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KEY ELEMENTS OF DIGITAL MEDIA

This new revolution is arguably more profound than the previous ones, and we are just beginning to register its initial effects. Indeed the introduction of the printing press affected only one stage of cultural communication – the distribution of media. The photograph affected only one type of cultural communication – still images. In contrast, the digital media revolution affects all stages of communication (acquisition, storage, manipulation, distribution) and it effects all types of media – texts, still images, moving images, sound, and spatial constructions. (Manovich, 2001: 19)

Mark Poster (1995) was one of the first theorists to provide an insightful discussion about what was, at the time, the emerging communications revolution of ‘new media’. He argued that the main difference between old broadcast media and new media was that new media was ‘active’, whereas old media was ‘passive’.

Poster associated broadcast media with modernism, in the sense that it was part of the development of modern industrial capitalism and the nation-state. In that respect, the structure of broadcast media reflected its role in the modern nation state: a small elite group of producers, because of their wealth and privilege, had the access and ability to shape the public sphere of broadcasting, and thereby sent one-way communication to the much larger mass of receivers (see Figure 1.1a). The model of communications here is a hierarchical one, with those in power, or at least representing the interests of those in power, creating hegemony through the ownership and distribution of a popular culture that encouraged audience outlooks that were favourable to the status quo. This sort of critique of modern media and popular culture is epitomised by the Frankfurt School, and particularly by Adorno and Horkheimer (1991), in that this type of broadcast model is said to promote a passive audience, vulnerable to the herd mentalities which make nationalism, and even fascism, thrive.1

By contrast, Poster argued that the new ‘internet model’ of media promoted a more active and critical subject. Interactive, two-way communications such as those implicit in internet architecture suggest a collapse of the distinction between consumers and producers, and a more decentralised model of media production, less hierarchical and more akin to a network (Figure 1.1b). This structure therefore allows the audience the
affordances of increased choice, and the ability to ‘answer back’ or produce their own media: ‘The shift to decentralised networks of communications makes the producers consumers, senders receivers, upsetting the logic of the first media age’ (Poster 1995: 33).

Poster associates his decentralisation and two-way communication with a more active, engaged and aware audience or subject, one that has to make choices, make decisions and formulate opinions from the wide variety of information sources at his/her disposal. Media in the digital age becomes a ’lean forward’ instead of a ‘lean back’ medium, and Poster associated this more critical thinking, actively engaged subject with the contexts of multiple and diffuse identity formation associated with postmodernism: ‘Electronic culture promotes the individual as an unstable identity in a continuous process of multiple identity formation’ (Poster, 1995: 59).

Whether or not these somewhat optimistic predictions have panned out quite the way Poster first envisioned is the story for other chapters (Chapters 6 and 7), but his thoughtful analysis of the differences in, and the effects of, new digital networked forms of media set the basic groundwork for many later discussions of the characteristics of digital media. This chapter will examine the changes in media, and the experience of media that has been occurring for two decades now and are still taking place.

Since Poster’s early work, the ‘differences’ between old and new media is a topic that has been discussed by many authors and on many media industry web pages. As a result, many definitive lists have been offered. For example, Lister et al. (2009) follow a more mainstream or conventional approach to describing these differences, suggesting that new media is digital, interactive, hypertextual, dispersed, and virtual, whereas
Manovich (2001) takes a more novel approach. Echoing Marxist base/superstructure theory, he builds from the technical elements of digital media production and turns them into cultural categories, arguing that new media is numerical, modular, automated, variable and transcoded.

I plan to take a route between these two approaches, considering the groundbreaking work of Manovich (2001) in detail, but stopping short of the technological fetishism that is sometimes present in his work. In the rest of this chapter, I will attempt to summarise the essential features of digital media within three major themes where, in combination, digital media can be seen as innovative as compared to the media of the past: technical processes, cultural form and immersive experience. Technical processes refer to the technological building blocks of digital media, cultural forms refer to the ways in which digital media objects are created, encountered and used, and immersive experience refers to the environments that digital media can create. The last substantive section will examine the case of video games as contemporary media products, created from contemporary technologies, which defy traditional cultural categorisation.

It would be a mistake to suggest that these are all fundamentally unique to digital media, in the sense that, as Bolter and Grusin (2000) suggest, setting up a false binary between digital or ‘new’ media and ‘old’ media is unhelpful, as new media is made up of a recombining or ‘remediation’ of content and other aspects of old media. At the same time, it is necessary to point out how significant the switch to digital culture potentially is. Manovich (2001) recognises this when he suggests that the computer screen (whether on a desktop or laptop monitor, mobile phone, PDA interface, or television games console) has become the primary way in which mediated culture is experienced in technologically advanced countries. In that sense, the computer has moved from being merely a tool, such as a calculator or processor, to being a filter for all culture and has started to replace the cinema screen, the television, the gallery wall and the book as our primary interface with mediated culture, with the internet itself becoming a repository for all culture and cultural forms.

**TECHNICAL PROCESSES**

The first set of ways that digital media is in many respects novel as compared to previous media paradigms, such as broadcast or print media, come under what I am referring to as technical processes. By this I mean the technological aspects of production, distribution and consumption which contribute to the shape, character and potential of digital media.

**Digital**

The first of these, digitality, will be discussed comprehensively in Chapter 3 on convergence, and so will only be mentioned briefly here. Suffice to say that digital media is by
nature a numerical representation (Manovich, 2001) in that all information is represented in 0–1 digital code. Manovich suggests that numerical representation makes digital information programmable, alterable, and subject to algorithmic manipulation. Thus, digital media can be ‘tinkered with’ in a way that is extremely difficult with traditional analogue media (as any user of Photoshop is aware) and is alterable in several ways. It can be compressed and decompressed using algorithms, allowing for large amounts of data to be stored and distributed in an efficient manner. It can be easily manipulated or copied, and is transferable between different sources, objects and means of technological delivery.

Networked

Digital media tends to be networked (produced, distributed and consumed through two-way networked infrastructures) in a variety of ways such as the internet, mobile phone, or WiFi networks, whereas broadcast media tends to be consumed on one-way analogue infrastructures. Conceptually, much digital media is more akin to the telephone than television broadcasting or cinema screening. In that sense, digital media, as Poster (1995) suggests, tends to follow a more decentralised network architecture with many producers and consumers in a constant dialogue with each other, as opposed to a more pyramidal model of broadcast media in which an elite of producers sends out one-way communications to many receivers.

This decentralisation of media production means that, with many more producers and sources of information, there is a greatly enlarged element of choice when consuming digital media as compared to the broadcast media of the past. Whether it be the multitude of web pages, blogs, forums and the like on the internet, or the hundreds of channels available on digital television, digital media expands choice immensely compared to the previous broadcast era where choice available for sources of information was severely limited to, for example, five terrestrial television broadcasts on the analogue spectrum.

This diversity of choice then becomes a fundamental characteristic of new media that follows on from networking, convergence and the blurring of producers and consumers. The audience is given immense choice, and because of digitisation and convergence, the user has the capacity to choose from all available forms of media and content which are deliverable over any device or channel.

Interactive

Manovich (2001) proposes that ‘interactivity’ is a meaningless term, since the ability to manipulate and customise information is the most basic fact about computers. He further argues that almost all previous forms of media could be considered ‘interactive’ in the sense that they have called upon the audience to do some sort of ‘work’ in the consuming experience.
However, despite these caveats, interactivity is still an important part of digital media to acknowledge even if, to a certain extent, the term is somewhat watered down. ‘Interactivity’ can be defined in a number of ways, most generally as ‘responsiveness’; as in the responsiveness of a media object or piece of information to the preferences, needs or activities of the user.

Interactivity has been a notoriously difficult term to pin down more specifically, especially its use within the context of digital media. Kiousis (2002) and Downes and McMillan (2000) both provide comprehensive discussions which attempt to establish a coherent definition. Kiousis (2002) argues that interactivity has been spoken about in three thematic ways. First, interactivity can be seen as implicit in the technological structures of computer mediated communications. This is reminiscent of Manovich’s point above in that ‘interactivity’ is seen as something embedded in the structure of the media or in computer technology. Thus it is the deterministic structure of the technology which creates the affordance of ‘interactivity’ and interactive media, in a sense that there is a technological potential for a user to modify their mediated environment, as they use it.

The second theme is more sociologically oriented and relates to the context in which communication of any sort occurs, and the results of that communication. Here one pays attention to the context in which messages are exchanged. Some communication settings, such as a telephone call, tend to promote two way communication or interactivity more than others, such as a speech involving a large crowd. It can be seen as the way people adapt their actions to a particular social situation (Jensen, 1998).

The third theme is more of a psycho-socially oriented aspect of interactivity relating to the perception of the user or the ‘state of mind’ of the audience in terms of taking a ‘passive’ or ‘active’ role in relation to the media, or the extent to which they feel invited to participate in an interactive experience. This approach tends to be used when evaluating web site design, where some sites are better than others at establishing an active role for the user of the site, creating a more interactive experience.

