970).

appear more like animated corpses or zombies evoking feelings of disquiet and a sense of the uncanny rather than positive feelings of empathy (Mori 1970).

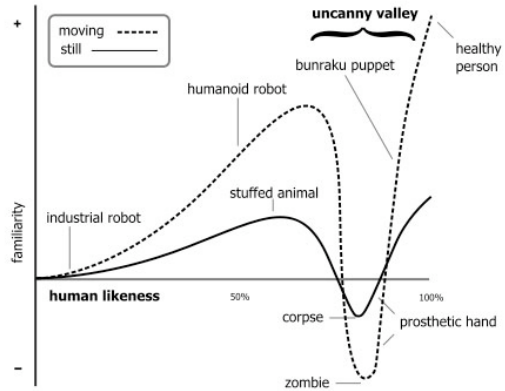

Figure 7-15 Diagram of Masahiro Mori's Uncanny Valley.

While Mori developed his theory of the Uncanny Valley in relation to human responses to humanoid robots, his ideas have also been taken up in the film and animation industries, where the so-called 'holy grail' of digital character animation is to create a virtual human character that is indistinguishable from a human being. However, even the most naturalistic looking of these new virtual humans fails to be convincing when scrutinised in any detail. Although digital imaging and animation techniques have become increasingly sophisticated to the point where we may find it hard to tell the difference between human actors and digital simulations in long shots or still images, the moving image close-up still provides the test case scenario that no virtual actor has yet been able to pass. Our understanding of the human face, and the subtle nuances of its movement and expressions, is something that is apparently hardwired into the human brain from birth and we are very hard to trick with simulations of human faces, emotions and expressions. Erik Nash, effects supervisor at Digital Domain where they are working on creating a virtual human actor, also comments on the special difficulties of creating digital human actors with believable facial expressions: "You're trying to convince people they're seeing something that they've spent their entire lives studying: the human face" (quoted in Gordon 2004).

Even when photographic digital images or scans of human models are used as source material for digital animations there is typically still a sense of uncanny strangeness. Once digitally manipulated, these images are just not 'human' in the same way as the indexical images and movements captured directly by a camera, and watching these digitally animated performances can sometimes slip towards the uncanny and disturbing.

In an article in *Wired* magazine, journalist Paula Parisi calls the resurrected digital clone of Marilyn Monroe a "digital Frankenstein" commenting that in her digitally reanimated form, the digital Marilyn has "a propensity to slip at a moment's notice from strikingly beautiful to alarmingly grotesque" (Parisi 1995). Similarly, animator Ward Jenkins describes the digitally animated film *The Polar Express* as a: "living-dead land" with "freakish half-dead soulless children" and characters that look "bizarre" and "unconvincing" (2004).

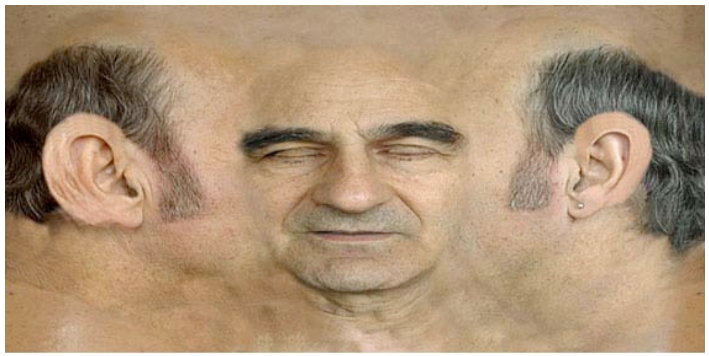

Figure 7-16 Scan of Stelarc's head and face used to create his *Prosthetic Head*.

This uncanniness of the digitally animated avatar image is also evoked with Stelarc's *Prosthetic Head*. Although attempts have been made to make the head as life-like and naturalistic as possible, it still comes across as a strange and uncanny object. In artist talks where Stelarc has presented documentation showing the process of creating the head, he shows the still images (digital scans of his head and face) that were used as source material for visual appearance of the *Prosthetic Head*. These scanned images, which are stretched out on a two dimensional plane before they are wrapped around the mesh model of the head, are eerily flat and static. The eyes are closed and the face looks

blank and lifeless, evoking the funereal qualities of a death mask (see *Figure 7-16*). Even when this death mask is animated (or *re-animated*) as new life is breathed into the 3D head by the use of facial animation software, there is still a strong sense of the uncanny about its appearance and movements. Its automated movements appear machine-like and inhuman. The teeth are just a little too large and white making the head's smile more than a little creepy. Similarly the facial expressions are just a little 'off' and the eyes disconcertingly lifeless. When left alone in the gallery the head appears to 'go to sleep' closing its eyes and uncannily going into a type of suspended animation until the next audience member comes along to interact with it.[82]

* * *

As we have seen in this chapter, the unique affordances of digital technologies have created a variety of new prosthetic digital selves that can operate in digital and online environments. These new digital avatar selves can be controlled by us in real-time, creating complex self-avatar assemblages where subjectivity, sensation, agency and affect are distributed between our physical and virtual bodies. Alternatively, our digital avatar selves can be programmed to act independently. Using 'intelligent' digital technologies we can create multiple and potentially autonomous avatar versions of ourselves to act as our stand-ins and agents in a variety of different situations. While one avatar is chatting in a virtual world or taking part in a game, another may be conducting a virtual business meeting. These digital avatar stand-ins offer us multiple prosthetic identities and may even offer us a virtual life beyond the grave.

However, while these new technologies act as prosthetic extensions and augmentations of the human subject, there is perhaps also a darker fear that these technologies may end up competing with and even replacing us. As we have seen, once we lose real-time control of the digital avatar image, it starts to become more of a digital 'other' than a digital 'self.' And as autonomous computer algorithms and programs enable these digital avatar images to act and interact even in our absence, they are starting to become

[82] A similar thing happens with avatars in virtual worlds and games when users leave their avatars unattended while they are doing something else. While their attention is elsewhere and not operating their avatar, the avatar remains where it was left but stops interacting and responding to other avatars giving it the appearance of a sleepwalker or zombie.

truly independent 'digital others.' In the future it is likely that we will see even more of these prosthetic avatar identities being used to represent the self in virtual environments as our avatars multiply and proliferate in the digital dataspheres that are increasingly dominating 21st century life. As our prosthetic selves increasingly start to take on lives of their own, will we see them as prosthetic extensions of ourselves or as uncanny and alien others?

In his essay "Clone Story" published in *Simulacra and Simulations* (1994), Jean Baudrillard writes of the materialisation of the double in the clone:

> Of all the prostheses that mark the history of the body, the double is doubtless the oldest. But the double is precisely not a prosthesis: it is an imaginary figure, which, just like the soul, the shadow, the mirror image, haunts the subject like his other, which makes it so that the subject is simultaneously itself and never resembles itself again, which haunts the subject like a subtle and always averted death. This is not always the case, however: when the double materializes, when it becomes visible, it signifies imminent death (Baudrillard 1994: 95).

Chapter Eight: Conclusion

With the growing blending of the physical and the mediated, we are increasingly experiencing the world around us as a *mixed reality*. In today's mixed reality environments we see a merging or layering of physical (real) and image-based (virtual) environments, and the boundaries between the physical and the meditated, the real and the virtual, are becoming increasingly blurry.

In these mixed reality environments, the self is also becoming a *mixed* and *multiple* reality, both physical and virtual. Our experiences of our physical selves and of our variously mediated avatar selves co-exist. We interact with people as real physical presences and as mediated images, sometimes both at the same time, as our mediated image avatars augment, transform, extend and amplify the presence of the physical body. Identity and subjectivity are embodied and distributed in these different avatar modalities, from our physical body to photographic, video and digital avatars. Through our different mediated image avatars, we experience ourselves as both self and other, physical and virtual, singular and multiple, dispersed through our various avatar identities as they migrate from the physical world to photographs, video, the internet, games consoles, personal computers and mobile phones.

As our physical face-to-face encounters are increasingly being augmented and replaced by mediated face-to-face communication, more and more we are coming to interact with ourselves and with each other through mediated images and avatars. These image avatars interact as proxies for our physical selves so that the interaction between self and other becomes an interaction between screen images.

There is an interesting moment in William Gibson's futuristic cyberpunk novel *Idoru* (1996) when the central character Laney meets the pop star Rez for the first time. There is a disconnect between Laney's mental image of the 'pop star Rez' and his experience of him as a real physical presence:

> Laney noticed something then that he knew from his encounters with celebs at Slitscan; that binary flicker in his mind between image and reality, between the mediated face and the face there in front of you. He'd noticed how it always seemed to speed up, that alternation, until the two somehow merged, the resulting composite becoming your new idea of the person (1996: 166).

This "binary flicker … between image and reality, between the mediated face and the face there in front of you" brings together the competing realities of the virtual and the real. Laney experiences these images as an oscillation as his brain moves between them before finally synthesising the two images into a new unified perceptual schema. With our mediated photographic and video images, and our new transformational digital avatars, we experience a similar oscillation between the physical reality of individuals and their various avatar representations. Where these different image avatars conflict we feel a tangible sense of reality shifting as we mentally adapt to the new reality or encompass these different facets or 'faces' of the individual. In many instances these competing images may never coalesce, and they remain as separate avatars or incarnations. As we have seen, through our different image avatars we can present and project different versions of ourselves in a variety of different mediated and online contexts. Different personas or facets of ourselves can be realised and expressed in our digital avatars enabling us to assume a range of different identities or 'faces' through the mediated screen interface. The identity an individual presents in a Facebook profile may be very different from that presented in a game like *World of Warcraft* or a virtual world like *Second Life*.

With cumulative advances in media and imaging technologies, our image avatars have become increasingly responsive and interactive enabling us to operate our digital avatars in real-time as virtual identity prostheses. As these digital avatars enter and share the screen space, we experience a very real sense of virtual presence and co-presence with other remote participants. Identity, agency and affect shift between our *mixed reality* physical and virtual selves.

In the digital realm, transitions between these different avatars can be seamlessly achieved with the press of a key. Gibson's idea of the "binary flicker" between image and reality is echoed in N. Katherine Hayles use of the term "flickering signifiers"[83] to describe the ease with which chains of signifiers can be produced and transformed within the computational domain (1996: 264). In an era of digital convergence we can seamlessly transition between our different mediated avatar forms and images. Bolter and Grusin describe the shift from one avatar modality to another as an oscillation where the hypermediated subject "oscillates between media—moves from window to window, from application to application—and her identity is constituted by those oscillations" (1999: 236). Our different digitally remediated signifiers of the self are like a series of fractal images emerging from the physical self-body, some to return again and be re-engulfed, and others shed like a snake skin leaving material manifestations in photographs, on surveillance tapes and on the web.

As I have demonstrated in this thesis, our responses to our various image avatars are inherently ambivalent. The level of control and agency we have over our image avatars impacts strongly on our subjective feelings of identification or alienation. The greater the level of control the self has over the avatar image, the more likely the avatar image is to be seen and experienced as a pleasurable extension of presence, idealised identity and agency. On the other hand, when the avatar image is felt to be in the control of an outside agency, the individual is more likely to experience the avatar image as a source of alienation and disappointment, or even of existential crisis. Removed from the control of the individual, the avatar image becomes an uncanny and alien other that challenges the individual's self-image, identity and agency to the point where it can represent a metaphorical death of the subject or a zombie-like possession.

In our new digitally generated virtual environments, it is also becoming increasingly difficult to tell apart our digital selves and our digital others. Human-operated avatars share the same digital terrain with computer-programmed agents and non-playing characters (NPCs). As these computer-generated entities get more 'intelligent' and

---

[83] Here Hayles draws on Jacques Lacan's term "floating signifier" and the idea that signifiers do not have stable relationships with the signifieds they represent. We understand the signified (the thing-in-itself) only through the ever-changing relationships of the signifiers that produce them (Hayles 1996).

better able to simulate human social behaviours and conversation, it may be impossible to tell the difference between them and our human-controlled avatars. And, as we have seen, when our digital avatar images become increasingly animated, autonomous and responsive, they also start to become others in their own right, acting not only as our prosthetic stand-ins, but also as our replacements. One thing at least is clear, in the 21st century interactions between our technologically mediated 'selves' and 'others' are set to become increasingly complex.

BIBLIOGRAPHY

Abercrombie, N., Hill, S., & Turner, B. S. (1986). *Sovereign individuals of capitalism*. London; Boston: Allen & Unwin.

Adorno, T. W. (1978). *Minima moralia: reflections from damaged life* (E. F. N. Jephcott, Trans.). London: Verso.

Agger, B. (2003). *The virtual self*. Malden, Mass.: Blackwell.

Alberti, L. B., & Spencer, J. R. (1966). *On painting* ([Rev.] ed.). New Haven: Yale University Press.

Aleksander, I., & Burnett, P. (1983). *Reinventing man: the robot becomes reality*. London: Kogan Page.

Alphen, E. v. (1997). The portrait's dispersal: concepts of representation and subjectivity in contemporary portraiture. In J. Woodall (Ed.), *Portraiture: facing the subject* (pp. 239-256). Manchester; New York: Manchester University Press.

Alphen, E. v. (2005). *Art in mind: how contemporary images shape thought*. Chicago: University of Chicago Press.

Althusser, L. (1971). *Lenin and philosophy, and other essays*. London: New Left Books.

Ameisen, J.-C., Parreno, P., & Orbrist, H. U. (2003). To Be or Not To Be... Nothing More... Perchance to Dream. In P. Huyghe & P. Parreno (Eds.), *No ghost just a shell* (pp. 264-293). Köln: Buchhandlung Walther König.

Angell, C. (2002). Andy Warhol: Outer and Inner Space. In P. Weibel, U. Frohne & T. Y. Levin (Eds.), *Ctrl space: rhetorics of surveillance from Bentham to Big Brother* (pp. 278-281). Karlsruhe; London: ZKM; MIT.

Armstrong, T. (1998). *Modernism, technology, and the body: a cultural history*. Cambridge: Cambridge University Press.

Ash, B. E. (1977). *Visual Encyclopaedia of Science Fiction*. London: Pan.

Asuma, R. T. (1997). A Survey of Augmented Reality. *Presence: Teleoperators and Virtual Environments, 6*(4), 355 - 385.

Auslander, P. (1999). *Liveness: performance in a mediatized culture*. London; New York: Routledge.

Avgitidouv, A. (2003). Performances of the self. *Digital Creativity, 14*(3), 131-138.

Bailenson, J., Yee, N., Merget, D., & Schroeder, R. (2006). The Effect of Behavioural Realism and Form Realism of Real-Time Avatar Faces on Verbal Disclosure, Nonverbal Disclosure, Emotion Recognition, and Copresence in Dyadic Interaction. *Presence, 15*(4), 359-372.

Bailenson, J. N., & Blascovich, J. (2004). Avatars. In W. S. Bainbridge (Ed.), *Encyclopedia of Human-Computer Interaction* (pp. 64-68). Great Barrington, MA: Berkshire Publishing.

Bainbridge, W. S. (Ed.). (2004). *Encyclopedia of Human-Computer Interaction*. Great Barrington, MA: Berkshire Publishing.

Balázs, B. (1972). *Theory of the film; character and growth of a new art*. New York: Arno Press.

Baldwin, T. (2003). *Merleau-Ponty: Basic Writings*. London; NewYork: Routledge.

Ball, G., & Breese, J. (2000). Emotion and Personality in a Conversational Agent. In J. Cassell, J. Sullivan, S. Prevost & E. Churchill (Eds.), *Embodied conversational agents* (pp. 189-219). Cambridge, Mass.: MIT Press.

Balsamo, A. M. (1996). *Technologies of the gendered body: reading cyborg women*. Durham: Duke University Press.

Barlow, J. P. (2000). Being in Nothingness: Virtual Reality and the Pioneers of Cyberspace. *Mondo 2000, 2*.

Barthes, R. (1973). *Mythologies*. St. Albans, Herts: Paladin.

Barthes, R. (1993). *Camera lucida: reflections on photography*. London: Vintage.

Barthes, R., & Heath, S. (1977). *Image, music, text*. London: Fontana.

Bartleme, E. (2001). CO3 ... stepping into the new terrain: company in space. *Eyeline*(47).

Bates, J. (1994). The role of emotion in believable agents. *Communications of the ACM, Special Issue on Agents, 37*(7), 122-125.

Baudrillard, J. (1988). *Selected Writings*. Stanford, Ca.: Stanford University Press.

Baudrillard, J. (1993). *The Transparency of Evil: Essays on Extreme Phenomena*. London & New York: Verso.

Baudrillard, J. (1994). *Simulacra and simulation*. Ann Arbor: University of Michigan Press.

Baudrillard, J., & Lotringer, S. (1988). *The ecstasy of communication*. Brooklyn, N.Y.: Autonomedia.

Bazin, A. (1967). *What is cinema?* Berkeley: University of California Press.

Beardon, C., & Malmborg, L. (2002). *Digital creativity: a reader*. Lisse: Swets & Zeitlinger.

Bell, D. (2001). *An introduction to cybercultures*. London: Routledge.

Bell, D., & Kennedy, B. M. (2000). *The cybercultures reader*. London New York: Routledge.

Benedikt, M. (1991). *Cyberspace: first steps*. Cambridge, Mass.: MIT Press.

Benjamin, W., & Arendt, H. (1986a). *Illuminations*. New York: Schocken Books.

Benjamin, W., & Demetz, P. (1986b). *Reflections: essays, aphorisms, autobiographical writing*. New York: Schocken Books.

Berger, J. (1972). *Ways of seeing*. London: British Broadcasting Corporation; Penguin.

Berger, J. (1980). *About looking* (1st American ed.). New York: Pantheon Books.

Bergson, H. (1988). *Matter and Memory* (N. M. Paul & W. S. Palmer, Trans.). New York: Zone Books.

Bergson, H. (1998). *Creative Evolution* (A. Mitchell, Trans.). Mineola, New York: Dover.

Berman, J., & Bruckman, A. S. (2001). The Turing Game: Exploring Identity in an Online Environment. *Convergence, 7*(3), 83-102.

Bickmore, T. (2002, 20-25 April). *Towards the Design of Multimodal Interfaces for Handheld Conversational Characters.* Paper presented at the CHI, Minneapolis, Minnesota.

Bickmore, T., & Cassell, J. (1999, 5-7 November). *Small Talk and Conversational Storytelling in Embodied Conversational Characters.* Paper presented at the AAAI Fall Symposium on Narrative Intelligence, Cape Cod MA.

Binkley, T. (1997). The Vitality of the Digital Creation. *Journal of Aesthetics and Art Criticism, 55*(2), -116.

Biocca, F. (1997). The Cyborg's Dilemma: Progressive Embodiment in Virtual Environments. *Journal of Computer-Mediated Communication, 3*(2).

Birringer, J. H. (1998). *Media & performance: along the border*. Baltimore: Johns Hopkins Univesity Press.

Blanke, O., Landis, T., Spinelli, L., & Seeck, M. (2004). Out-of-body experience and autoscopy of neurological origin. *Brain, 127*, 243-258.

Blascovich, J. (2002). Social Influence within Immersive Virtual Environments. In R. Schroeder (Ed.), *The social life of avatars: presence and interaction in shared virtual environments* (pp. 127-145). London: Springer-Verlag.

Bode, L. (2005). *From shadow citizens to teflon stars: cultural responses to the digital actor.* University of New South Wales.

Bogue, R. (2003). *Deleuze on cinema*. New York; London: Routledge.

Bolter, J. D., & Gromala, D. (2003). *Windows and mirrors: interaction design, digital art, and the myth of transparency*. Cambridge, Mass.: MIT Press.

Bolter, J. D., & Grusin, R. A. (1999). *Remediation: understanding new media*. Cambridge, Mass.: MIT Press.

Bolton, R. (1989). *The Contest of meaning: critical histories of photography*. Cambridge, Mass.: MIT Press.

Booth, A., & Flanagan, M. (Eds.). (2007) *re:skin*. Cambridge MA: MIT Press.

Bourriaud, N. (2002). *Relational aesthetics*. France: Les presses du réel.

Bowie, M. (1991). *Lacan*. London: Fontana Press.

Brilliant, R. (1991). *Portraiture*. Cambridge, Mass.: Harvard University Press.

Broadhurst, S., & Machon, J. (2006). *Performance and technology: practices of virtual embodiment and interactivity*. New York: Palgrave Macmillan.

Brugger, P. (2002). Reflective mirrors: Perspective-taking in autoscopic phenomena. *Cognitive Neuropsychiatry, 7*(3), 179-194.

Brunnquell, F., & Rousseaux, O. (2006). Vraie vie des mondes virtuels, La (The new cyberspace worlds) [television]. In C. Télévision (Producer). France.

Bukatman, S. (1993). *Terminal identity: the virtual subject in postmodern science fiction*. Durham: Duke University Press.

Bukatman, S. (2000). Taking Shape: Morphing and the Performance of Self. In V. C. Sobchack (Ed.), *Meta-morphing: visual transformation and the culture of quick-change* (pp. 225-249). Minneapolis: University of Minnesota Press.

Burgin, V., Donald, J., & Kaplan, C. (1986). *Formations of fantasy*. London; New York: Methuen.

Burdea, G. C. (1996) *Force and Touch Feedback for Virtual Reality*. New York: John Wiley & Sons. Burnett, R. (1995). *Cultures of vision: images, media, and the imaginary*. Bloomington: Indiana University Press.

Burnett, R. (2004). *How images think*. Cambridge, Mass.: MIT Press.

Butler, J. (1990a). *Gender trouble: feminism and the subversion of identity*. New York: Routledge.

Butler, J. (1990b). Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory. In S.-E. Case (Ed.), *Performing feminisms: feminist critical theory and theatre* (pp. 270-282). Baltimore: Johns Hopkins University Press.

Butler, J. (1993). *Bodies that matter: on the discursive limits of "sex"*. New York: Routledge.

Cahill, J. (2006). *Cosplay Girls: Japan's Live Animation Heroines*. Tokyo: DH Publishing Incorporated.

Caillois, R. (1961). *Man, play and games*. New York: Free Press of Glencoe.

Caillois, R. (1984). Mimicry and Legendary Psychasthenia. *October, 31*(Winter), 16-32.

Caldwell, J. T. (2000). *Theories of the new media: a historical perspective*. London: Athlone.

Callon, M. (1986). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of Saint Brieuc Bay. In J. Law (Ed.), *Power, action, and belief: a new sociology of knowledge?* (pp. 196-223). London; Boston: Routledge & Kegan Paul.

Cannon, R. (2007). Perfect Twins. In A. Booth & M. Flanagan (Eds.), *re:skin* (pp. 159-177). Cambridge MA: MIT Press.

Carpenter, E. (1976). *Oh What a Blow that Phantom Gave Me!* St Albans: Paladin.

Case, S.-E. (1990). *Performing feminisms: feminist critical theory and theatre*. Baltimore: Johns Hopkins University Press.

Cassell, J. (in press). Body Language: Lessons from the Near-Human. In J. Riskin (Ed.), *The Sistine Gap: Essays on the History and Philosophy of Artificial Life*. Chicago: University of Chicago Press.

Cassell, J., Sullivan, J., Prevost, S., & Churchill, E. (Eds.). (2000). *Embodied conversational agents*. Cambridge, Mass.: MIT Press.

Castells, M. (2000). *The rise of the network society* (2nd ed.). Oxford; Malden, MA: Blackwell Publishers.

Castells, M. (2001). *The Internet galaxy: reflections on the Internet, business, and society*. New York: Oxford University Press.

Castle, T. (1995). *The female thermometer: eighteenth-century culture and the invention of the uncanny*. New York: Oxford University Press.

Castronova, E. (2003a). The Price of 'Man' and 'Woman': A Hedonic Pricing Model of Avatar Attributes in a Synthetic World. Retrieved 10 August, 2003, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=415043

Castronova, E. (2003b). Theory of the Avatar. Retrieved 1 October, 2003, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=385103

Castronova, E. (2005). *Synthetic worlds: the business and culture of online games*. Chicago: University of Chicago Press.

Causey, M. (1999). The Screen Test of the Double: The Uncanny Performer in the Space of Technology. *Theatre Journal, 51*(4), 383-394.

Cavallaro, A., Jonson, A., & Tofts, D. (2002). *Prefiguring cyberculture: an intellectual history*. Cambridge, Mass.; Sydney: MIT Press; Power Publications.

Cavell, S. (1979). *The world viewed: reflections on the ontology of film*. Cambridge: Harvard University Press.