Overall, perhaps the simplest but most useful definition of interactivity in the context of digital media is provided by Jensen (1998): ‘A measure of media’s potential ability to let the user exert an influence on the context and/or form of the mediated communication’ (Jensen, 1998: 461, cited in Kiousis, 2002: 368).

What this demonstrates is the socio-technical relationship between the user of media and the media itself. The user has the potential – and can be invited – to have some sort of influence on the presentation of the media, or feedback upon it. In this respect, interactivity is seen to be one of the more ‘value added’ characteristics of digital media (Lister et al., 2009) in that business and industry find it useful for marketing purposes to know as much as possible about how their products are perceived and can be improved. Interactivity provides business with the means to tailor their products more effectively around the ‘needs’ of the user, making them more desirable. Thus, ‘interactivity’ was a much-hyped phenomenon in business and marketing throughout the early development of the web, and helped drive the development of the internet as a business-led phenomenon.
Hypertextual/Hypermediated

At the close of World War Two, Vannevar Bush, military science advisor for US presidents Roosevelt and Truman, published an article in *The Atlantic Monthly* which suggested that with the war over, America should turn its efforts towards organising the substantial amounts of scientific advancements taking place in such a way as to make the increasingly vast panoply of human knowledge accessible to all. He argued that science was advancing at such a rate that it had already outstripped the ability of scientists themselves to keep up with the advances taking place.

Bush’s proposed solution was what he called the ‘memex’. This was to be an inter-linked archive of human knowledge which would work by association in a manner similar to the understandings, at that time, of how the human mind operated. This memex would thus consist of a ‘web of trails’, which could theoretically link any one document to any other, based on some set of relevant criteria at any given time.

Thereafter, at any time, when one of these items is in view, the other can be instantly recalled merely by tapping a button below the corresponding code space. Moreover, when numerous items have been thus joined together to form a trail, they can be reviewed in turn, rapidly or slowly, by deflecting a lever like that used for turning the pages of a book. It is exactly as though the physical items had been gathered together from widely separated sources and bound together to form a new book. It is more than this, for any item can be joined into numerous trails.

…Wholly new forms of encyclopedias will appear, ready made with a mesh of associative trails running through them, ready to be dropped into the memex and there amplified. The lawyer has at his touch the associated opinions and decisions of his whole experience, and of the experience of friends and authorities. The patent attorney has on call the millions of issued patents, with familiar trails to every point of his client’s interest. (Bush, 1945: 7–8).

Bush’s prophetic ideas were later influential on Ted Nelson, the info-tech pioneer who coined the term ‘hypertext’ in the mid-1960s (Landow, 2006), what Bush actually did was lay the conceptual foundations for ‘hypertext’ as we know and use it today; the system of links and databases that allow us to navigate from one bit of content or web page to another on the World Wide Web.

Hypertext is a form of text that is composed of *nodes* or *blocks* of text (or media, in the case of hypermedia) which form the content, the *links* between these blocks of content, and the *buttons* or *tags* that enact the link from one node to another (such as the links or tags embedded in web documents). As one follows the different links, paths are created...
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within the network of nodes. The fact that the choice of paths is normally up to the reader means that hypertext by nature is a non-linear form of text, and it begins to blur the distinction between ‘writer’ and ‘reader’. Thus, hypertext combines traditional text with interactive branching to create a non-linear text which is difficult to conceive of within the notion of a ‘traditional’ printed page (Conklin, 1987: 1).³

Landow (1994, 2006) was one of the first, and still is one of the most comprehensive works to examine digital media from a literary theory perspective. He, and many since, have pointed out how hypertext is very similar to Barthes’ notion of writerly text. The writerly text for Barthes is an ideological tool that he promotes in contrast to the readerly text, which he associates with most forms of classic literature and the notion of ‘the book’.

In brief, Barthes suggests that classic literature has two elements which inform an ideological position:

- **Authorship** In that the production of meaning resides within the author and the reader is obliged to follow under convention.
- **Linearity** In that the sequence of events is set up and determined by the author and presented as a material whole which itself constitutes a beginning and an end.

These elements suggest ‘possessiveness’ on the part of the author and, ideologically, an attempt at enclosure of meaning by allowing the author the power to present an authoritative, definitive, linear voice of ‘reality’. In contrast, Barthes champions the writerly text, which attempts to erase the authority of the author as some sort of definitive voice by opening up the text and providing the reader with the chance – even forcing the reader – to answer back, produce and create meanings from the text. This blurs the distinction between readers and writers, undermining the authoritative position of the author:

> The goal of literary work … is to make the reader no longer a consumer, but a producer of the text … the writerly text is ourselves writing, before the infinite play of the world (the world as function) is traversed, intersected, stopped, plasticized by some singular system (ideology, genus, criticism) which reduced the plurality of entrances, the opening of networks, the infinity of languages. (Barthes, 1974: 4–5)

The similarities are clear, and lead Landow to merge information theory with critical theory of Barthes, Foucault and Derrida through a comprehensive description of hypertext and its potential from the point of view of active versus passive audiences, as well as from an ideological point of view in terms of the potential implications that hypertext and hypermedia structures have with regard to the subversion of hegemony and power.

Rivett casts a certain amount of caution on Landow’s Barthes-inspired characterisation of hypertext, noting that the extent of ‘hyper-reading’ is likely to be influenced by the interpretative framework set up for the reader by the text, digital or not. The reader,
when presented with a text, is not necessarily going to encounter the ‘pure’ theoretical freedom of hypertext, but the text as it is inflicted through the medium and conventions of the web site (Rivett, 2000: 36).

Manovich also qualifies this complete freedom of the writerly reader in hypertext by arguing that the relationship between producer and consumer is more complex. Readers are not necessarily creating ‘new works’ by navigating their own way through hypertexts. Instead, it is possible to see the ‘complete work’ of the text as the sum of all possible paths, and that a user, by choosing a particular path, only accesses a part of the total work (Manovich, 2001: 28).

Automated

Manovich (2001) can also be credited for suggesting that ‘automation’ is one of the key components of digital media. He proposes that the numerical constitution of digital media and communications means that such products can be easily manipulated through the use of automated templates and algorithms. This means that digital products and media can be automatically modified or even created through software and programs instead of being specifically created or modified by people. In short, much of what we experience as media objects in digital culture are created out of databases by machines as opposed to being the results of human endeavour.

The most prominent way in which this happens is through the increasing personalisation of media. When we consider that the internet and other forms of digital media base much of their commercial value on the ability to collect information in order to profile consumers and target them with advertising more efficiently, it seems clear that the automated processes of personalisation and profiling are fundamental to the digital media environment (see Chapter 5). Thus, when using a service like Google, personalised targeted advertising is automatically generated on our screens based on our web footprints and email content. My Amazon automatically generates an individual profile page with recommendations based on previous purchases and browsing. MyYahoo news automatically customises a user’s news page in a way that selects news stories geared towards stated interests and preferences. Social networking web sites automatically configure profiles with friends, updates, actions and status reports. Lastly, iTunes, Last.fm and other music services recommend music to listeners based on their previous listening habits (see Chapter 3).

Automation also proves to be essential for our navigation through the vast amount of information present on the internet. Search engines are essentially vast automated database processors that present potentially relevant information to us based on some specific criteria. ‘Buzz monitoring’, a more recent tool of internet marketing, uses automated programs (web robots) to troll the internet looking for topics, trends and texts among blogs, discussion forums and social networks in an attempt to ‘read’ popular culture for marketing purposes.

Automation is also demonstrated in the form of modelling behaviours and environments. This occurs in a variety of ways, for example in the sorts of artificial life forms
created in video and online games, such as non-player characters, which interact with players using behavioural algorithms to model the behaviour of a living being at some basic level. This also occurs in the construction of simulational environments such as 3-D software packages or point of view and first-person video games, which create immersive environments and the illusion of movement for their players.

In these brief examples, it becomes clear how automation, in part at least, removes human intentionality from the creative process within digital culture. A large amount of what we experience in digital media is ‘unique’ in the sense that it has been created specifically for us, but it is not ‘original’ in the sense that these unique creations are not composed of bespoke human-created material, but elements of already existing data residing in a database, and compiled by a machine using an algorithm.

**Databased**

When travelling by car, it is now fairly typical practice to consult either an onboard satellite navigation system or any one of the many online mapping services and route planners such as MapQuest, Multi-map, Google Maps or the AA route planner. After submitting the starting point and destination, the user is given a map, a detailed list of directions, distances, landmarks, even the location of speed cameras. It is an impressive service, and provides us with a wealth of useful information with real practical benefits. The process that brings us this information is even more impressive, as these directions and maps are created from a complex maze of digitised databases of roads, cross-correlated with satellite images pulled from other databases, all of which are seamlessly put together to give the user a fairly simple picture of where to go, how to get there, and what to look for.

In the most general sense, a database can be defined as ‘a structured collection of data’ (Manovich, 2001: 218), or ‘a container of information’ (Paul, 2007). Outside of computing, archives, libraries, books and even (in pre-print days) elders, can to a certain extent be considered forms of database in that they store and organise information, so that it can pass down through the generations (Paul, 2007).