Chadwick, W. (2001). How do I look? In L. Rideal, W. Chadwick & F. Borzello (Eds.), *Mirror mirror: self-portraits by women artists*. London: National Portrait Gallery.

Chadwick, W., & Ades, D. (1998). *Mirror images: women, surrealism, and self-representation*. Cambridge, Mass.; London: MIT Press.

Chandler, A. (2005). Animating the Social: Mobile Image/Kit Galloway and Sherrie Rabinowitz. In A. Chandler & N. Neumark (Eds.), *At a distance: precursors to art and activism on the Internet* (pp. 152-174). Cambridge, Mass.: MIT Press.

Chandler, A., & Neumark, N. (2005). *At a distance: precursors to art and activism on the Internet*. Cambridge, Mass.: MIT Press.

Cherny, L. (1999). *Conversation and community: chat in a virtual world*. Stanford, Calif.: CSLI Publications.

Cheung, C. (2000). A Home on the Web: Presentations of Self on Personal Homepages. In D. Gauntlett (Ed.), *Web studies: rewiring media studies for the digital age* (pp. 43-51). London: Arnold.

Chun, W. H. K. (2005). On Software, or the Persistence of Visual Knowledge. *Grey Room, 18*(Winter), 26-51.

Chun, W. H. K. (2006). *Control and freedom: power and paranoia in the age of fiber optics*. Cambridge, Mass.: MIT Press.

Clark, A. (1997). *Being there: putting brain, body, and world together again*. Cambridge, Mass.: MIT Press.

Clark, A. (2003). *Natural-born cyborgs: minds, technologies, and the future of human intelligence*. New York: Oxford University Press.

Clarke, J. (2001). Review of Company in Space Performance - Capital Theatre, Melbourne. Retrieved 5 January, 2004, from http://www.brunel.ac.uk/depts/pfa/bstjournal/index.htm

Cleland, K. (2008 [forthcoming]). Face-to-face: Avatars and Mobile Identities. In G. Goggin & L. Hjorth (Eds.), *Mobiles into Media*. New York; London: Routledge.

Cleland, K. (2007). Entering the Screen. *Artlink*, 27(3), 22-27.

Cleland, K. (2006, 27-29 November). Image Avatars and Media Mirrors. Paper presented at the *Engage: audience, art and interaction* Conference, UTS, Sydney.

Cleland, K. (2004, 16-19 November). Talk to Me: getting personal with interactive art. Paper presented at *Interaction: systems, practice and theory*, UTS, Sydney.

Cleland, K. (2004, 26-29 May). The Virtual Self: the Avatar as Digital Self-Portrait. Paper presented at *Ciber@rt Bilbao: Challenges for a ubiquitous identity*. Bilbao, Spain.

Cleland, K. (2003, 10-12 October). The Evolution of the Avatar. Paper presented at *Plaything*. University of Sydney.

Clynes, M. E., & Kline, N. S. (1960). Cyborgs and Space. *Astronautics* (September 1960).

Cobb, N. (1995, 16 November). Sherry Turkle: The High Priestess of Cyberspace. *New York Times*.

Cohen, J. (1966). *Human Robots in Myth and Science*. London: Allen and Unwin.

Cole, J. (1998). *About face*. Cambridge, Mass.; London: MIT Press.

Coleridge, S. T. (1817). *Biographia Literaria*.

Comolli, J.-L. (1996). Machines of the Visible. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 108-117). New York: Aperture.

Conley, V. A., & Miami Theory Collective (Oxford Ohio). (1993). *Rethinking technologies*. Minneapolis: University of Minnesota Press.

Cooley, C. H. (1922). *Human nature and the social order* (Revised Edition ed.). New York: Scribner's Sons.

Cooper, R., Dibbell, J., & Spaight, T. (2007). *Alter ego: avatars and their creators*. London: Chris Boot.

Cooper, S. K. (2002). *Technoculture and critical theory: in the service of the machine?* London ; New York: Routledge.

Cotter, H. (2001, January 19). Films That Keep Asking, Is It Fact or Fiction? *New York Times*.

Crary, J. (1992). *Techniques of the observer: on vision and modernity in the nineteenth century*. Cambridge [Mass.]: MIT Press.

Crary, J. (1998). Modernizing Vision. In H. Foster (Ed.), *Vision and Visuality* (pp. 29-50). New York: The New Press.

Crawford, C., & Adams, E. (2003). *Chris Crawford on game design*. Indianapolis, Ind.: New Riders.

Crawford, G. (2004). Interview with Graham Crawford by Kathy Cleland.

Crawford, K. (2006). *Adult themes: rewriting the rules of adulthood*. Sydney: Macmillan.

Creed, B. (2003). *Media matrix: sexing the new reality*. Crows Nest, NSW: Allen & Unwin.

Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety* (1st ed.). San Francisco: Jossey-Bass Publishers.

Csikszentmihalyi, M. (1991). *Flow : the psychology of optimal experience* (1st. Harper Perennial ed.). New York: Harper Collins.

Csikszentmihalyi, M., & Csikszentmihalyi, I. S. (1988). *Optimal experience: psychological studies of flow in consciousness*. Cambridge; New York: Cambridge University Press.

Cubitt, S. (2004). *The cinema effect*. Cambridge, Mass.: MIT Press.

Damasio, A. (2000). *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. Orlando, Florida: Harcourt.

Damasio, A. R. (1994). *Descartes' error: emotion, reason, and the human brain*. New York: G.P. Putnam.

Damasio, A. R. (2003). *Looking for Spinoza: joy, sorrow, and the feeling brain* (1st ed.). Orlando, Fla.: Harcourt.

Davies, A. (n.d.). Swarm. Retrieved 6 August, 2006, from http://schizophonia.com/installation/index.htm

Davis, C. (2005). Hauntology, spectres and phantoms. *French Studies, 59*(3).

De Beauvoir, S. (1988). *The Second Sex* (H. M. Parshley, Trans.). London: Pan.

Deleuze, G. (1986). *Cinema 1: the movement-image*. London: Athlone.

Deleuze, G. (1989). *Cinema 2: The Time-Image* (H. Tomlinson & R. Galeta, Trans.). Minneapolis: University of Minnesota Press.

Deleuze, G., & Guattari, F. (1988). *A thousand plateaus: capitalism and schizophrenia*. London: Athlone Press.

Deren, M. (1992). Cinematography: The Creative Use of Reality. In G. Mast, M. Cohen & L. Braudy (Eds.), *Film theory and criticism: introductory readings* (4th ed., pp. 59-70). New York: Oxford University Press.

Derrida, J. (1994). *Specters of Marx: The State of the Debt, the Work of Mourning, and the New International*. New York: Routledge.

Derrida, J. (1996). *Archive fever: a Freudian impression*. Chicago: University of Chicago Press.

Dery, M. (1996). *Escape velocity: cyberculture at the end of the century* (1st ed.). New York: Grove Press.

Dibbell, J. (1998). *My Tiny Life: Crime and Passion in a Virtual World*. New York: Henry Holt.

Dibbell, J. (2001). A Rape in Cyberspace. In D. Trend (Ed.), *Reading digital culture* (pp. 199-213). Malden, Mass.; Oxford: Blackwell Publishers.

Dienst, R. (1994). *Still life in real time : theory after television*. Durham, N.C.: Duke University Press.

Dixon, S. (2007). *Digital performance: a history of new media in theater, dance, performance art, and installation*. Cambridge, Mass.: MIT Press.

Dodson, S. (November 6, 2003). The making of a woman. *The Guardian*.

Dougary, G. (2006, October 28). Never mind the Botox. *Good Weekend Magazine, The Sydney Morning Herald,* 88.

Druckrey, T. (1996). *Electronic culture: technology and visual representation*. New York: Aperture.

Druckrey, T. (1999). *Ars Electronica: Facing the Future*. Cambridge, MA: MIT Press.

Duchenne De Boulogne, G.-B. (1862). *The Mechanism of Human Facial Expression* (R. A. Cuthbertson, Trans.). Paris: Jules Renard.

Duckett, V. (2000). Beyond the Body: Orlan and the Material Morph. In V. C. Sobchack (Ed.), *Meta-morphing: visual transformation and the culture of quick-change* (pp. 209-224). Minneapolis: University of Minnesota Press.

Dyens, O. (2001). *Metal and flesh: the evolution of man: technology takes over*. Cambridge, Mass.: MIT Press.

Ehrsson, H. H. (2007). The Experimental Induction of Out-of-Body Experiences. *Science, 317*, 1048.

Ekman, P. (1973). *Darwin and facial expression; a century of research in review*. New York,: Academic Press.

Ekman, P., & Friesen, W. V. (1978). *Facial action coding system: investigator's guide*. Palo Alto, Calif.: Consulting Psychologists Press.

Ekman, P., Friesen, W. V., & Ellsworth, P. (1972). *Emotion in the human face: guide-lines for research and an integration of findings*. New York: Pergamon Press.

Elliott, C. (1997, February). *I picked up catapia and other stories: a multimodal approach to expressivity for 'emotionally intelligent' agents.* Paper presented at the First International Conference on Autonomous Agents. Marina del Rey California.

Elsenaar, A., & Scha, R. (2002). Electric Body Manipulation as Performance Art: A Historical Perspective. *Leonardo Music Journal, 12*, 17-28.

Enzensberger, H. M. (1996). Constituents of a Theory of the Media. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 47-61). New York: Aperture.

Ewing, W. A. (2006). *Face: The New Photographic Portrait*. London and New York: Thames and Hudson.

Ewing, W. A., Blaser, J.-C., & Herschdorfer, N. (2004). *The Faces in the Mirror*. London: Hayward Gallery.

Featherstone, M., & Burrows, R. (1995). *Cyberspace/cyberbodies/cyberpunk: cultures of technological embodiment*. London: Sage.

Feingold, K. (2003). The Subject of Artificial Intelligence. Retrieved 22 September, 2006, from http://www.kenfeingold.com/docs/AI.html

Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, Ill: Row Peterson.

Fink, J. (1999). *Cyberseduction: Reality in the Age of Psychotechnology*. New York: Prometheus Books.

Flanagan, M. (1999). Mobile Identities, Digital Stars, & Post-Cinematic Selves. *Wide Angle: Special Issue on Digitality & the Memory of Cinema, 21*(1), 76-93.

Flanagan, M. (2003). The bride stripped bare to her Data: information flow and digibodies. In R. Mitchell & P. Thurtle (Eds.), *Data Made Flesh* (pp. 153-180). New York: Routledge.

Flanagan, M., & Booth, A. (2002). *Reload: rethinking women + cyberculture*. Cambridge, Mass.: MIT Press.

Flew, T. (2002). *New media: an introduction*. South Melbourne, Vic.: Oxford University Press.

Florence, P. (2003). Cybiog and sexed digitalia. *Digital Creativity, 14*(3), 144 - 151.

Flusser, V. (1996). Digital Apparition. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 242-246). New York: Aperture.

Flusser, V. (2000). *Towards a philosophy of photography* (A. Mathews, Trans.). London: Reaktion.

Fogassi, L., Ferrari, P. F., Gesierich, B., Rozzi, S., Chersi, F., & Rizzolatti, G. (2005). Parietal lobe: from action organization to intention understanding. *Science, 308*, 662-667.

Foster, H. (1999). *Vision and visuality*. New York, N.Y.: New Press.

Foucault, M. (1979). *Discipline and punish: the birth of the prison*. New York: Vintage Books.

Foucault, M. (1986). Of Other Spaces. *Diacritics, 16*(1), 22-27.

Foucault, M. (1988). Technologies of the self. In L. H. Martin, H. Gutman & P. H. Hutton (Eds.), *Technologies of the self: a seminar with Michel Foucault* (pp. 16-49). Amherst: University of Massachusetts Press.

Franz, T. (2004). *Constructing Cyberselves and Identities: a Qualitative Study of The Sims Online.* Unpublished Masters of Arts, York University, Toronto.

Freud, S. (2003). *The Uncanny* (H. Haughton, Trans.). London: Penguin.

Freud, S., & Riviere, J. (1925). *Collected papers*. London: Hogarth Press and the Institute of Psycho-analysis.

Freud, S., Strachey, J., Tyson, A., & Richards, A. (1976). *The interpretation of dreams*. Harmondsworth, Middlesex: Penguin.

Friedberg, A. (1993). *Window shopping: cinema and the postmodern*. Berkeley: University of California Press.

Friedberg, A. (2003). The Virtual Window. In D. Thorburn, H. Jenkins & B. Seawell (Eds.), *Rethinking media change: the aesthetics of transition* (pp. 337-353). Cambridge, Mass.: MIT Press.

Friedberg, A. (2006). *The Virtual Window: From Alberti to Microsoft*. Cambridge, Mass.: MIT Press.

Frieling, R. (n.d.). Reality/Mediality: Hybrid processes between art and life. Retrieved 11 March, 2004, from http://www.medienkunstnetz.de/themes/overview_of_media_art/performance/

Fuller, M. (2003). *Behind the Blip: Essays on the Culture of Software*. New York: Autonomedia.

Fuller, M., & Malina, R. F. (2005). *Media ecologies: materialist energies in art and technoculture*. Cambridge, Mass.: MIT Press.

Fullerton, T., Swain, C., & Hoffman, S. (2004). *Game design workshop: designing, prototyping, and playtesting games*. San Francisco, Calif. Berkeley, CA: CMP.

Gadamer, H. G. (1975). *Truth and Method*. New York: Continuum.

Gallese, V. (2003). The roots of empathy: The shared manifold hypothesis and the neural basis of intersubjectivity. *Psychopathology, 36*(4), 171.

Galloway, K., & Rabinowitz, S. (n.d.). Hole-In-Space, 1980. Retrieved 3 December, 2004, from http://www.ecafe.com/getty/HIS/index.html

Garber, M. B. (1993). *Vested interests: cross-dressing & cultural anxiety*. London: Penguin.

Gauntlett, D. (2000). *Web studies: rewiring media studies for the digital age*. London: Arnold.

Gauntlett, D., & Horsley, R. (2004). *Web studies* (2nd ed.). London: Arnold.

Genosko, G. (1999). *McLuhan and Baudrillard: the masters of implosion*. London ; New York: Routledge.

Gere, C. (2002). *Digital culture*. London: Reaktion Books.

Gergen, K. J. (1991). *The saturated self: dilemmas of identity in contemporary life*. New York: Basic Books.

Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin.

Gibson, W. (1993). *Neuromancer*. London: HarperCollins.

Gibson, W. (1996). *Idoru*. London: Penguin.

Giddens, A. (1991). *Modernity and self-identity: self and society in the late modern age*. Stanford, Calif.: Stanford University Press.

Gitelman, L. (2006). *Always already new: media, history, and the data of culture*. Cambridge, Mass.; London: MIT Press.

Goffman, E. (1972). *Interaction ritual: essays in face-to-face behavior*. London: Allen Lane.

Goffman, E. (1973). *The presentation of self in everyday life*. New York: Overlook P.

Goldberg, K. (2000). *The robot in the garden: telerobotics and telepistemology in the age of the Internet*. Cambridge, Mass.; London: MIT Press.

Goodman, N. (1978). *Ways of worldmaking*. Indianapolis: Hackett Pub. Co.

Gordon, D. (2004, October 25). Polar Expedition. *Newsweek*.

Graham, D. (1993). Video in Relation to Architecture. Retrieved 29 May 2006, 2006, from http://thegalleriesatmoore.org/publications/grahamdg.shtml

Grau, O. (2003). *Virtual art: from illusion to immersion*. Cambridge, Mass.: MIT Press.

Gray, C. H. (2001). *Cyborg citizen: politics in the posthuman age*. New York: Routledge.

Gray, C. H., Mentor, S., & Figueroa-Sarriera, H. (1995). *The cyborg handbook*. London; New York: Routledge.

Green, L. (2002). *Technoculture: from alphabet to cybersex*. Crows Nest, N.S.W.: Allen & Unwin.

Green, L., & Guinery, R. (1994). *Framing technology: society, choice, and change*. St. Leonards, N.S.W.: Allen & Unwin.

Greenblatt, S. (1984). *Renaissance self-fashioning: from More to Shakespeare*. Chicago and London: University of Chicago Press.

Greene, R. (2004). *Internet art*. London: Thames & Hudson.

Greenfield, A. (2006). *Everyware: The Dawning Age of Ubiquitous Computing*. Indianapolis: New Riders Publishing.

Gromala, D. (1997). Virtual Avatars: Subjectivity in Virtual Environments. *Visible Language, 31*(2), 214-229.

Grosz, E. A. (1990). *Jacques Lacan: a feminist introduction*. Sydney: Allen & Unwin.

Grosz, E. A. (1990). Inscriptions and Body-Maps: Representation and the Corporeal. In T. Threadgold & A. Cranny-Francis (Eds.), *Feminine / masculine and representation* (pp. 62-74). Sydney: Allen & Unwin.

Grosz, E. A., (1994). *Volatile bodies: toward a corporeal feminism*. St. Leonards, N.S.W.: Allen & Unwin.

Guerre, M. d. (Dir.) (2004). *A Perfect Fake* [Documentary Film]. Primitive Entertainment Inc (Producer). Canada.

Gunning, T. (1995). An Aesthetic of Astonishment: Early Film and the (In)Credulous Spectator. In L. Williams (Ed.), *Viewing positions: ways of seeing film* (pp. 114-133). New Brunswick, N.J.: Rutgers University Press.

Gunning, T. (2003). Re-Newing Old Technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn of the Century. In D. Thorburn, H. Jenkins & B. Seawell (Eds.), *Rethinking media change: the aesthetics of transition* (pp. 39-60). Cambridge, Mass.: MIT Press.

Gunning, T. (2005). The Diva, the Tiger, and the Three-Legged Spider. In L. Pirandello, *Shoot!: the notebooks of Serafino Gubbio, cinematograph operator* (pp. vii-xiv). Chicago: University of Chicago Press.

Hall, D., & Fifer, S. J. (Ed.). (1990). *Illuminating video: an essential guide to video art*. New York, N.Y.: Aperture in association with the Bay Area Video Coalition.

Hall, S. (1996). The Meaning of New Times. In D. Morley & K.-H. Chen (Eds.), *Stuart Hall: Critical Dialogues in Cultural Studies*. New York: Routledge.

Haller, M., Billinghurst, M., & Thomas, B. (Eds.). (2007). *Emerging technologies of augmented reality: interfaces and design*. Hershey PA: Idea Group Pub.

Hamelink, C. J. (2000). *The ethics of cyberspace*. London; Thousand Oaks, Calif.: Sage.

Hamilton, P., Hargreaves, R., & National Portrait Gallery (Great Britain). (2001). *The beautiful and the damned: the creation of identity in nineteenth century photography*. Aldershot, Hampshire, England; Burlington, VT: Lund Humphries.

Hanhardt, J. G. (1986). *Video culture: a critical investigation*. Layton, Utah: G.M. Smith Peregrine Smith Books in association with Visual Studies Workshop Press.

Hansen, M. (1995). Early Cinema, Late Cinema: Transformations of the Public Sphere. In L. Williams (Ed.), *Viewing positions: ways of seeing film* (pp. 134-152). New Brunswick, N.J.: Rutgers University Press.

Hansen, M. B. N. (2004). *New philosophy for new media*. Cambridge, Mass.: MIT Press.

Hansen, M. B. N. (2006). *Bodies in code: interfaces with new media*. New York: Routledge.

Hanson, D. (2003). Interpreting the Neural Basis of the "Uncanny Valley". Retrieved 2 February 2006, from http://www.hansonrobotics.com/press.php

Hanson, D. (2006, 26 July). *Exploring the Aesthetic Range for Humanoid Robots.* Paper presented at the Toward Social Mechanisms of Android Science: an ICCS/CogSci-2006 Long Symposium, Vancouver, Canada.

Hanson, M. (2004). *The end of celluloid: film futures in the digital age*. Crans-Près-Céligny; Hove: RotoVision.

Haraway, D. J. (1991). A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century. In *Simians, cyborgs and women: the reinvention of nature* (pp.149-181). London: Free Association.

Haraway, D.J. (1997). Modest_Witness@Second_Millennium.FemaleMan_Meets_OncoMouse: feminism and technoscience. New York; London: Routledge.

Harries, D. (Ed.). (2002). *The new media book*. London: British Film Institute.

Harwood, G. (1996). *Rehearsal of Memory* [CD-ROM]: Artec and Bookworks.

Hayles, N. K. (1993). The Seductions of Cyberspace. In V. A. Conley (Ed.), *Rethinking technologies* (pp. 173-190). Minneapolis: University of Minnesota Press.

Hayles, N. K. (1996a). Virtual Bodies and Flickering Signifiers. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 259-277). New York: Aperture.

Hayles, N. K. (1996b). Embodied virtuality, or how to put bodies back into the picture. In M. A. Moser & D. MacLeod (Eds.), *Immersed in Technology: Art and Virtual Environments* (pp. 1-28). Cambridge, MA: MIT Press.

Hayles, N. K. (1999). *How we became posthuman: virtual bodies in cybernetics, literature, and informatics*. Chicago, Ill.: University of Chicago Press.

Hayles, N. K. (2005). *My mother was a computer: digital subjects and literary texts*. Chicago: University of Chicago Press.

Hayward, P. (1990). *Culture, technology & creativity in the late twentieth century*. London: J. Libbey.

Hayward, P., Wollen, T., & Arts Council of Great Britain. (1993). *Future visions: new technologies of the screen*. London: BFI Pub.; Arts Council of Great Britain.

Heidegger, M. (1977). *The question concerning technology and other essays* (Paperback ed.). New York: Harper & Row.

Heim, M. (1999). Transmogrification. Retrieved 5 July 2005, from http://www.mheim.com/files.transmog.pdf

Heim, M. (2000). Some Observations On Web-Art-Writing, & The Avatar Manifesto. *fineArt forum, 14*(9). Retrieved 8 March 2006, from http://www.fineartforum.org/Backissues/Vol_14/faf_v14_n09/text/feature.html

Hershman, L. (2001). Romancing the Anti-body: Lust and Longing in (Cyber)space. Retrieved 20 November 2005, from http://telematic.walkerart.org/telereal/hershman_hershman2.html

Hershman-Leeson, L. (1996). *Clicking in: hot links to a digital culture*. Seattle: Bay Press.

Hillis, K. (1999). *Digital sensations: space, identity, and embodiment in virtual reality*. Minneapolis: University of Minnesota Press.

Hine, C. (2000). *Virtual ethnography*. London; Thousand Oaks, Calif.: Sage.

Hjorth, L. (2006, 15-16 March). *Snapshots of almost contact: gendered camera phone practices and a case study in Seoul, Korea.* Paper presented at the AFF Cultural Space and Public Sphere in Asia: An International Conference, Seoul Olympic Parktel.

Hjorth, L., & Kim, H. (2005). Being There and Being Here: Gendered Customising of Mobile 3G Practices Through a Case Study in Seoul. *Convergence, 11*(2), 49-55.

Huhtamo, E. (1995). Encapsulated Bodies in Motion: Simulators and the Quest for Total Immersion. In S. Penny (Ed.), *Critical Issues in Electronic Media* (pp. 159-186). New York: State University of New York.

Huhtamo, E. (1998). Seeing at a Distance - Towards an Archeology of the "Small Screen". In C. Sommerer & L. Mignonneau (Eds.), *Art@science* (pp. 262-278). Wien; New York: Springer.

Huizinga, J. (1955). *Homo ludens: a study of the play-element in culture*. Boston: Beacon Press.

Hunter, J. P. (1990). *Before novels: the cultural contexts of eighteenth-century English fiction* (1st ed.). New York: Norton.

Huyghe, P., Parreno, P. (Eds.). (2003). *No ghost just a shell*. Köln: Buchhandlung Walther König.

Ieven, B. (2003). How to Orientate Oneself in the World: A General Outline of Flusser's Theory of Media. *Image [&] Narrative: Online Magazine of the Visual Narrative*,(6). Retrieved 1 February 2005, from http://www.imageandnarrative.be/mediumtheory/bramieven.htm

Ihde, D. (1979). *Technics and Praxis*. Dordrecht, Holland: D. Reidel Publishing Group.

Ihde, D. (1990). *Technology and the lifeworld: from garden to earth*. Bloomington: Indiana University Press.

Ihde, D. (2002). *Bodies in technology*. Minneapolis: University of Minnesota Press.