A database system is essentially composed of three components: the storage element (hardware storage in the case of computers), the means to retrieve and filter data (software which can sort information on the basis of certain parameters), and the means to turn that data into meaningful information (the user who creates meaning) (Paul, 2007).

What distinguishes such systems from libraries, archives and books are their flexibility. Digital databases can provide an almost infinite set of possibilities for the retrieval, filtering and organisation of data. Such databases consist of lists, tables and structures that have discrete units, objects or bits of information. These objects often have little or even no meaning on their own (and thus tend to possess the same significance as any other object), but have the potential to be related to other bits of information or objects and thus together can obtain a layer of meaning.

We tend to associate databases with computerised record-keeping systems or cumbersome workplace spreadsheets, but in actuality the spread of databases into everyday
life and digital culture is pervasive, despite going relatively unnoticed. Online travel maps are one example, but it is the case that every web site, every online service, and the very internet itself, is a database. This leads Manovich (2001) to suggest that databases are becoming a, if not the, dominant cultural form of our times, and that ‘almost every practical act involves choosing from some menu, catalogue, or database’ (Manovich, 2001: 128).

This can be seen in lists of hyperlinks on a digital document or a web page: root menu lists on film DVDs (play movie, scene selection, languages, added features); personal characteristics on profiles; lists of pages on search engine hits. Indeed the great commercial entities of the information age: Google, Yahoo!, Amazon.com, eBay and even Microsoft have made their billions by providing services that essentially build, use, and sort through, databases. Web pages themselves, although they appear to be a coherent visual artefact, are really assemblages of different elements: databases of text, images, moving images, sounds, all of which are separate files stored and then assembled together when viewed by a user (Manovich, 2001).

This illusion of coherence applies to the web as a whole. While surfing we perceive the web as a seamless set of visual and auditory experiences, but in fact it is a vast collection of files that is continually being sorted and assembled together to produce the visual artefacts we see on our screen (Featherstone, 2000; Manovich, 2001; Paul, 2007; Snyder, 2007). This may be experienced as a coherent totality, but much like the illusion used in filmmaking called ‘persistence of vision’, in which separate still images, moving at a rate of 24 frames per second creates the illusion of seamless movement, the aggregate space of collected files and databases brought together to create the web appears to us as a seamless ‘space’ which we navigate through.

**CULTURAL FORMS**

Every container of information, and every way of organising information, creates an information architecture of its own that has cultural implications. Storing information in archives or museums creates a particular form of power geometry, where access to information, and the way it is organised creates implicit hierarchies around who has a right to use information. Storing information in ‘elders’ creates another set of power geometries, and so does information stored in libraries and in books. The rise of a database culture as a response to a particular set of cultural and technological conditions therefore has the potential to create a significant cultural impact not only on how we organise and categorise the world around us, but also in terms of who has the ability to do the organising.

Narratives, as typified in modernity by the novel and the film, attempt to create order. They have beginnings, middles and endings: a plot or a story in which a sequence of meaningful events is in a contextual ‘cause and effect’ relationship (Manovich, 2001). Furthermore, narratives generally lend themselves to the notion of an author: a voice which speaks with a certain amount of authority with regard to the portrayal of the events being represented or described.
Databases are antithetical to this. They present the world as a list or a collection without any dominant order. They do order the world, but it is an ad-hoc ordering based on a particular user, and a particular set of parameters or relationships chosen at a given time. And because these are lists or collections, they are never complete. Stories end, novels have a last page, but lists (just like web pages, social networking profiles, or iPod playlists) can always be added to, and relationships can always be reconfigured.

Outside of media culture, one can see the effects of the shift towards a database logic in the fields of science (Hine, 2006), social work (Parton, 2008) and criminal justice (Aas, 2004). In social work and penal culture, for example, the impact of new communication technologies and databased record-keeping has led to a movement away from decision making on the basis of knowledgeable decision makers who are familiar with the narrative biographies of their clients, and towards the creation of de-contextualised subjects as ‘database identities’ who become categorised and then are acted upon on the basis of those categories. Aas (2004) calls this ‘power without narrative’ (the role of databases in surveillance and power is discussed in Chapter 5).

Networked, digital, hypertextual, databased environments tend to suppress narratives, and get rid of authors. As discussed in Chapter 3, such environments encourage the erosion of the distinction between producers and consumers of media. Two-way communication networks allow users to ‘answer back’, in addition to being able to contribute to the media environment through individual or collaborative efforts. Digitisation allows easy production of original works, or the easy copying or manipulation of already existing works. Hypertextual and hypermedia environments allow an autonomy to the user to select his or her own path through materials available, and databases allow users to retrieve and recombine existing objects, texts and data in an infinite number of ways. As a result, the power geometry in media has in many ways already begun to shift away from the hegemonic position of the producer (or author), towards the anti-hierarchical position of the consumer/producer, or ‘prosumer’ (see Chapter 3 on convergence).

Given these technological affordances, this section will discuss the unique cultural forms one can associate with digital media objects, specifically their lack of context, variability and rizomatic organisation. It will ultimately suggest that perhaps digital media objects may not be seen as ‘objects’ at all, but processes.

Context (or lack of it)

“Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence. (Benjamin, 1936, from Frascina and Harris, 1992: 298)

Walter Benjamin’s ‘The work of art in the age of mechanical reproduction’ (1936) is a highly influential work when it comes to discussions about digital culture. So much so
that Hansen (2006) suggests that it has almost attained the status of cliché. Despite the clichés, it is, indeed, a seminal work which thoughtfully contextualises the changing visual culture within the early development of modernity.

Benjamin suggests that, with the advent of photography, film and phonographic recording, works of art, cultural objects and performances of music could for the first time be either copied on a large scale or mass-produced. Benjamin was interested in the implications of this. On the one hand, these technologies brought a democracy of culture, in that remarkable objects became more accessible as they were – in a sense – pulled out from the physical locations of the original or authentic works: the cathedrals, the private collections, the galleries, the archives, the opera houses, the museums and far flung locations, and into a more accessible everyday lifeworld of cinemas, photographic magazines, parlours and radio broadcasts. Mechanical reproduction upset the power geometry that existed when the work of art was only accessible in certain physical spaces and to which limited people had access.

This ability and determination to 'bring things closer', or make them more accessible to the masses in modernity certainly had its positives, but Benjamin also suggested that in doing this, something was being lost: aura. 'Aura' can be considered the feeling of awe or reverence created by being in the presence of unique or remarkable objects:

> We define the aura of the latter [natural objects] as the unique phenomenon of a distance, however close it may be. If, while resting on a summer afternoon, you follow with your eyes a mountain range on the horizon or a branch which casts its shadow over you, you experience the aura of those mountains, of that branch. (Benjamin, 1936, from Frascina and Harris, 1992: 300)

Distance, space, perspective, a horizon, historical and geographical specificity, all create context. One appreciates the mountain range because of the experience of 'natural distance' which allows us to appreciate the object in its uniqueness and in its relation to the others that surround it. Similarly, the work of art possesses aura as a result of its surrounding attributes: place in history, authenticity, ties to place of exhibition (and thus also ties to bourgeois structures of power). Technologies of reproduction including photography, film and sound recording, uproot objects of art and nature from their situational contexts. The camera, for example, through its ability to 'zoom in', or record in slow motion, alters how we perceive the object by transcending both the physical and perceptual distance between the object and the viewer, and therefore obliterates the contextual situation of the object:

> To pry an object from its shell, to destroy its aura, is to make of a perception whose ‘sense of the universal equality of things’ has increased to such a degree that it extracts it even from a unique object by means of reproduction. (Benjamin, 1936, from Frascina and Harris, 1992: 300)
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Mass reproduction created the potential for any object to be seen anywhere, which inevitably has an effect on the meaning of things. Manovich (2001) cleverly updates Benjamin’s seminal argument by likening it to Paul Virilio’s (1992) notion of ‘big optics’ and ‘small optics’ in the age of real time communication technology. Small optics refers to viewpoints based on geometric perspective (distance), and big optics refers to the ability to communicate in real time on a global scale. Instantaneity creates a situation where distance and space no longer have meaning and thus a depthless and horizonless world is created. Dreyfus (2001) pulls at a similar thread in his discussion of nihilism in relation to internet culture. However, Dreyfus sees the contemporary subject (and not objects) as becoming de-situated. People in contemporary culture with a wealth of digital communication at their disposal are encouraged to take a disengaged ‘God-like’ view of the world, where all types of information, involving all manner of places, become levelled into an equivalence; a universal equality of information which makes no distinction in terms of importance or relevance to personal or geographical contexts.