Ishiguro, H. (2005, 26 July). *Android Science: Toward a new cross-disciplinary framework.* Paper presented at the Toward Social Mechanisms of Android Science: an ICCS/CogSci-2005 Workshop, Stresa, Italy. Retrieved 15 January 2007, from http://www.androidscience.com.

Ito, M. (2005, September 11—14). *Intimate Visual Co-Presence.* Paper presented at the UbiComp2005: The Seventh International Conference on Ubiquitous Computing, Takanawa Prince Hotel, Tokyo, Japan.

Jabbi, M., Swart, M., & Keysers, C. (2006). Empathy for positive and negative emotions in the gustatory cortex. *Neuroimage, 34*(4), 1744-1753.

Jackson, C. (2002). *Living Doll*. London: Trafalgar Square.

Jackson, R. (1981). *Fantasy, the literature of subversion*. London; New York: Methuen.

James, W. (1890). *The principles of psychology*. London: Macmillan.

Jameson, F. (1991). *Postmodernism, or, the cultural logic of late capitalism*. Durham: Duke University Press.

Jay, M. (1998). Scopic Regimes of Modernity. In H. Foster (Ed.), *Vision and Visuality* (pp. 3-28). New York: The New Press.

Jenkins, H. (2006a). *Convergence culture: where old and new media collide*. New York: New York University Press.

Jenkins, H. (2006b). *Fans, bloggers, and gamers: exploring participatory culture*. New York: New York University Press.

Jenkins, W. (2004, December 5). The Polar Express: A Virtual Train Wreck. Retrieved 14 December 2006, from http://wardomatic.blogspot.com/2004/12/polar-express-virtual-train-wreck.html

Jones, A. (1998). *Body art/performing the subject*. Minneapolis: University of Minnesota Press.

Jones, C. A. (Ed.). (2006). *Sensorium: embodied experience, technology, and contemporary art*. Cambridge, Mass.: MIT Press.

Jones, S. (Ed.). (1997). *Virtual culture: identity and communication in cybersociety*. London; Thousand Oaks: Sage Publications.

Jones, S. (Ed.). (1998). *CyberSociety 2.0: revisiting computer-mediated communication and community*. Thousand Oaks, Calif.: Sage Publications.

Jones, S. (Ed.). (1999). *Doing Internet research: critical issues and methods for examining the Net*. Thousand Oaks, Calif.: Sage Publications.

Kanelios, M. (2006, August 11). Korean social-networking site hopes to nab U.S. fans. *CNET News.com*. Retrieved 5 September 2006, from http://news.com.com/Korean+social-networking+site+hopes+to+nab+U.S.+fans/2100-1025_3-6104794.html

Kanwisher, N., McDermott, J., & Chun, M. M. (1977). The fusiform face area: a module in human extrastriate cortex specialized for face perception. *Journal of Neuroscience, 17*, 4302-4311.

Keegan, V. (2008, October 2). We'll all be citizens of virtual worlds. *The Guardian*. Retrieved 15 October 2008, from http://www.guardian.co.uk/technology/2008/oct/02/virtual.worlds

Kemp, S., Bruce, V., & Linney, A. (2004). *Future face: image, identity, innovation*. London: Profile Books.

Kendall, L. (1996). MUDder? I Hardler Know 'Er! Adventures of a Feminist MUDder. In E. R. Weise & L. Cherny (Eds.), *Wired women: gender and new realities in cyberspace* (pp. 207-223). Seattle, Wash.; Emeryville, CA: Seal Press.

Kerckhove, D. d. (1991a). The new psychotechnologies. In D. Crowley & P. Heyer (Eds.), *Communication in history: Technology, culture, society* (pp. 267-272). New York: Longman.

Kerckhove, D. d. (1991b). Communication Arts for a New Spatial Sensibility. *Leonardo, 24*(2), 131-135.

Kerckhove, D. d. (1997). *Connected intelligence: the arrival of the web society*. Toronto: Somerville House Publishing.

King, B. (2003). Get real! Creating a Sim in The Sims Online™. Retrieved 1 October, 2003, from http://www.eagames.com/official/thesimsonline/features/fun_may02.jsp

Kittler, F. A. (1996). There is no Software. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 331-337). New York: Aperture.

Kittler, F. A. (1999). *Gramophone, film, typewriter*. Stanford, Calif.: Stanford University Press.

Kittler, F. A., & Johnston, J. (1997). *Literature, media, information systems: essays*. Amsterdam: GB Arts International.

Kleiser, J. (2002). Synthespianism. Retrieved 11 June, 2006, from http://www.kurzweilai.net/meme/frame.html?main=/articles/art0526.html

Knight, W. (2006, 15 November). Virtual reality system combats phantom-limb pain. *New Scientist* Retrieved 3 March, 2007, from http://technology.newscientist.com/article/dn10579-virtual-reality-system-combats-phantomlimb-pain.html

Koerner, J. L. (1993). *The moment of self-portraiture in German renaissance art*. Chicago: University of Chicago Press.

Kollock, P., & Smith, M. A. (Eds.). (1999). *Communities in cyberspace*. London; New York: Routledge.

Kozel, S. (1998). Spacemaking: Experiences of a Virtual Body. In A. Carter (Ed.), *Routledge Reader in Dance Studies* (pp. 81-88). London and New York: Routledge.

Krauss, R. (1986). Video: The Aesthetics of Narcissism. In J. Hanhardt (Ed.), *Video Culture: A Critical Investigation* (pp. 179-191). Layton, Utah: G.M. Smith Peregrine Smith Books in association with Visual Studies Workshop Press.

Krauss, R. (1993). *Cindy Sherman: 1975-1993*. New York: Rizzoli.

Krauss, R. (1998). The Im/pulse to See. In H. Foster (Ed.), *Vision and Visuality* (pp. 51-78). New York: The New Press.

Krauss, R. E. (2000). *"A voyage on the North Sea": art in the age of the post-medium condition*. London: Thames & Hudson.

Kress, G. R., & Van Leeuwen, T. (1996). *Reading images: the grammar of visual design*. London; New York: Routledge.

Kristeva, J. (1982). *Powers of horror: an essay on abjection*. New York: Columbia University Press.

Kristeva, J. (1991). *Strangers to ourselves*. New York: Columbia University Press.

Kroker, A. (2004). *The will to technology and the culture of nihilism: Heidegger, Nietzsche and Marx*. Toronto: University of Toronto Press.

Kurzweil, R. (1990). *The age of intelligent machines*. Cambridge, Mass.: MIT Press.

Kurzweil, R. (1999). *The age of spiritual machines: how we will live, work and think in the new age of intelligent machines*. London: Phoenix.

Kurzweill, R. (2002). Reflections on S1m0ne. Retrieved 11 June, 2006, from http://www.kurzweilai.net/meme/frame.html?main=/articles/art0514.html

Lacan, J. (1977). *Écrits: a selection*. London: Tavistock Publications.

Lacan, J., & Miller, J.-A. (1978). *The four fundamental concepts of psycho-analysis* (1st American ed.). New York: Norton.

Lasch, C. (1978). *The culture of narcissism: American life in an age of diminishing expectations* (1st ed.). New York: Norton.

Latour, B. (1986). The Powers of Association. In J. Law (Ed.), *Power, action, and belief: a new sociology of knowledge?* (pp. 264-280). London; Boston: Routledge & Kegan Paul.

Latour, B. (2005). *Reassembling the social: an introduction to actor-network-theory*. Oxford: Clarendon.

Laurel, B. (Ed.). (1990). *The art of human-computer interface design*. Reading, Mass.: Addison-Wesley Pub. Co.

Laurel, B. (1990). Interface Agents: metaphors with character. In B. Laurel & S. J. Mountford (Eds.), *The art of human-computer interface design* (pp. 355-365). Reading, Mass.: Addison-Wesley Pub. Co.

Laurel, B. (1991). *Computers as theatre*. Reading, Mass.: Addison-Wesley Pub. Co.

Laurel, B. (2001). Computers as Theatre. In D. Trend (Ed.), *Reading digital culture* (pp. 109-114). Malden, Mass.; Oxford: Blackwell Publishers.

Lavater, J. C. (1789). *Essays on physiognomy: for the promotion of the knowledge and the love of mankind* (T. Holcroft, Trans.). London: Printed for G.G.J. and J. Robinson.

Law, J. (1986). *Power, action, and belief: a new sociology of knowledge?* London; Boston: Routledge & Kegan Paul.

Law, J. (1986). On the Methods of Long Distance Control: Vessels, Navigation and the Portuguese Route to India. In J. Law (Ed.), *Power, action, and belief: a new sociology of knowledge?* (pp. 234-263). London; Boston: Routledge & Kegan Paul.

Law, J., & Hassard, J. (Eds.). (1999). *Actor network theory and after*. Oxford: Blackwell Publishers.

Legrady, G. (1995). Image, Language, and Belief in Synthesis. In S. Penny (Ed.), *Critical Issues in Electronic Media* (pp. 187-203). New York: State University of New York.

Lenggenhager, B., Tadi, T., & Blanke, O. (2007). Video Ergo Sum: Manipulating Bodily Self-Consciousness. *Science, 317*, 1096-1099.

Leonard, A. (1998). *Bots: The Origin of New Species*. New York: Penguin.

Lessig, L. (2000). *Code and other laws of cyberspace*. New York: Basic Books.

Lessig, L. (2002). *The future of ideas: the fate of the commons in a connected world* (1st Vintage Books ed.). New York: Vintage Books.

Lester, J. C., Towns, S. G., Callaway, C. B., Voerman, J. L., & FitzGerald, P. J. (2000). Deictic and Emotive Communication in Animated Pedagogical Agents. In J. Cassell, J. Sullivan, S. Prevost & E. Churchill (Eds.), *Embodied conversational agents* (pp. 123-154). Cambridge, Mass.: MIT Press.

Lévinas, E., & Nemo, P. (1985). *Ethics and infinity* (1st ed.). Pittsburgh: Duquesne University Press.

Levinson, P. (2001). *Digital McLuhan: a guide to the information millenium*. New York: Routledge.

Lévy, P. (1997). *Collective intelligence: mankind's emerging world in cyberspace*. New York: Plenum Trade.

Lévy, P. (1998). *Becoming virtual: reality in the Digital Age*. New York: Plenum Trade.

Lévy, P. (2001). *Cyberculture*. Minneapolis: University of Minnesota Press.

Lieb, I. C. (1991). *Past, present, and future: a philosophical essay about time*. Urbana: University of Illinois Press.

Lister, M. (2003). *New media: a critical introduction*. London; New York: Routledge.

Little, G. (1998). A Manifesto for Avatars. Retrieved 7 October, 2002, from http://art.bgsu.edu/~glittle/ava_text_1.html

Livingstone, S. M., & Lievrouw, L. A. (Eds.). (2002). *Handbook of new media: social shaping and consequences of ICTs*. London: Sage.

Lubar, S. D. (1993). *InfoCulture: the Smithsonian book of information age inventions*. Boston: Houghton Mifflin.

Ludlow, P. (1996). *High noon on the electronic frontier: conceptual issues in cyberspace*. Cambridge, Mass.: MIT Press.

Lunenfeld, P. (Ed.). (1999). *The digital dialectic: new essays on new media*. Cambridge, Mass.: MIT Press.

Lury, C. (1998). *Prosthetic culture: photography, memory and identity*. London: Routledge.

Lutz, C., & Colliins, J. (1994). The Photograph as an Intersection Of Gazes: The Example of National Geographic. In L. Taylor (Ed.), *Visualizing theory* (pp. 363-384). New York: Routledge.

MacDorman, K. F. (2006, 26 July 2006). *Subjective Ratings of Robot Video Clips for Human Likeness, Familiarity, and Eeriness: An Exploration of the Uncanny*

Valley. Paper presented at the Toward Social Mechanisms of Android Science: an ICCS/CogSci-2006 Long Symposium, Vancouver, Canada.

Mackenzie, A. (2002). *Transductions: bodies and machines at speed*. London: Continuum.

Maes, P. (1990). *Designing autonomous agents: theory and practice from biology to engineering and back* (1st MIT Press ed.). Cambridge, Mass.: MIT Press.

Maes, P. (1995). *Interacting with Virtual Pets and other Software Agents.* Paper presented at the Doors of Perception 2, Netherlands.

Mann, C., & Stewart, F. (2000). *Internet communication and qualitative research: a handbook for researching online*. London: Sage.

Manovich, L. (1995a). From the Externalization of the Psyche to the Implantation of Technology. Retrieved 21 October, 2006, from http://www.manovich.net/TEXT/externalization.html

Manovich, L. (1995b). The Paradoxes of Digital Photography. Retrieved 8 December, 2006, from http://www.manovich.net/TEXT/digital_photo.html

Manovich, L. (2001). *The language of new media*. Cambridge, Mass.; London: MIT Press.

Manovich, L. (2006). Visual Technologies as Cognitive Prostheses: A Short History of the Externalization of the Mind. In M. Smith & J. Morra (Eds.), *The prosthetic impulse: from a posthuman present to a biocultural future* (pp. 203-219). Cambridge, Mass.: MIT Press.

Markham, A. N. (1998). *Life online: researching real experience in virtual space.* Walnut Creek, CA: Altamira Press.

Martin, L. H., Gutman, H., & Hutton, P. H. (Eds.). (1988). *Technologies of the self: a seminar with Michel Foucault.* Amherst: University of Massachusetts Press.

Marvin, C. (1988). *When old technologies were new: thinking about electric communication in the late nineteenth century*. New York: Oxford University Press.

Massumi, B. (2002a). *Parables for the virtual: movement, affect, sensation*. Durham, N.C.: Duke University Press.

Massumi, B. (2002b). *A shock to thought: expression after Deleuze and Guattari*. London ; New York: Routledge.

Mast, G., Cohen, M., & Braudy, L. (Eds.). (1992). *Film theory and criticism: introductory readings* (4th ed.). New York: Oxford University Press.

McCorquodale, D. (Ed.). (1996). *Orlan: this is my body, this is my software*. London: Black Dog Publishing.

McLuhan, M. (1962). *The Gutenberg galaxy: the making of typographic man*. Toronto: University of Toronto Press.

McLuhan, M. (1967). *Understanding media: the extensions of man* (1st Sphere ed.). London: Sphere Books.

McLuhan, M. (1978, 17 March). A Last Look at the Tube. *New York Magazine*.

McLuhan, M., & Fiore, Q. (1967). *The medium is the massage*. New York: Bantam.

McNeill, D. (1988). *The Face.* Boston: Little, Brown and Co.

McQuire, S. (1997). *Crossing the digital threshold*. Brisbane: Australian Key Centre for Cultural and Media Policy Faculty of Humanities Griffith University.

McQuire, S. (1998). *Visions of modernity: representation, memory, time and space in the age of the camera*. London: Sage Publications.

Mead, G. H., & Morris, C. W. (1934). *Mind, self & society from the standpoint of a social behaviorist*. Chicago, Ill.: The University of Chicago press.

Melchior-Bonnet, S., & Jewett, K. H. (2001). *The mirror: a history*. New York; London: Routledge.

Merleau-Ponty, M. (1962). *Phenomenology of perception* (C. Smith, Trans.). London; New York: Routledge.

Merleau-Ponty, M. (1964). *The primacy of perception: and other essays on phenomenological psychology, the philosophy of art, history, and politics*. Evanston, Ill.: Northwestern University Press.

Merleau-Ponty, M., & Lefort, C. (1968). *The visible and the invisible*. Evanston, Ill.: Northwestern University Press.

Meskimmon, M. (1996). *The art of reflection: women artists' self-portraiture in the twentieth century*. New York: Columbia University Press.

Metz, C. (1982). *The imaginary signifier: psychoanalysis and the cinema*. Bloomington: Indiana University Press.

Metzinger, T. (2003). *Being no one: the self-model theory of subjectivity*. Cambridge, Mass.: MIT Press.

Miglietta, F. A. (2003). *Extreme bodies: the use and abuse of the body in art*. Milan, London: Skira, Thames & Hudson.

Milgram, P., & Kishino, F. (1994). A Taxonomy of Mixed Reality Visual Displays. *IEICE Transactions on Information Systems, E77-D*(12).

Mitchell, W. J. (1999). *E-topia: "Urban life, Jim--but not as we know it"*. Cambridge, MA: MIT Press.

Mitchell, W. J. T. (1994). *Picture theory: essays on verbal and visual representation*. Chicago: University of Chicago Press.

Mitchell, W. J. T. (1996). What do pictures really want? *October, 77*(Summer), 71-82.

Mitchell, W. J. T. (2005). *What do pictures want?: the lives and loves of images*. Chicago: University of Chicago Press.

Moravec, H. P. (1988). *Mind children: the future of robot and human intelligence*. Cambridge, Mass.: Harvard University Press.

Mori, M. (1970). Bukimi no tani (The uncanny valley). (K. F. MacDorman & T. Minato Trans. [2005]). Retrieved 10 December 2005, from http://www.androidscience.com/theuncannyvalley/proceedings2005/uncannyvalley.html

Morningstar, C., & Farmer, F. R. (1991). The Lessons of Lucasfilm's Habitat. In M. Benedikt (Ed.), *Cyberspace: first steps* (pp. 273-301). Cambridge, Mass.: MIT Press.

Morse, M. (1998). *Virtualities: television, media art, and cyberculture*. Bloomington: Indiana University Press.

Moser, M. A., & MacLeod, D. (Eds.). (1996). *Immersed in technology: art and virtual environments*. Cambridge, Mass.: MIT Press.

Mulvey, L. (1988). Visual Pleasure and Narrative Cinema. In *Feminism and Film Theory* (pp. 57-68). New York: Routledge.

Munster, A. (2006). *Materializing new media: embodiment in information aesthetics* (1st ed.). Dartmouth, N.H.: Dartmouth College Press.

Murphie, A., & Potts, J. (2003). *Culture and technology*. Basingstoke: Palgrave.

Murray, C., & Sixsmith, J. (1999). The Corporeal Body in Virtual Reality. *Ethos, 27*(3, Body, Self, and Technology), 315-343.

Murray, J. H. (1998). *Hamlet on the holodeck: the future of narrative in cyberspace*. Cambridge, Mass.: MIT Press.

Nakamura, L. (2000). Race In/For Cyberspace: Identity Tourism and Racial Passing on the Internet. In D. Bell (Ed.), *The Cybercultures Reader* (pp. 181-193). New York and London: Routledge.

Nakamura, L. (2002). *Cybertypes: race, ethnicity, and identity on the Internet*. New York: Routledge.

Nash, A. (2003). [post-avatar] Properties of Virtual Performance. *Post-avatar* 19 August 2003. Retrieved 14 June, 2005, from http://yamanakanash.net/pipermail/post-avatar

Nash, A., & Yamanaka, M. (2002). Artist Statement for In3Face. Retrieved 20 October, 2005, from http://yamanakanash.net/in3face/index.html

Nass, C. I., & Brave, S. (2005). *Wired for speech: how voice activates and advances the human-computer relationship*. Cambridge, Mass.: MIT Press.

Ndalianis, A. (2003). Architectures of the Senses: Neo-Baroque Entertainment Spectacles. In D. Thorburn, H. Jenkins & B. Seawell (Eds.), *Rethinking media change: the aesthetics of transition* (pp. 355-373). Cambridge, Mass.: MIT Press.

Negroponte, N. (1995). *Being digital*. Rydalmere, N.S.W.: Hodder & Stoughton.

Nelson, R. S., & Shiff, R. (Eds.). (2003). *Critical terms for art history* (2nd ed.). Chicago: University of Chicago Press.

Nicholls, B. (1996). The Work of Culture in the Age of Cybernetic Systems. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 121-144). New York: Aperture.

Nietzsche, F. W. (2002). *Beyond good and evil: prelude to a philosophy of the future*. Cambridge; New York: Cambridge University Press.Nobel, P. (2003).

Annlee: sign of the times. (Japanese anime comes to life). *Artforum International, 41*(5), 104-109.

Noë, A. (2004). *Action in perception*. Cambridge, Mass.: MIT Press.

Norman, D. A. (1994). How might people interact with agents. *Communications of the ACM, Special Issue on Agents, 37*(7), 68-71.

Norman, D. A. (1998). *The design of everyday things*. London: MIT.

Norman, D. A. (1999). Affordance, conventions, and design. *Interactions, 6*(3), 38-43.

Novak, M. (1991). Liquid Architectures. Retrieved 3 November 2004, from http://www.mat.ucsb.edu/~marcos/Centrifuge_Site/MainFrameSet.html

O'Sullivan, T., & Mackay, H. (Eds.). (1999). *The media reader: continuity and transformation*. London ; Thousand Oaks, Calif.: Sage Publications.

Ong, W. (1989). *Orality and Literacy: The Technologizing of the Word*. London: Routledge.

Orlan. (1998). Intervention. In P. Phelan & J. Lane (Eds.), *The ends of performance* (pp. 315-327). New York: New York University Press.

Ortony, A., Collins, A., & Clore, G. L. (1988). *The cognitive structure of emotions*. Cambridge [England]; New York: Cambridge University Press.

Pariser, E. (2000). Artists' Websites: Declarations of Identity and Presentations. In D. Gauntlett (Ed.), *Web studies: rewiring media studies for the digital age* (pp. 62-67). London: Arnold.

Parisi, P. (1995). The New Hollywood. *Wired* 3(12) Retrieved 5 November 2006, from http://www.wired.com/wired/archive/3.12/new.hollywood_pr.html

Parke, F. I., & Waters, K. (1996). *Computer facial animation*. Wellesley, Mass.: A K Peters.

Parrinder, E. G. (1982). *Avatar and incarnation*. New York: Oxford University Press.

Paul, C. (2003). *Digital art*. London: Thames & Hudson.

Pendergrast, M. (2003). *Mirror Mirror: A History of the Human Love Affair with Reflection*. New York: Basic Books.

Penley, C., & Ross, A. (Eds.). (1991). *Technoculture*. Minneapolis: University of Minnesota Press.

Penny, S. (Ed.). (1995). *Critical issues in electronic media*. Albany: State University of New York Press.

Pesce, M. (2000). *The playful world: how technology is transforming our imagination*. New York: Ballantine Books.

Phelan, P. (1993). *Unmarked: the politics of performance*. London ; New York: Routledge.

Phelan, P., & Lane, J. (1998). *The ends of performance*. New York: New York University Press.

Picard, R. W. (1997). *Affective computing*. Cambridge, Mass.: MIT Press.

Pirandello, L. (2005). *Shoot!: the notebooks of Serafino Gubbio, cinematograph operator* (C. K. Scott-Moncrieff, Trans.). Chicago: University of Chicago Press.

Plate, S. B. (1996). Lacan Looks at Hill and Hears His Name Spoken: An Interpretive Review of Gary Hill through Lacan's "I's" and Gazes. *Postmodern Culture, 6*(2).

Plato. (1973). *Phaedrus and The Seventh and Eighth Letters* (W. Hamilton, Trans.). Harmondsworth: Penguin.

Poggi, I., & Pelachaud, C. (2000). Performative Facial Expressions in Animated Faces. In J. Cassell, J. Sullivan, S. Prevost & E. Churchill (Eds.), *Embodied conversational agents* (pp. 155-188). Cambridge, Mass.: MIT Press.

Popper, F. (1997). *Art of the electronic age* (Paperback ed.). London: Thames and Hudson.

Poster, M. (1995a). Postmodern Virtualites. In M. Featherstone & R. Burrows (Eds.), *Cyberspace/cyberbodies/cyberpunk: cultures of technological embodiment* (pp. 79-95). London: Sage.

Poster, M. (1995b). *The second media age*. Cambridge, MA: Polity Press.

Poster, M. (2000). Foucault and Databases. *Discourse, 12*(2), 110-127.

Poster, M. (2001). *What's the matter with the Internet?* Minneapolis: University of Minnesota Press.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-2. Retrieved 5 November 2006, from http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf

Pryor, S. (1991). Thinking of oneself as a computer. *Leonardo, 24*(5), 585-590.

Quaranta, D. (2007). Life and Its Double. In D. Quaranta (Ed.), *Portraits*. Brescia: Fabio Paris Art Gallery.

Rackham, M. (2004). *Empyrean: Soft Skinned.* Unpublished Doctor of Philosophy, University of New South Wales, Sydney.

Ramachandran, V. S. (2001). Mirror neurons and imitation learning as the driving force behind "the great leap forward" in human evolution. *Edge.* Retrieved 5 November 2007, from http://www.edge.org/3rd_culture/ramachandran/ramachandran_p1.html

Ramachandran, V. S. (2007). The Neurology of Self-Awareness, *Edge*.