Building on the previous discussion, databases too, contribute to the lack of context within digital culture: collections of discrete units which create meaning only when related to other discrete units by the ad-hoc ordering of a user and a particular set of relationships at a given time. Where a narrative would provide a context, a cause, a reason, or a story, a database provides a temporary relationship. The extent to which digitally databased media is able to mix and match all manner of text, sound, image, data demonstrates this horizonless, contextless world of Virilio, Manovich, Benjamin and Dreyfus. Time and space are absent on YouTube, where one can just as easily watch episodes of a favourite television programme from childhood as watch the latest news events, upsetting the experience of memory, time and narrative biography. Digital music sites and MP3 culture pulverise bands, albums and genres into semi-anonymous files of singles embedded into endlessly diverse playlists that almost unreasonably span musical genres and eras (see Chapter 3). Social networking profiles link friends from different periods of life, childhood, university, work, as well as family and brief acquaintances in a timeless and space-less networked collection (see Chapter 7). In this environment, it seems quite reasonable to suggest that the accessibility created by the age of networked digital reproduction has accelerated the demise of the contextual link between cultural object, space and time.

Variability

In the previous section on automation, we discussed how a large amount of what we experience in digital media is ‘unique’, in the sense that it has been created specifically for individual users in the sense of personalisation and customisation, but not ‘original’, in the sense that these unique creations are not composed of bespoke human-created material. The uniqueness of digital media objects not only emerges from this ability to personalise, but from the fact that most digital media objects change over time. Manovich (2001) refers to this as the property of variability.
‘Old media’, Manovich suggests, tends to be finite in that narratives and authored works tend to have a set composition or sequence of events (narrative). In that respect, the media fit the times, as old media is associated with the methods of production associated with modern industrialism. Just like cars coming out of factories, old media objects were mass produced copies of the master or prototype, produced in large amounts to meet mass demand, each copy identical to the last, and unchangably fixed in materiality.

By contrast, digital media objects are produced under the rubric of post-industrial informational capitalism, a system of production that focuses on ‘just in time’ production methods, which cater more towards individual choice as opposed to mass demand and is less focussed on the production of physical goods (see Chapter 2). As a result, digital media objects tend to be characterised by variability. They are not finite or finished products (let alone mass produced material ones), but instead are objects that are continually updated, reassembled and recreated and exist in potentially infinite versions. This is the case for several reasons, and these reasons tie together all of the ‘technical processes’ discussed in the last section.

Because digital media is digital numeric code, and not a physical object, it is left open to all kinds of manipulation involving algorithms. In some ways the most obvious example of this is the very fact that when digital data is stored and transferred, it is almost always compressed using algorithms when it is stored or transferred, then decompressed using algorithms when it is used (see Chapter 3 on ‘convergence’). In effect, the data is taken apart and reconstructed and, in that sense, digital media objects are continually reconstructed when used. This compression/decompression model is followed by any types of digitised media produced for mass consumption, including music files and digital television.

Because digital media tends to be networked and interactive it often gets altered by the efforts, needs and wants of the user. This is especially true when it comes to personalisation and customisation. Personalisation can be manifested in a number of ways, from targeted advertising, to customised viewing, through to the participation of users in communally produced media objects such as Wikipedia, Massively Multiplayer Online Role-Playing Games (MMORPG’s), Alternate Reality Games, or open sourced software such as Linux (see Chapter 3). These objects are always changing because people are always adding to them, expanding them, or improving them.

Digital media is often hypertextual or hypermediated and is thus composed of a variety of linkages where the order of execution of those linkages can be determined by the user. These links usually change over time as they often either become out of date, or expand in number. This is especially the case with regard to social media (Web 2.0), where links or tags can often be added to an existing document or object quite easily. Social networking web sites and blogs provide a good example of this, where the content of a profile is continually changing through the addition of new updates, friends, links, pictures and comments.

As suggested above, much of new media is now automated, thus not created by a human author, but assembled on the fly through automated processes, algorithms and updates. Manovich (2001) makes the point that web sites in particular automatically
configure and customise sites on the basis of the user’s IP address (automatically changing language, or directing the user to a nation or region specific page such as yahoo.uk, or ebay.ca), or by altering presentation to the type of computer and web browser being used. Automated periodic updates change software and keep it up to date, as well as reconfigure social media profiles.

And finally, the form of the database itself, central to the way digital media is constructed, is amenable to variability because the whole purpose of a database is to be able to configure information in a variety of ways. Because databases are lists, conceptually, they tend not to be finite products. They are meant to be temporarily useful, flexible and expand. Thus databases epitomise variability, whereas narratives tend to be static.

Rhizome

Several authors (such as Hamman, 1996; Wise, 1997; Stivale, 1998; Bell, 2001; Buchanan, 2007; Hess, 2008) have suggested that because the internet possesses features such as hypertext, networking and variability, the internet, and many parts of it, articulate the concept of the rhizome as characterised by Deleuze and Guattari (1988). Rhizome is a metaphor that Deleuze and Guattari use to describe a form of organisation that is not based on hierarchical structure, but a kind of horizontal network of relations. They contrast the botanical term rhizome with arboreal structures such as trees and their root systems, which they see as hierarchical, and associate with a particular way of thinking that involves tracing things back to centres or origins.

A rhizome as a subterranean stem is absolutely different from roots and radicles. Bulbs and tubers are rhizomes. Plants with roots or radicles may be rhizomorphic in other respects altogether. Burrows are too, in all their functions of shelter, supply, movement, evasion, and breakout. The rhizome itself assumes very diverse forms, from ramified surface extension in all directions to concretion into bulbs and tubers ... The rhizome includes the best and the worst: potato and couchgrass, or the weed. (Deleuze and Guattari, 1988: 6–7)

Rhizome is a difficult concept, but for simplicity’s sake most discussion of the internet as a rhizome will start with the six principles outlined in the introduction to A Thousand Plateaus:4

- ‘The rhizome connects any point to any other point’. The connections are random in relation to each other and any point can be connected to any other (the principle of connection).
- ‘The rhizome is reducible to neither the One nor the multiple’. In this respect it is neither a collection of individual things, nor one large thing. Instead it is composed of dimensions and lines of connection (the principle of multiplicity).
This also means that no point in the rhizome can be altered without altering the whole.

- ‘The rhizome operates by variation, expansion, conquest, capture, offshoots’. In that sense, it does not ‘reproduce’, it transforms both itself and what it encounters (the principle of decalcomania).

- ‘The rhizome pertains to a map that must be produced, constructed, a map that is always detachable, connectable, reversible, modifiable, and has multiple entryways and exits and its own lines of flight’. So in contrast to ‘tracings’ where one must follow a given path, a rhizome is akin to a map or a field in which one can enter at any point, and must construct their own path through (the principle of cartography).

- ‘The rhizome is an acentered, nonhierarchical, nonsignifying system without a General and without an organizing memory or central automation’. This suggests that rhizomes have nothing akin to a ‘centre’ which is more important than other parts of the system (the principle of heterogeneity).

- ‘The rhizome is made only of lines’. These lines can be severed or broken, but because it is acentered, such breakages do not impede its function but can instead create new lines for growth or transformation (the principle of asignifying rupture).

Typically, writers then discuss the internet, or some part of the internet such as a chat room or forum to demonstrate its rhizomatic principles. Within these parameters the principle of connection is fairly easy to establish, in that the architecture of the internet is one in which connectivity reigns supreme, and the fact that one can connect to the internet from just about any point, and traverse it freely from one hyperlink to the next in seemingly random ways, suggests that the internet follows the principle of cartography. For example, within five clicks on hyperlinks embedded in the Wikipedia entry for ‘Germany’ (‘golden bull’, ‘indivisible’, ‘rain queen’, ‘meningitis’) I can end up on the Wikipedia page for ‘penicillin’, an unexpected and novel pathway to say the least. The supposedly chaotic networked structure of the internet means that there is no real centre that is fundamentally important (heterogeneity), and the internet is fully able to sustain breakages without much effect on its function (asignifying rupture).

The last two principles, multiplicity and decalcomania, require more nuanced analysis. Multiplicity suggests that a rhizome is not a collection of units, not one unit, but a multiplication of dimensions. While many authors suggest that the continuing proliferation of computers and multiple other kinds of connections to the web, as well as the limitless number of web sites, are suggestive of multiplicity, Buchanan (2007) makes the reasonable point that what actually matters with regard to multiplicity is whether or not these new connections and web pages are dimensions, or units of the web, and whether or not subtracting them has any effect on the whole. He argues that one could remove several thousand web sites from the net without the whole being noticeably affected, and in that sense individual web sites can be seen as ‘units’ of the web, and
not ‘dimensions’. However, this is a tenuous argument, as one would think that Deleuze and Guattari’s point here is one of connection and isolation. Since each web site or computer has multiple connections (both physically and in terms of hyperlinks) the whole is affected even by the severing of one, because connections are lost, altering the multiplicity of pathways.

Decalcomania is slightly more complex and refers to the idea of variation or transformation in expansion or encounter. This relates to Deleuze and Guattari’s notion of ‘becoming’ (which is set in opposition with ‘being’ as a static form of existence) and suggests that rhizomes do not achieve growth through reproduction, but through continual transformation. In one of their more famous analogies, they turn to the relationship between ‘the wasp and the orchid’. The petals and stamen of the orchid take on the patterning of a wasp in order to fool it into thinking that it is another wasp with which it can mate. The wasp is in turn attracted onto the orchid and thus collects pollen which it then distributes to other orchids. In this relationship, both have taken on aspects of the other. The wasp has become part of the orchid’s reproductive system and the orchid has taken on the visual appearance of the wasp. They have been transformed, but not merged in their encounter (Bell, 2001).