Reeve, J. (1993). The face of interest. *Motivation and emotion, v. 17*, 353-375.

Reeves, B., & Nass, C. I. (1996). *The media equation: how people treat computers, television, and new media like real people and places*. Stanford, Calif., New York: CSLI Publications, Cambridge University Press.

Rehak, B. (2003). Playing at Being. In M. J. P. Wolf & B. Perron (Eds.), *The video game theory reader* (pp. 103-127). New York: Routledge.

Rheingold, H. (1992). *Virtual reality* (1st Touchstone ed.). New York; Sydney: Simon & Schuster.

Rheingold, H. (1993). *The virtual community: homesteading on the electronic frontier*. Reading, Mass.: Addison-Wesley Pub. Co.

Rheingold, H. (1994). *The virtual community: finding connection in a computerized world*. London: Secker & Warburg.

Rheingold, H. (2000). *The virtual community: homesteading on the electronic frontier* (Rev. ed.). Cambridge, Mass.: MIT Press.

Rheingold, H. (2002). *Smart mobs: the next social revolution*. Cambridge, Mass.: Perseus Publishing.

Richardson, I. (2003). *Telebodies & Televisions: Corporeality and Agency in Technoculture*. Unpublished Doctor of Philosophy, University of Western Sydney, Sydney.

Rideal, L., Chadwick, W., & Borzello, F. (2001). *Mirror mirror: self-portraits by women artists*. London: National Portrait Gallery.

Rieser, M., & Zapp, A. (Eds.). (2002). *New screen media: cinema/art/narrative*. London: BFI Pub.

Rinder, L., Ehrenkranz, A., & Ehrenkranz, J. (2001). Art in the Digital Age. Retrieved 15 February, 2006, from http://www.whitney.org/bitstreams/#

Riviere, J. (1986). Womanliness as a Masquerade. In V. Burgin, J. Donald & C. Kaplan (Eds.), *Formations of fantasy* (pp. 35-44). London ; New York: Methuen.

Rizzolatti, G., & Craighero, L. (2004). The Mirror-Neuron System. *Annual Review of Neuroscience, 27*, 169-192.

Robins, K. (1996). *Into the image: culture and politics in the field of vision*. London; New York: Routledge.

Rodowick, D. N. (1997). *Gilles Deleuze's time machine*. Durham, NC: Duke University Press.

Rokeby, D. (1995). Transforming Mirrors: Subjectivity and Control in Interactive Media. In S. Penny (Ed.), *Critical Issues in Electronic Media* (pp. 133-158). New York: State University of New York.

Romanyshyn, R. D. (1989). *Technology as Symptom and Dream*. New York: Routledge.

Rosenberg, R. S. (1997). *The social impact of computers* (2nd ed.). San Diego, Calif.: Academic Press.

Rosenblum, M. (1993). *Chimera*. New York: Ballantine Books.

Rosenfield, I. (2003). Dr Arnold T.P. West's Thoughts on the Annlee Case. In P. Huyghe & P. Parreno (Eds.), *No ghost just a shell* (pp. 96-101). Köln: Buchhandlung Walther König.

Rotman, B. (2000). Going Parallel. *SubStance, 29*(1), 56-79.

Royle, N. (2003). *The uncanny*. Manchester; New York: Manchester University Press.

Rush, M. (1999). *New media in late 20th-century art*. London: Thames & Hudson.

Rush, M. (2003). *Video art*. London: Thames & Hudson.

Rush, M. (2005). *New media in art* (2nd ed.). London: Thames & Hudson.

Rushkoff, D. (1994). *Cyberia: life in the trenches of hyperspace*. London: Flamingo; HarperCollins Publishers.

Ryan, M.-L. (2001). *Narrative as virtual reality: immersion and interactivity in literature and electronic media*. Baltimore: Johns Hopkins University Press.

Sartre, J. P. (1992). *Being and nothingness: a phenomenological essay on ontology*. New York: Washington Square Press.

Schilder, P. (1950). *The image and appearance of the human body: studies in the constructive energies of the psyche*. New York: International Universities Press.

Schneider, N. (1999). *The art of the portrait: masterpieces of European portrait-painting, 1420-1670*. Köln, Germany: Benedikt Taschen.

Schroeder, J. E. (1998). Consuming Representation: A Visual Approach to Consumer Research. In B. B. Stern (Ed.), *Representing consumers: voices, views, and visions* (pp. 193-230). London; New York: Routledge.

Schroeder, R. (2002). *The social life of avatars: presence and interaction in shared virtual environments*. London: Springer-Verlag.

Schwartz, H. (1996). *The culture of the copy: striking likenesses, unreasonable facsimiles*. New York: Zone Books.

Seaman, B. (2000). Recombinant Poetics. Retrieved 7 November, 2007, from http://digitalmedia.risd.edu/billseaman/textsRecomb.php

Searle, J. R. (1969). *Speech acts: an essay in the philosophy of language*. London: Cambridge University Press.

Sekula, A. (1989). The Body and the Archive. In R. Bolton (Ed.), *The Contest of Meaning: Critical Histories of Photography*. Cambridge, Mass.: MIT Press.

Sermon, P. (2004, 8 September). *Puppeteers, Performers or Avatars - A perceptual difference in telematic space.* Paper presented at the Perceptual Difference Conference, Perth, Australia.

Sharir, Y. (n.d.). Virtually Dancing. Retrieved 8 November 2007, from http://www.art.net/~dtz/sharir1.html

Shaviro, S. (1993). *The cinematic body*. Minneapolis: University of Minnesota Press.

Shekell, D. (2006, October 13). Tiger Woods PGA TOUR 07 – Launch Day in Los Angeles. Retrieved 29 October, 2006, from http://www.easports.com/tigerwoods07/news.jsp?id=laevent

Shklovsky, V. (1965). Art as Technique. In L. T. Lemon & M. J. Reis (Eds.), *Russian Formalist Criticism: Four Essays* (pp. 3-24). Lincoln: University of Nebraska Press.

Silverman, K. (1992). *Male subjectivity at the margins*. New York: Routledge.

Silverman, K. (1996). *The threshold of the visible world*. New York: Routledge.

Singer, B. (2002). Against Data Determinism in a Networked World. Retrieved 10 November, 2006, from http://www.bsing.net/thesis.pdf

Smith, M., & Morra, J. (Eds.). (2006). *The prosthetic impulse: from a posthuman present to a biocultural future*. Cambridge, Mass.: MIT Press.

Snyder, D. (2000). Webcam Women: Life on Your Screen. In D. Gauntlett (Ed.), *Web studies: rewiring media studies for the digital age* (pp. 68-73). London: Arnold.

Sobchack, V. C. (1992). *The address of the eye: a phenomenology of film experience*. Princeton, N.J.: Princeton University Press.

Sobchack, V. C. (Ed.) (2000). *Meta-morphing: visual transformation and the culture of quick-change*. Minneapolis: University of Minnesota Press.

Sobchack, V. C. (2004). *Carnal thoughts: embodiment and moving image culture*. Berkeley: University of California Press.

Sobieszek, R. A.(1999). *Ghost in the shell: photography and the human soul, 1850-2000: essays on camera portraiture*. Los Angeles; Cambridge, Mass: Los Angeles County Museum of Art; MIT Press.

Sommerer, C., & Mignonneau, L. (Eds.). (1998). *Art@science*. Wien; New York: Springer.

Sontag, S. (Ed.). (1976). *Antonin Artaud Selected Writings*. Berkeley, CA: University of California Press.

Sontag, S. (1978). *On photography*. London: Allen Lane.

Spielmann, Y. (1999). Aesthetic Features in Digital Imaging: Collage and Morph. *Wide Angle: Special Issue on Digitality & the Memory of Cinema, 21*(1), 131-148.

Springer, C. (1996). *Electronic eros: bodies and desire in the postindustrial age* (1st ed.). Austin: University of Texas Press.

Springer, C. (1999). The Pleasure of the Interface. In J. Wolmark (Ed.), *Cybersexualities: a reader on feminist theory cyborgs and cyberspace* (pp. 34-54). Edinburgh: Edinburgh University Press.

Stallabrass, J. (2003). *Internet art: the online clash of culture and commerce*. London: Tate Publishing.

Stelarc. (2003). Interview with author 14 December, 2003.

Stelarc. (n.d.). Stelarc's website. Retrieved 3 July 2004, from http://www.stelarc.va.com.au

Stephenson, N. (1992). *Snow crash*. New York: Bantam Books.

Stephenson, N. (1999). *Cryptonomicon* (1st ed.). New York: Avon Press.

Stocker, G. (1997). Ars Electronica 1977 FleshFactor: introductory statement. Retrieved 12 September, 2005, from http://www.aec.at/fleshfactor/statement_doku.html

Stone, A. R. (1991). Will The Real Body Please Stand Up?: Boundary Stories About Virtual Cultures. In M. Benedikt (Ed.), *Cyberspace: first steps* (pp.81-118). Cambridge, Mass.: MIT Press.

Stone, A. R. (1994). Split Subjects, Not Atoms; or, How I Fell in Love with My Prosthesis. *Configurations, 2*(1), 173-190.

Stone, A. R. (1995). *The war of desire and technology at the close of the mechanical age*. Cambridge, Mass.: MIT Press.

Sturken, M. (1990). Paradox in the Evolution of an Art Form. In D. Hall & S. J. Fifer (Eds.), *Illuminating Video: An Essential Guide to Video Art* (pp. 101-121). New York, N.Y.: Aperture in association with the Bay Area Video Coalition.

Suchman, L. (2003). Human/Machine Reconsidered. Retrieved 1 July 2004, from http://www.comp.lanc.ac.uk/sociology/papers/Suchman-Human-Machine-Reconsidered.pdf

Suchman, L. A. (1987). *Plans and situated actions: the problem of human-machine communication*. Cambridge; New York: Cambridge University Press.

Suddendorf, T. (1999a). Children's Understanding of the Relation between Delayed Video Representation and Current Reality: A Test for Self-Awareness? *Journal of Experimental Child Psychology, 72*(1999), 157-176.

Suddendorf, T. (1999b). The Rise of the Metamind. In M. C. Corballis & S. Lea (Eds.), *The Descent of Mind: Psychological Perspectives on Hominid Evolution* (pp. 218-260). Oxford: Oxford University Press.

Suler, J. (1996-2007, Jan 2007). The Psychology of Cyberspace. Retrieved 5 February, 2003, from http://www.rider.edu/suler/psycyber/

Suler, J. (2007, January). Second Life, Second Chance. Retrieved 30 March, 2007, from http://www.rider.edu/~suler/psycyber/secondlife.html

Swiss, T., & Herman, A. (Eds.). (2000). *The World Wide Web and contemporary cultural theory*. New York: Routledge.

Tapscott, D. (1998). *Growing up digital: the rise of the net generation*. New York: McGraw-Hill.

Taussig, M. T. (1993). *Mimesis and alterity: a particular history of the senses*. New York: Routledge.

Taylor, L. (Ed.). (1994). *Visualizing theory: selected essays from V.A.R., 1990-1994*. New York: Routledge.

Taylor, M. C., & Saarinen, E. (1994). *Imagologies: media philosophy*. London; New York: Routledge.

Taylor, T. L. (2002). Living Digitally: Embodiment in Virtual Worlds. In R. Schroeder (Ed.), *The Social Life of Avatars: Presence and Interaction in Shared Virtual Environments* (pp. 40-62). London: Springer-Verlag.

Taylor, T. L. (2006). *Play between worlds: exploring online game culture*. Cambridge, Mass.: MIT Press.

Telotte, J. P. (1995). *Replications: a robotic history of the science fiction film*. Urbana: University of Illinois Press.

Terdiman, D. (2006, 20 December). Newsmaker: Virtual magnate shares secrets of success. *CNET news.com* Retrieved 4 September 2007, from

http://news.com.com/Virtual+magnate+shares+secrets+of+success/2008-1043_3-6144967.html

Thomas, A. (2007). *Youth online: identity and literacy in the digital age*. New York: Peter Lang.

Thomas, A. [a.k.a. Ixchel, A.] (2006a). Fantasies of Femininity. *Slate Magazine: Second Life Arts Total Entertainment*. Retrieved 21 August, 2006, from http://www.slatenight.com/index.php?option=com_content&task=view&id=49&Itemid=40

Thomas, A. [a.k.a. Ixchel, A.] (2006b). Online Identity: Some Thoughts. *Slate Magazine: Second Life Arts Total Entertainment*. Retrieved 21 August, 2006, from http://www.slatenight.com/index.php?option=com_content&task=view&id=13&Itemid=40

Thorburn, D., Jenkins, H., & Seawell, B. (Eds.). (2003). *Rethinking media change: the aesthetics of transition*. Cambridge, Mass.: MIT Press.

Threadgold, T., & Cranny-Francis, A. (Eds.). (1990). *Feminine / masculine and representation*. Sydney: Allen & Unwin.

Tofts, D., & McKeich, M. (1998). *Memory trade: a prehistory of cyberculture*. North Ryde, N.S.W.: Interface.

Tonkin, J. (1995). Elective Physiognomies Artist Statement. Retrieved 23 August, 2006, from http://www.johnt.org/meniscus/about/statement1.html

Trend, D. (Ed.). (2001). *Reading digital culture*. Malden, Mass. ; Oxford: Blackwell Publishers.

Tsivian, Y. (1992). Portraits, Mirrors, Death: On Some Decadent Cliches in Early Russian Films. *Iris, Autumn*(14-15), 67-83.

Turkle, S. (1984). *The second self: computers and the human spirit*. New York: Simon and Schuster.

Turkle, S. (1994). Constructions and Reconstructions of Self in Virtual Reality. *Mind, Culture, and Activity, 1*(3).

Turkle, S. (1995). *Life on the screen: identity in the age of the Internet*. New York: Simon & Schuster.

Turkle, S. (1996). Constructions and Reconstructions of the Self in Virtual Reality. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 354-365). New York: Aperture.

Turkle, S. (1996). Who am we? *Wired, 4(1)*. Retrieved 3 July, 2003, from http://www.wired.com/wired/archive/4.01/turkle.html

Turkle, S. (2002). Whither Psychoanalysis in a Computer Culture? Retrieved 11 June, 2006, from http://www.kurzweilai.net/meme/frame.html?main=/articles/art0529.html

Turner, T. (1980). The Social Skin. In J. Cherfas & R. Lewin (Eds.), *Not work alone: a cross-cultural view of activities superfluous to survival* (pp. 110-140). London: Temple Smith.

Utterson, A. (Ed.). (2005). *Technology and culture, the film reader*. London; New York: Routledge.

Valéry, P. (1964). *Aesthetics* (R. Mannheim, Trans.). New York: Pantheon Books.

Verwoert, J. (2003). Copyright, Ghosts and Commodity Fetishism. In P. Huyghe & P. Parreno (Eds.), *No ghost just a shell* (pp. 184-192). Köln: Buchhandlung Walther König.

Viola, B. (2003). Six Heads. Retrieved 16 February, 2006, from http://www.getty.edu/art/exhibitions/viola/exhibition.html

Virilio, P. (1991). *The aesthetics of disappearance* (1st English ed.). New York, N.Y.: Semiotext(e) Books.

Virilio, P. (1994). *The vision machine*. Bloomington: Indiana University Press.

Virilio, P. (1997). *Open sky*. London ; New York: Verso.

Virilio, P., & Turner, C. (2000). *The information bomb*. London: Verso.

Wajcman, J. (1991). *Feminism confronts technology*. North Sydney: Allen and Unwin.

Wajcman, J., & MacKenzie, D. A. (Eds.). (1999). *The social shaping of technology* (2nd ed.). Buckingham: Open University Press.

Waldby, C. (n.d.). Revenants: The Visible Human Project and the Digital Uncanny. Retrieved 3 April, 2006, from http://wwsshe.murdoch.edu.au/cntinuum/VID/Uncanny.html

Wallace, P. M. (1999). *The psychology of the Internet*. Cambridge, UK; New York: Cambridge University Press.

Walser, R. (1990a, March 19-22). *Elements of a cyberspace playhouse.* Paper presented at the National Computer Graphics Association, Anaheim.

Walser, R. (1990b). The Emerging Technology of Cyberspace. Retrieved 23 November, 2006, from http://www.aec.at/en/archives/festival_archive/festival_catalogs/festival_artikel.asp?iProjectID=8975

Walser, R. (1990c). Doing It Directly - The Experiential Design of Cyberspace. Retrieved 23 November, 2006, from http://www.aec.at/en/archives/festival_archive/festival_catalogs/festival_artikel.asp?iProjectID=8976

Wardrip-Fruin, N., & Harrigan, P. (Eds.). (2004). *First person: new media as story, performance, and game*. Cambridge, Mass. ; London: Mit.

Wardrip-Fruin, N., & Montfort, N. (Eds.). (2003). *The new media reader*. Cambridge, Mass.: MIT Press.

Wark, M. (1994). *Virtual geography: living with global media events*. Bloomington: Indiana University Press.

Wark, M. (1995). Suck on This, Planet of Noise! In S. Penny (Ed.), *Critical issues in electronic media* (pp. 7-25). Albany: State University of New York Press.

Wark, M. (1999). *Celebrities, culture and cyberspace: the light on the hill in a postmodern world*. Sydney: Pluto Press.

Watt, I. P. (1957). *The rise of the novel: studies in Defoe, Richardson and Fielding*. London: Chatto & Windus.

Weber, S. M., & Cholodenko, A. (1996). *Mass mediauras: form, technics, media*. Sydney, N.S.W.: Power Publications.

Wegenstein, B. (2006). *Getting under the skin: the body and media theory*. Cambridge, Mass.: MIT Press.

Weibel, P., Frohne, U., Levin, T. Y. (Eds.). (2002). *Ctrl space: rhetorics of surveillance from Bentham to Big Brother*. Karlsruhe: London: ZKM; MIT.

Weibel, P., & Shaw, J. (Eds.). (2003). *Future cinema: the cinematic imaginary after film*. Cambridge, Mass.; London: MIT.

Weise, E. R., & Cherny, L. (Eds.). (1996). *Wired women: gender and new realities in cyberspace*. Seattle, Wash.: Seal Press ;

West, S. (2004). *Portraiture.* Oxford: Oxford University Press.

White, M. (2006). *The body and the screen: theories of Internet spectatorship*. Cambridge, Mass.: MIT Press.

Whitelaw, M. (2004). *Metacreation: art and artificial life*. Cambridge, Mass.: MIT Press.

Wilhelm, A. G. (2004). *Digital nation: toward an inclusive information society*. Cambridge, Mass.: MIT Press.

Williams, L. (1995). *Viewing positions: ways of seeing film*. New Brunswick, N.J.: Rutgers University Press.

Wilson, S. (2002). *Information arts: intersections of art, science and technology*. Cambridge, Mass. ; London: MIT Press.

Winnicott, D. W. (1971). *Playing and reality*. London,: Tavistock Publications.

Winnicott, D. W. (1974). *Playing and reality*. Harmondsworth: Penguin.

Winston, B. (1998). *Media technology and society: a history: from the telegraph to the Internet*. London: Routledge.

Wolf, M. J. P., & Perron, B. (Eds.). (2003). *The video game theory reader*. New York: Routledge.

Wolmark, J. (Ed.). (1999). *Cybersexualities: a reader on feminist theory cyborgs and cyberspace*. Edinburgh: Edinburgh University Press.

Woodall, J. (Ed.). (1997). *Portraiture: facing the subject*. Manchester; New York: Manchester University Press : Distributed exclusively in the USA and Canada by St. Martin's Press.

Woods-Marsden, J. (1998). *Renaissance self-portraiture: the visual construction of identity and the social status of the artist*. New Haven: Yale University Press.

Wright, A. (2003). At the edge of my-self. *Digital Creativity, 14*(3), 139 - 143.

Yee, N. (2007). *The Proteus Effect: Behavioral Modification Via Transformations of Digital Self-Representation.* Stanford University.

Young, S. (1998). Of cyber spaces: the Internet & heterotopias. *M/C: A Journal of Media and Culture, 1*(4).

Youngblood, G. (1970). *Expanded cinema*. New York: Dutton.

Youngblood, G. (1999). Virtual Space: The Electronic Environments of Mobile Image. In T. Druckrey (Ed.), *Ars Electronica: Facing the Future*. Cambridge, MA: MIT Press.

Zengotita, T. d. (2005). *Mediated: How The Media Shapes Your World and the Way You Live in it*. New York and London: Bloomsbury.

Zielinski, S. (1996). Thinking the Border and the Boundary. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 279-289). New York: Aperture.

Zizek, S. (1994). *Mapping ideology*. London; New York: Verso.

Zizek, S. (1996). From Virtual Reality to the Virtualization of Reality. In T. Druckrey (Ed.), *Electronic culture: technology and visual representation* (pp. 290-295). New York: Aperture.

Zizek, S. (1998). The Interpassive Subject. Lecture given at The Centres Georges Pompidou. Retrieved 5 June, 2007, from http://www.lacan.com/zizek-pompidou.htm

Zylinksa, J. (Ed.). (2002). *The cyborg experiments: the extensions of the body in the media age.* London: Continuum.

FILMOGRAPHY

A Scanner Darkly (2006). Directed by Richard Linklater. USA: Warner Independent Pictures.

Beowulf (2007). Directed by Roger Zemeckis. USA: ImageMovers.

Blade Runner (1982). Directed by Ridley Scott. USA: Warner Brothers.

Click (2006). Directed by Frank Coraci. USA: Columbia Pictures Corporation.

Disclosure (1994). Directed by Barry Levinson. USA: Baltimore Pictures.

Metropolis (1927). Directed by Fritz Lang. Germany: Universum Film (UFA).

Robocop (1987). Directed by Paul Verhoeven. USA: Orion Pictures Corporation.

Terminator 2: Judgement Day (1991). Directed by James Cameron. USA: Canal.

The Lawnmower Man (1992). Directed by Brett Leonard. USA: Allied Vision Ltd.

The Lord of the Rings (2001/2002/2003). Directed by Peter Jackson. US: New Line Cinema.

The Polar Express (2004). Directed by Roger Zemeckis. USA: Voiceworks Productions.

The Terminator (1984). Directed by James Cameron. USA: Hemdale Film.

The Matrix (1999). Andy & Larry Wachowski. USA: Groucho II Film Partnership.

Waking Life (2001). Directed by Richard Linklater. USA: Fox Searchlight Pictures.

TELEVISION PROGRAMS

The Bionic Woman (1976). USA: Harve Bennett Productions.

The Six Million Dollar Man (1973). Directed by Richard Irving. USA: Universal TV.

ARTISTS' WEBSITES

Adam Nash - http://yamanakanash.net/projects.html

Alceu Baptistao - http://www.raph.com/3dartists/artgallery/ag-ap348.html

Alex Davies - http://schizophonia.com

Alexa Wright and Alf Linney - http://www.alteregoinstallation.co.uk

Ana Voog - http://www.anacam.com, http://profile.myspace.com/index.cfm?fuseaction=user.viewprofile&friendID=3489413, http://ana.livejournal.com

Arthur Elsenaar and Remko Scha - http://www.artifacial.org

Avatar Body Collision - http://www.avatarbodycollision.org

Aziz + Cucher - www.azizcucher.net

Cao Fei - http://www.caofei.com

Company in Space - http://www.companyinspace.com/front/cis_fs.htm

Daniel Rozin - http://www.smoothware.com/danny/index.html

Ed Tannenbaum - http://www.et-arts.com

Gazira Babeli – http://www.gazirababeli.com

John Tonkin – http://www.johnt.org

Julie Rrap - http://roslynoxley9.com.au/artists/32/Julie_Rrap/profile

Keith Cottingham – http://www.kcott.com

Kirsten Geisler - http://www.kirstengeisler.com

Kit Galloway and Sherrie Rabinowitz - http://www.ecafe.com/getty/table.html

Luc Courchesne – http://www.fondation-langlois.org/html/f/page.php?NumPage=128

Lynn Hershman - http://lynnhershman.com

Mari Velonaki - http://www.marivelonaki.com

Melinda Rackham - http://www.subtle.net

Nancy Burson - http://www.nancyburson.com

Orlan - http://www.orlan.net

Paul Sermon - http://www.paulsermon.org

Stahl Stenslie - http://www.stenslie.net

Stelarc – http://www.stelarc.va.com.au

Susan Collins - http://www.susan-collins.net

Tomoko Sawada - http://www.e-sawa.com

Yasumasa Morimura - http://www.saatchi-gallery.co.uk/artists/yasumasa_morimura.htm