One could speak on similar lines about the internet and its encounter with ‘old media’ in, for example, the encounter between newspapers and the internet. Newspapers have been transformed but not subsumed by the arrival of the internet (they still exist in print form, but also have been remediated in digital form on the internet), and the internet has been transformed in that newspaper sites are now popular destinations on the internet. Similar could be said about the encounter between the internet and the telephone, with the development of internet-enabled mobile phones and, conversely, internet-based phone companies such as Skype. More absurdly, the internet has encountered refrigerators. In 2001, LG Electronics introduced the Digital internet Refrigerator:

> The refrigerator makes extensive use of touch screens, a simplified graphics user interface, electronic pen and voice messaging for a user-friendly experience. Using these tools, consumers can check real-time price information on groceries; obtain tips on food, nutrition and recipes; be reminded of scheduled events; be informed when to change the refrigerator’s filter, and learn cooking methods for products stored inside. (Beststuff.com, 2001)

In this respect, it seems reasonable to suggest that the internet, and many of the things on it, follow rhizomatic principles insofar as it/they are in a continual state of ‘becoming’ or transformation in response to the surrounding environment. However, Hess (2008) argues that through the imperatives of commercialisation, search engines now follow a more hierarchical structure by returning commercially valuable sites higher up in results lists. In this sense, search engines end up ordering knowledge in such a way as to privilege mainstream voices, atrophying the internet’s cartographic and heterogenic potential for resistance.
While one may see the internet as fulfilling many rhizomatic principles, it is problematic to suggest that the internet is a rhizome in the idealised form Deleuze and Guattari set out. As Hess suggests, dependence on commercial entities introduces arboreal structures, roots and hierarchies into the experience of the web and thus limits to an extent the degree to which the internet can be seen as truly rhizomic in terms of its epistemology and its potential for resistance. One only has to look at the compromises that Google has made with the government of China in order to get a Chinese-based Google page to see that, ultimately, commercial pressures will compromise rhizomatic principles (Buchanan, 2007). In that respect, we can see the internet existing in a kind of uneasy tension between rhizomic and arboreal forms of organisation and existence.

Process

Deleuze and Guattari’s discussions of ‘transformation’ and ‘becoming’ bring us to the suggestion that the internet, and much on it, is in a continual state of transformation. This observation makes sense within the context of Manovich’s claim that variability is one of the key principles of new media. As we recall from earlier, digital media is in continual transformation as it is always being updated, modified, compressed, decompressed, linked and databased, and in that sense has the potential to exist in infinite versions. Looking forward to Bruns (2008) (see Chapter 3), he lists ‘unfinished artefacts, continuing process’ as one of the key principles of ‘produsage’ in digital media:

‘... as collectively prodused content is shared in an openly accessible information commons, the process of produsage must necessarily remain continually unfinished, and infinitely continuing ...

Such outcomes, prodused through social processes, take on the same aspects of those processes themselves; they resemble cultural artefacts more than commercial products. (Bruns, 2008: 27).

These three concepts of becoming/transformation, variability and unfinished artefacts/continuing processes all point towards the same key characteristic of digital media: constant change. When we consider much of what is found in the internet, very little of it is static: web pages acquire more links; databases continue to grow; software (especially open source software) continues to be improved and expanded; social networking profiles are continually being updated and add new friends; ‘wiki’s’ of all kinds are always getting new entries or revising old ones; images and texts are repeatedly being copied and manipulated; online games, MMORPGs and ARGs are continually added to and enhanced by their players and participants.

In this respect, Bruns might be right to suggest that digital media are more like ‘continuing processes’ than ‘objects’. Unfortunately, Bruns turns to calling digital media products ‘artefacts’, which is perhaps a misleading term in that ‘artefacts’ refer to tangible products
in material culture. Manovich (2001) also seems inconsistent in this regard by continually using the term ‘new media object’, which also seems contradictory with what he is trying to achieve. However, this is somewhat unsurprising in that it is often difficult for us to conceive of ‘processes’ given that Western culture has tended to view the world from a substantist philosophical position (influenced by Aristotle), as opposed to a relational one:

For Aristotelians, the primary categories of being are substance and accident, with all accidents inhering some particular substance …

For relational metaphysics, relation or process becomes the primary reality in which substances function as movements. Clearly the world of advanced technological machines is to some extent more amenable to such a relational metaphysics. (Mitcham, 1994: 169)

But perhaps this is what we need to do when considering the ‘stuff’ of digital media. After all, it has no material form (although it is accessed through material objects and can be translated into material form), so it cannot be considered an ‘artefact’ or an ‘object’. The fact that digital media tends to be in constant change only reenforces this view.

Given the characteristics of digital media such as variability and transformation brought up in this chapter thus far, and given the general shift in use of the internet from being a primarily informational source, to a social medium (Web 2.0), it is perhaps useful to see new media products being more akin to conversations than material objects. Conversations are social processes or experiences that may have an origin, but not necessarily an outcome (or at least an outcome directly related to their origins). This is cleverly illustrated by Stivale’s (1998) examination of meandering threads of discussion in online discussion forums dedicated to Deleuze and Guattari.

Jenkins’ (2006) ‘Bert is evil’ example is also illustrative of this. In the same way a conversation may have an original purpose but often takes diversions in unanticipated directions, and perhaps ending up in a place completely unimagined, Jenkins tracks how the image of Bert was grafted from Sesame Street episodes aimed at American children, placed ironically alongside Osama Bin Laden on the ‘Bert is evil’ web pages of a high school student (being transformed in the process), ending up, in the wake of September 11th, in an Osama Bin Laden image collage on Islamist anti-American placards in the Middle East (creating an entirely different and unexpected set of meanings and relationships), and finally ending up as a comical news item on CNN and a variety of blogs. The continual migration and transformation of the Bert image both in properties and meaning is an exemplar of how digital media products are both rhizomatic and in a constant state of ‘becoming’.

IMMERSIVE EXPERIENCES

Once we start to consider digital media as producing processes, experiences, or conversations in continual flux more than they are producing finite ‘objects’, the more we
are able to see how digital media has as much as, or perhaps more, in common with the tradition of the telephone and other telecommunications than with the aesthetic tradition of the novel or the painting. As Manovich points out:

> By foregrounding telecommunications, both real-time and asynchronous, as a fundamental cultural activity, the internet asks us to reconsider the very paradigm of an aesthetic object. (Manovich, 2001: 163–164)

The move to media as process entails within it new conceptions of the audience or user, as we have seen. However, the move also entails a transformation of the audience or consumer experience, from a static role of viewer to a role as active, mobile user or participant within the creation. This creates much more potential for digital media to provide a more immersive relationship between media and user. This new relationship is embodied in the features of telepresence, virtuality and simulation, which can be considered fundamental immersive elements of digital media.

**Telepresence**

One thing that communication technologies have the potential to do is alter our feelings of presence. The term presence itself can be considered ‘the experience of one’s physical environment’ or more generally, ‘the sense of being in an environment’ (Steuer, 1992: 75). Presence is relatively unproblematic in unmediated situations, we are where we ‘are’, and that seems quite obvious and simple. However, when mediated communication or long distance interaction is introduced into the equation, things begin to change. In this situation we gain the ability to simultaneously exist in two different environments at the same time: the physical environment in which our body is located and the conceptual or interactional ‘space’ we are presented with through the use of the medium (Steuer, 1992). For example, getting a letter from someone far away may, if descriptive enough, transport our imaginations to a particular place or event being described. Well-written novels certainly do this.

This altered sense of presence becomes even more apparent when we are dealing with more advanced communication technologies. The telephone allows us, in real time, to be in two places at once. Where our bodies are and, also, in that ‘space in between’ where we are and where the other person is, not a physical space, but a conceptual one (Lister et al., 2009). This is the notion of telepresence: the experience of presence in an environment by means of a communication medium (Steuer, 1992: 77). In contemporary culture, the increasing blending of presence and telepresence manifests itself in the current ambiguities regarding mobile phone conversations and texting when in the company of others, particularly at the dinner table (see Rimer, 2009). Online, our perception of presence becomes even more complicated. Terms such as ‘cyberspace’, ‘surfing’ and being ‘on’ the internet are indicative of how our experience of the internet as an interactive, real-time media give us an enhanced sense of telepresence over, say, watching television. People ‘watch’ television.
This leads us to another feature of telepresence: that its experience varies between technologies as well as being influenced by social factors. Steuer (1992) suggests that technologically, there are two things which determine the extent that telepresence is experienced. The first is vividness: the ability of a technology to produce a rich environment for the senses in terms of sensory depth and breadth. Sensory breadth refers to the number of senses engaged in the medium (sight, sound, smell, haptic, taste). Sensory depth refers to the quality or resolution the medium provides to a given sense. Superior sound, visual and other sensory qualities will create a much more immersive experience. The second factor is interactivity. As we discussed earlier, interactivity refers to the degree in which the user of a medium can influence the form and content of their mediated environment.

In addition to technological factors, it is important to note, as Steuer does, the importance of contextual or emotional factors in the experience of telepresence. The idea of engagement in the interaction underway is crucial in this. For example, exchanging work-related emails often does not engage one to a large degree, and thus creates very little sense of presence or immersion. However, the same might not be said using the exact same technologies to – for example – engage in cybersex discourse. More emotionally engaging interactions create a greater sense of ‘first person-ness’ (Laurel, 1991 cited in Steuer, 1992) that is the essence of vivid telepresence. The recent generations of video games, such as Grand Theft Auto and Bully, use the combination of telepresence, sensory depth and first person-ness to create a high degree of vividness and engagement for the player. This adds to the controversial nature which sometimes surrounds these games.

Virtuality

Any discussion of ‘engagement’ leads to another immersive aspect of digital media: virtuality. Rob Shields (2003) begins his discussion of The Virtual in 1556 with the execution of Archbishop Thomas Cramner for heresy. The basis of this event was a debate in the early reformation period over the Christian Eucharist, and specifically the transubstantiation of bread and wine into the blood and body of Christ during the performance of the sacrament of the Eucharist. Within the Catholicism of the time, transubstantiation was (and still is) taken literally; the bread and wine actually became the body and blood of Christ. Protestants and reformers like Thomas Cramner disagreed and suggested that this was not an actual transformation, but a virtual one. In 1556, that was enough to get one hanged.

Shields’ excellent discussion demonstrates how the problem of the virtual is nothing new. Debates we have now about the worth or value of online communities (Chapter 8), or mobile phones in public places, or the ‘danger’ of cybersex (Chapter 7), are not very far off the sort of debate described above:

“The doctrine of virtualism raised questions concerning the way we understand presence – must it be concrete and embodied, or was ‘essentially present’ good enough? Was there anything there if it was virtual? (Shields, 2003: 6)”
The merit (or lack) of virtual communities and the like is a topic for other chapters. Here what needs to be addressed is how ‘virtuality’ is an important aspect of digital media and how virtuality can be placed within a wider cultural context. In this respect, Shields is quite helpful in that he makes the distinction between ‘the real’, ‘the actual’ (or ‘concrete’) and ‘the virtual’.

Within current discourses, the idea of the virtual is normally limited to discussions of digital technologies: ideas of ‘virtual reality’, ‘virtual economies’, or ‘virtual worlds’. Within these discourses, there is a tendency to contrast such virtualities with ‘the real’. Shields brings the discussions of the virtual back to a wider context, by defining virtuality as ‘the nature of objects and activities which exist, but are not tangible or concrete’ (Shields, 2003: 2). In many respects, Shields constructs a notion of the virtual which is inclusive of all sorts of social constructions and imaginings. Plays, for example, can be considered virtual in the sense that they create a world and a set of understandings and realities that are ephemeral, not concrete. It does not mean that plays or the worlds they depict are not ‘real’. They do exist, but they exist as an abstraction.

Similarly, one could consider a digital file or document. They are virtual in the sense that they (up until being printed) are not material objects. But they are experienced, sent, viewed and can have a concrete impact in terms of their implications, depending on what the document was about and who was reading it. It would be silly to argue that a digital document is not ‘real’ just because it is not concrete.

Thus, the practice of contrasting the virtual with the real is problematic, as ‘reality’ is made up of both the concrete and the virtual in many ways, including the practices of religious rituals, abstract planning, and even in the imaginings of our own and other communities. We exist in both at the same time. This leads Shields to argue that the virtual is in opposition to the concrete, not in opposition to the real, and that reality in fact is always part virtual in everyday concrete, as well as electronic, instances. The virtual is real, but not actual.

Simulation

From a discussion of virtuality as a feature of digital objects, we can take Shields’ insights and move forward to suggest that digital objects (or artefacts or processes) have an ephemeral as opposed to a concrete quality that makes them real but not actual. However, they can be represented in concrete form. This articulation of the relationship between the real and the virtual becomes useful because if we can see the virtual as a ‘kind of’ reality, we can start to address some of the fears that are involved in discussions of virtual communities, virtual worlds and virtual identities: i.e., that we are passing into some sort of fantasy world and losing touch with the real (Lister et al., 2009).

Any discussion of the virtual in digital culture almost inevitably leads onto a discussion of simulations. ‘Virtual reality’ or ‘virtual worlds’ are usually seen as simulations of ‘reality’, a kind of model of the real world. The simulational qualities of digital media can be considered in three different ways:
Understanding Digital Culture

- As a technical or mathematical process often performed by computers
- As a tradition in visual culture
- As part of a historical progression away from ‘the real’ within media-laden contemporary culture.

In the first instance, simulation can be defined as ‘a mathematical or algorithmic model, combined with a set of initial conditions, that allows prediction and visualisation as time unfolds’ (Prensky, 2001: 211, cited in Lister et al., 2009: 41). Such simulations are not restricted to computers, but obviously come into their own in the computerised, information age. Within a wide variety of research, computer simulations are used to project into the future and to estimate the potential effects of a change in certain variables on a complex system or process. For example, climatologists will study the potential effects of a change in atmospheric CO2 levels on the global climate using computerised climate modelling, and economists would predict the potential effects of a change in oil prices on the stock market in a stock market simulation. Another popular encounter with computer simulations are video games of all kinds (see the case study in this chapter).

Manovich (2001) examines the simulative and representational as two different traditions within Western visual culture. The representation tradition is exemplified by the painting (or objects with frames and screens) and relies upon the immobility of the spectator. Representation allows for the creation of aesthetic objects that are fixed in space and time, and refer to something outside of themselves. In that sense, representations attempt to portray other things usually located in other places. By contrast, the tradition of simulation (epitomised in mosaics and frescoes) relies on a mobile spectator. The audience travels through the hall or church, encountering the frescoes in movement, so there is a blending of the virtual world of the created work and the physical space of the spectator or audience. Thus, simulations possess an immersive quality.

Digital culture tends to follow in the immersive simulational tradition by emphasising the mobility of the viewer, in a metaphorical sense through actions like hyperlinking, hypertext, the notion of ‘surfing’, and more literally with regard to the three-dimensional virtual worlds of first person or point of view video games and MMORPGs, in which the exploration of a virtual world is open to the user.

Within digital culture, immersive simulations obviously abound. Anyone can point to the virtual worlds of Second Life or The Sims as examples of simulated everyday life. Even more interesting perhaps are the next generation of virtual worlds which are overtly imitative of real offline environments. Here, efforts such as Twinity (http://www.twinity.com), a virtual reconstruction of Berlin, or Near Global’s (http://www.nearglobal.com/) current reconstruction of London immerse their users in accurate simulations of actual cities. Complete with the same shops and tourist sites that exist in the offline London and Berlin, Near Global and Twinity are pushing the simulation tradition into a merger between virtual simulations and physical spaces.
Virtual worlds are simulations. Like a map they usually start out as reproducing actual worlds, real bodies, and real situations: but, like simulations, they end up taking on a life of their own …

Virtual worlds become important when they diverge from the actual, or when the actual is ignored in favour of the virtual. (Shields, 2003: 4)

In the contrast between representation and simulation, the latter is usually viewed in the more negative light. Representation is generally seen as a genuine attempt to portray something ‘real’ or in a truthful manner. By contrast, simulation is often portrayed as deceptive, something which takes us away from the real or the truth. A brief perusal of any dictionary definitions for ‘simulation’ will pull up words such as ‘imitation’, ‘likeness’, ‘enactment’, ‘feigning’ ‘a sham’ or ‘a false appearance’, many of which are pejorative in nature.

This line of thinking is best represented by the work of Jean Baudrillard, especially in *Simulacra and Simulation* (1994). Baudrillard argued that there has been a historical progression in Western culture away from representation, where signs reflected something fundamentally real, to simulations, where signs no longer represent or refer to the real. He charts this movement in a series of stages which he refers to as the ‘orders of the simulacra’.

In pre-Renaissance or feudal times, Baudrillard suggests, there was symbolic order. There was a fixed system of signs that reflected a basic certainty of life. Everyone knew their positions in a rigid social structure, therefore social positions and status could be read quite easily, for example, royals, nobles and aristocrats wore certain clothes and used certain symbols. People were intimately tied to the concrete realities of nature, signs and symbols were easily interpreted and in that manner, ‘reality’ itself could be seen as unproblematic. This certainty of meaning and the way things are was reflected in art and other forms of representation. Thus, medieval painting, for example, as much as possible strived for realistic depictions of what were seen to be real events. This can be seen in Figure 1.2, a medieval representation of the crucifixion of Christ. Art reflected a basic reality.

Historically, the beginnings of industrial society initiated a break of the intimate relationship between people and nature, and the political changes brought forth by the Enlightenment meant a break from the certainties of medieval feudalism, with less rigid social structures and challenges being made to the power and authority of Monarchy and the Church. From the Renaissance to the early part of the Industrial Revolution, Baudrillard argues that Western culture entered the ‘first order of the simulacra’. In this context, the notion of the ‘fake’ or ‘imitation’ becomes important. Art, for example, starts to be viewed as imitative of life, rather than a representation of it. Baroque painting demonstrated a tendency towards idealisation (see Figure 1.3, a Baroque style painting of the ascension of Christ into heaven); classical architecture emerged as an
imitation of styles of the past, aristocratic Victorian gardens were meticulously designed to look wild and natural. All these demonstrate the tendency at the time towards idealisation of nature, events and the past. Thus, in the first order, art imitated or perverted a basic reality.

Baudrillard suggests the time period from the early industrial revolution to the middle of the twentieth century, corresponds with the second order of the simulacra. This is the era of industrial mass production. The link between people and nature in the West became more distanced as, in the age of machines, nature is continually being modified into new, completely unnatural things. This manipulation of nature, combined with the seemingly limitless reproducibility possible under mass production (typified by the factory or the photograph), created a situation where copies became almost indistinguishable from originals, even to the point where the whole notion of an ‘original’ or an ‘authentic’ becomes problematic. Take, for example, the first mass produced automobile, the Model T Ford. Purchasing a Model T (or any other mass produced object) did (and still does) not mean that one has purchased a lesser imitation of some sort of ‘original’ Model T. The car itself did not refer to something authentic; after all, how can one have an ‘authentic’ machine? Instead, any Model T Ford referred not to an authentic or original, but to other Model T’s as a series of signs (see Figure 1.4). Thus, in the second order, art and artifice masked the presence of a basic reality.
From the mid twentieth century to the present, Baudrillard argues that we have entered the third order of the simulacra or hyper-reality. This represents the transition from the machine age to the information age and the shift from a production to a consumption society. By this point, consumer culture has created such an uncertain social structure, and such a proliferation of signs, that their association to anything ‘real’ or ‘authentic’ has become lost. In that sense, a situation is created where we exist in hyper-reality, dealing with copies of copies to the point where we cannot tell the difference between copies and originals and, if anything, we prefer the copy to the original.

In this scenario, the real and the imaginary collapse into each other: politics becomes based on opinion polls (simulations of the public and their views); stockbrokers use computer models of the stock market for automated (or program) trading (accelerating the ‘Black Monday’ stock market crash of 1987); maps, tourist brochures and Google Street View, seen in advance, help to determine our experience of faraway places instead of the reverse.

Simulation of this kind is endemic to digital culture. Emails, in their ability to be endlessly reproduced, copied, responded to, forwarded and amended, embody hyper-reality in the sense that there is little attention paid to an ‘original’. Music files, such as
MP3s are not so much copies of songs as they are mathematical reproductions of songs compressed and decompressed by algorithmic software. Indeed, Poster (1990) makes the point that the majority of studio recordings in the contemporary music industry epitomise simulacra in the sense that songs are recorded one instrument at a time, often in different studios and over long periods of time. The listener is presented with what would seem to be a ‘performance’, but in fact it is a simulacrum of a performance: a copy of a performance which never really existed as an original (Poster, 1990 cited in Shields, 2003: 47). This can also be illustrated in Figure 1.5, where an avatar in Second Life was voted one of the top 100 most attractive women in the world in Maxim magazine’s ‘hot 100’ of 2007.

Baudrillard’s goal was to demonstrate how a shift from representation within contemporary culture was symptomatic of a historical drift away from nature and authenticity, or the real. For him, the danger of simulations lies in their ability to deceive, often through idealisation, so much so that simulations become preferable to the messiness and complications of ‘the real’. In that respect, simulations have an ideological function: they work as distractions or alibis. His famous discussion of the first Gulf War (1995) is a fine example of how a simulacrum can serve to mask an ugly truth.

However, at this point we should refer back to the end of the previous section on virtuality, where Shields (2003) and Lister et al. (2009), informed by the insights of Deleuze,
suggest that the line between the actual and the virtual is continually being crossed, and both together make up the real as experienced in everyday life. So it may be that we are not, as Baudrillard suggests, losing touch with ‘the real’ but that what used to constitute ‘the real’ has undergone change.

**Case Study: What Are Video Games? A Conundrum of Digital Culture**

Culturally, video games are significant because they were the first form of mass digital media, as well as the first mass consumed interactive media (Newman, 2004), and have also been at the forefront of digital culture in terms of the creation of immersive environments and networking. Frasca (2003) boldly suggests that ‘Video games imply an enormous paradigm shift for our culture because they represent the first complex simulational media for the masses’ (Frasca, 2003: 224).

This bold assertion hides a larger debate regarding what video games actually are as a cultural object. Video games have elements of many different media: they have elements of a story and usually have characters, thus suggesting an affinity with narrative texts,
they have visual, sonic and cinematic elements reminiscent of narrative film, they have rules and player agency associated with games and they have interactive and simulational elements that are most commonly viewed as fundamental to digital media. In many ways, video games defy categorisation.

Are video games ‘narratives’?

In this chapter, one of the main arguments put forward is that in digital culture, the cultural form of the database is beginning to supersede narrative as the preeminent cultural form of contemporary times (Manovich, 2001). Increasingly, Manovich argues, media objects consist of separate elements arranged on an ad-hoc basis with no predetermined authorship or a structured sequence of events which move towards an ending. One of the main stumbling blocks to this generalisation is the video game, which Manovich himself recognises as the one bastion of narrative in digital culture. Indeed, most contemporary video games have a story, a setting and characters. For example, in the highly popular Grand Theft Auto: San Andreas, the game revolves around player/character ‘CJ’, as described in the promotional material for the game:

Five years ago Carl Johnson escaped from the pressures of life in Los Santos, San Andreas ... a city tearing itself apart with gang trouble, drugs and corruption. Where filmstars and millionaires do their best to avoid the dealers and gangbangers.

Now, it’s the early 90s. Carl’s got to go home. His mother has been murdered, his family has fallen apart and his childhood friends are all heading towards disaster.

On his return to the neighborhood, a couple of corrupt cops frame him for homicide. CJ is forced on a journey that takes him across the entire state of San Andreas, to save his family and to take control of the streets.

(http://www.rockstargames.com/sanandreas/)

It is argued that the narrative elements in a game promote structure, motivation, psychological depth and a context for the player’s actions, adding to the immersive experience of the game and thus the quality of game play experience for the player (Mallon and Webb, 2005). In this light, video games have traditionally been seen as extensions of narrative, and have been analysed and conceived of as a form of interactive storytelling.

However, many video game scholars became increasingly frustrated with this approach, arguing that video games contain very few of the essential elements of ‘narrative’, that approaching them as narratives fundamentally misses the integral features of interactivity that is their core (Juul, 2001). In short, they argue:
Key Elements of Digital Media

- Narratives follow inevitable rules and predetermined sequences of action. Thus, video games are not a 'text' to be read because their outcomes depend directly on the action of the player (Frasca, 2003).
- The narrative components of video games tend to be non-interactive (for example, in the form of 'cut scenes' or instructions), and thus form only an incidental part of the player experience or motivation to play the game. Furthermore the games themselves usually lack dramatic content (Crawford, 2003).
- Characterisation is weak or even non-existent in video games. At best, characters tend to be viewed in game play as sites for action. Indeed in many video games (such as Tetris, or SimEarth), there is no visible actor or character at all (Juul, 2001).

As a result, there is a large debate occurring within the small domains of video game scholarship in which many suggest that such objects would be better examined in light of their capacity as 'games' than as 'texts'.

Are video games, ‘games’?

Theorists such as Juul (2001) and Frasca (2003) suggest that video games should be studied from the standpoint of ludology (the study of games). The notion of a 'game' suggests two basic elements: rules and an objective (or a way to ‘win’ and ‘lose’). These are the elements of what Callois (1961) refers to as ‘ludus’, essentially games with explicit rules that ultimately define a winner and loser (Frasca, 2003). This is of course common to all formalised games, not just video games. For example, football, as a game, has rules which include a field of play, a set time (90 minutes), an objective (to score more goals than the opposition in the set time) and strict rules about how this can be accomplished (not being able to touch the ball with your hands or arms).

Moving further with the work of Callois, Frasca (2003) suggests that ludus style game play occurs in three stages: learning the rules; playing the game; ending the game and deciding a winner. In this respect, Frasca argues that games and narratives are different. Games are rarely played only once (after all, one has to get used to the rules to play properly), whereas narratives are often consumed only once. In addition (also unlike narratives) one can never play the exact game twice, as the players and their actions will always be different.

Video games, especially earlier single-screen games such as Space Invaders, Donkey Kong, or Asteroids, have clear rules, a bounded sphere of action and a direct way to win. Any narrative elements ('save the earth from invaders', 'rescue the princess', 'save the ship from the asteroid field'), while they may exist, are ultimately subordinate to the main task as far as the player is concerned: to win, either by getting a high score, or living as long as possible. This seems clear and self-evident, but what about video games that don’t end, or games which have no winners or losers?
Are video games ‘simulations’?

In 1978, Atari released a new game for its 2600 console. Entitled Adventure, the game was based on the Dungeons and Dragons fantasy theme in which a knight must find a magic sword through a maze of rooms in order to slay dragons and recover a golden chalice. Essentially an exercise in problem solving, the game earned a place in video game history not for its graphics (which were basic in the extreme) but for its novel use of the cinematic convention of off-screen events (things in other parts of the labyrinth happened independently of the player’s actions) and the ability to freely move the character from one screen (room) to another (Robinett, 2003). What Adventure did was create a world beyond the screen: a world with a labyrinth of rooms and where things happened independently of the player’s actions.

Twenty years later, Aarseth (1997) argued that video games behaved much like cybernetic systems that incorporated feedback mechanisms to create an environment for game play (see Chapter 9). Frasca (2001, 2003) built upon this observation to argue that video games should not just be seen as narratives, or even just games, but simulations. Here, Frasca is working with a very specific definition of simulation: ‘to simulate is to model a (source) system through a different system which maintains to somebody some of the behaviors of the original system’ (Frasca, 2003: 223).

Basically, Frasca sees simulation as a dynamic system that behaves in some manner and thus reacts to actions or events according to a set of conditions. Increasingly, as video games have moved away from single-screen action, the creation of simulational worlds has become a dominant part of video game culture, as evidenced in so-called ‘God games’ such as SimCity or Civilisation, to social simulation games such as The Sims, sports simulations (Football Manager), to business, government, medical, flight and biological/ecological simulations. All of these games are thematic simulations or models of a particular system and as a game rely on the player interacting with complex feedback processes in order to transform the environment of the game into something the player desires.

In this respect, with these games there is often no specific goal which needs to be achieved to win the game. Players can merely ‘tinker’ or create their own goals to achieve (the ugliest life form, the most efficient city), and the game itself never really has to end. Thus, as Frasca (2003) suggests, video games as a genre not only incorporate the notion of ludus, but also what Callois refers to as padia or unstructured play. This is the form of play normally common with younger children who pretend (say, by modelling themselves on adult behaviour, playing ‘soldier’ or ‘nurse’) or tinker and experiment (with building blocks for example). Such play differs from (ludus) ‘games’ in the sense that rules are much less explicit, and there is no inherent purpose, winner or loser, or even a reason to end. If there are any goals, they are up to the player themselves and these efforts can be seen as a form of creativity.

Padia is more akin to simulation games, as these tend to be about exploration, experimentation and creativity. However, the popular first-person shooter game series, Grand Theft Auto (or similar games) incorporate both ludus and padia styles into its simulated
world of urban crime. Players can choose to pursue the stated objectives associated with
the plot of the game, or they can simply explore the world, start impromptu gun battles,
or complete death-defying stunts. Indeed, there is a large amount of user generated
content on YouTube in which people have created videos out of stunts and gun battles
on Grand Theft Auto as well as other games.

Video games have also changed over time from being solitary activities played on
isolated consoles or PCs to become social activities where users compete against, inter-
act among and cooperate with, each other, through networked computers or games
consoles. This has been accomplished by the online networking of console games and
also through the growth of web-based MMORPGs such as World of Warcraft and Second
Life. These games have changed the nature of video game playing online as they are
not so much games as they are virtual social worlds. Many participants have even set
up profitable businesses selling virtual goods in them. As many as 10 million people
worldwide subscribe to World of Warcraft and perhaps 30 million people worldwide are
involved in MMORPGs (Castranova, 2005).

There have been a number of recent large ethnographic studies of virtual worlds
or MMORPGs (Castranova, 2005; Meadows, 2008; and Boellstorff, 2008). Each of
these have approached the phenomena from a different angle. Castranova (2005) sees
MMORPG’s as games, Meadows (2008) makes a distinction between ‘game worlds’
like World of Warcraft, in which there is some sort of competition among players (and
the ‘loss’ of being killed and having to start over), and ‘social worlds’ in which there is
no direct competition and no chance of being killed. Boellstorff (2008) makes a clear
assertion that online worlds are not games, and thus are not video games. Certainly
MMORPGs like Second Life are not games in the ludic sense, but one can argue that
they demonstrate the padia quality of simulational play quite forcefully. Having no end-
ing or no stated goal, Second Life, Twinity and other socially-based MMORPGs (and one
could include the World of Warcraft) seem only to have the theme of ‘existence’, which
can be subdivided into vague ambitions of exploration, creativity and a quest for increas-
ing popularity or power within the world.

However, such ambitions will ultimately be manifest in different ways by different
players: from exploring different virtual landscapes, to maintaining different forms of
social relationships, to building structures and works of art, creating profitable busi-
nesses, acquiring skills and even amassing slaves. In this sense, the behaviour of play-
ers in MMORPGs is more akin to the creative exploration involved in Grand Theft Auto
shootouts and stunting than any specific ludic objectives. ‘Games’, perhaps they are not,
but they can be accurately described as relatively unstructured ‘play’ within simulations.

CONCLUSION

The purpose of this chapter has been to outline the basic elements of digital media as
compared to traditional broadcast media (or ‘old media’) within wider technological
and cultural contexts. This has been explored through the general themes of technical
processes, cultural forms and immersive environments. Within these themes there have been several features which, in sum, constitute digital products as novel compared to previous media incarnations.

The various features within these themes were many and interconnected, but one general theme which has emerged throughout the chapter is the idea that digital media products are as much process as object. What I mean by this is that digital media or new media objects tend not to be things ‘in and of themselves’, finished and ready to be consumed as a finite product by the audience. Instead, digital media objects usually have just as much in common with (telecom) conversations as they do with media artefacts or objects. So where one views a traditional media object such as a film, a book, or a painting, these objects have a finite ‘object-like’ quality to them. Digital media objects, more often than not, break from this and are usually in continual production, being in constant dialogue and transformation with the audience and with other digital products and technologies.

**FURTHER READING**

As one would expect with such a long and diverse chapter, there are potentially many further texts that could be suggested. In terms of the broad scope of the chapter, I would suggest that Manovich (2001) is essential, and a highly influential book. Poster (1995) is also broadly useful and a seminal work. Landow (2006) provides an excellent discussion of the relationship between critical theory and technology. Jenkins (2006) and Bruns (2008) provide good discussions about participatory new media as ‘process’. Shields (2003) is a good and comprehensive discussion of the idea of the virtual, with illuminating examples, and Baudrillard’s (1994) classic work is the starting point for any critically-informed discussion of simulation.

To follow up on the discussion of video game culture, an excellent starting point is Wolf and Perron (2003) *The Video Game Theory Reader*, as well as Newman (2004). A good debate regarding simulation versus narrative is also held in the first issue of the online journal *Game Studies* (http://www.gamestudies.org/0101/). Meadows (2008) and Boellstorff (2008), both provide good in-depth ethnographic discussions of *Second Life* and other simulated worlds.

**NOTES**

1. Of course, there is an entire body of cultural studies and sociological work, from the mid 1970s onwards (and particularly throughout the 1980s), which would argue that these descriptions of the passive audience in broadcast media as extremely simplistic, especially in their description of audiences as some sort of undifferentiated mass that ‘reacts’ to media in a uniform way. See Abercrombie and Longhurst (1998) as a good summary.

2. Not to take anything from Manovich’s excellent work, which is obviously highly influential in the making of this chapter, but no work is perfect, and *The Language of
New Media fails to appropriately tackle ‘interactivity’, for example. Manovich is actually quite dismissive of the concept, suggesting it is ‘a basic fact of computers’ and therefore meaningless as a term. He gives ample discussion to the term ‘algorithm’, however, even though all software uses algorithms and in that sense, is also a basic fact about computers.

3 There are elements of hypertext within traditional print. For example, academic books are somewhat hypertextual in they often have footnotes and endnotes (like this), and references at the back of the book, all which are periodically referred to in the main body of the text. These allow the reader to break up the main narrative with other blocks of related content.

4 Here I note that I am following Buchanan (2007) in choosing to rely on Deleuze and Guattari’s summary on page 21 of A Thousand Plateaus, as opposed to the earlier discussions of the six principles of Connection, Heterogeneity, Multiplicity, Asignifying Rupture, Cartography and Decalcomania. I feel that the way that the material was presented on page 21 was much more coherent and useful for this brief discussion.

5 It is important to note that Frasca’s definition is heavily influence by the computer science notion of simulation as a ‘model’ of a system. This contrasts Baudrillard’s (and many other social philosophers) more pejorative notion of simulation as a deception away from reality, or even as a destruction of the real. Other online games are simulations more in the Baudrillard sense in that they aspire towards social realism, and replicate real life events. Military games such as America’s Army (in which the player is put in the position of being a new recruit in the US armed forces) and their ideological counterpoints Under Ash and Special Force (both produced in the Middle East and which put the player in the position of Palestinian insurgency) depict real-life battles which have taken place within familiar geopolitical contexts (Galloway, 2004).