Gameplay and the Aesthetics of Intimacy

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Abstract

This thesis examines early videogames in relation to a number of current and emerging topics in videogame aesthetics.

The introduction outlines the approach to videogame history the thesis follows. It offers a periodisation of early games as those played during the period when arcades were the focus of videogame production and consumption. It puts the study in the context of Jenkins’ call for a ‘popular aesthetics’.

The first chapter gives the theoretical underpinnings of the thesis’s critical approach to videogames. The thesis compares games to other media as a result of criticisms of medium specificity in philosophical aesthetics and considerations of media convergence. It offers Manovich’s concepts of information design and information behaviour as the basis of a comparative approach. The thesis generalises from particular experiences of play, and it draws on prior critical practice in justifying this approach. The thesis analyses audiovisual aspects of videogame play, and it synthesises a model of game mise-en-scène for this purpose.

The second chapter looks at the parallel origins of media art and early videogames in the context of videogame archaeology. It locates the emergence of artworks by Nam June Paik and the earliest videogames in relation to changing discourses and definitions of artistic practice and the technological utopianism of 1960s culture. It considers the quick adoption of home game technologies and the early success of arcade play which arise from prominent approaches to media history.

The third chapter approaches narrative and fiction in videogames. It tracks the history of narrative and fiction as concepts in videogame studies, pays extended attention to Juul’s concept of fictional worlds, and develops this in the light of Jenkins’ and Manovich’s ‘architectural’ approaches to videogames. It shows, through close textual analyses of two early games, that rather than being epiphenomena of rule structures, players’ imperatives are embedded and revealed as aspects of fictional worlds constructed through audiovisual design.

The fourth chapter stages an encounter between the space shooter and emerging conversations around genre in videogame studies. It shows that genre is a multidimensional phenomenon, and that videogames genres can be understood in relation to a broader cultural context. Specifically arguing that the space shooter is a brand of science fiction, it shows that these games refract the genre in a new way, and can be seen as a reflection on the emergence of videogames as an ‘uncanny’ technology of real-time interaction.
STATEMENT OF AUTHENTICITY

I declare that this thesis is my own account of my research. This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

[Signature]
Jason Anthony Wilson
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NOTE

Throughout this thesis, 'videogame' will be the preferred term for referring to games. This is chosen above 'computer game' because as discussed in Chapter One, not all of the games discussed use computer technologies, and preference is given to 'video game' for the sake of simplicity and because the term usefully unites the visual and the ludic, in line with the emphases of this thesis. Online, unpaginated sources are simply referenced without page numbers. Videogames are referenced using their manufacturer or publisher and a year. A gameography is provided separately from the bibliography after the conclusion.
INTRODUCTION

Early Games, Periodisation, and ‘Popular Aesthetics’

This thesis examines what it defines as ‘early videogames’ in relation to a number of current and emerging topics in videogame aesthetics. It is a contribution to the effort to understand videogames in relation to a much broader field of cultural objects, and within longer cultural histories, rather than a radically self-contained, unique field of cultural objects. It is concerned with questions of aesthetics and history, and the interconnections between them, a number of which guide its arguments. Can the debates that have so far taken place in videogame aesthetics be usefully illuminated by the specific consideration of early videogames, and, conversely, can we understand these early videogames as having unique aesthetic aspects given the debates that have so far taken place in the formation of scholarly criticism? Could a periodisation of videogame studies nuance or complicate critical debates in game studies? Could aesthetic claims help with such periodisation? In answering these questions, the thesis is concerned with producing a number of linked interactions between history and aesthetics in videogame studies – a method that informs its structure, selection of sources, and its critical approach to videogames as mediated cultural experiences. The key motivation for the thesis is a desire to expand the critical conversations around videogames so that they speak more clearly to the experiences of players, and to the nature of videogames as the outcome of processes of design.

The thesis is therefore a series of mediations between debates about the appropriate
methods for analyzing and understanding videogames as interactive cultural experiences, aspects of the history of videogames, and considerations from broader debates in media and cultural theory. It critically engages with relevant parts of the literature in the burgeoning field devoted to the study of videogames – game studies – and can be understood as making a contribution to this field. But, crucially, the main themes in the thesis's arguments are that the intellectual sources and frameworks of comparison that game studies draws on can be fruitfully enlarged, that the critical analysis of videogames needs to be tied to an understanding of videogames' historical contexts, and that videogames are better understood through specific kinds of close analysis than they are by means of categorical a priori claims about them.

Therefore it draws on debates, analytical tools, concepts and modes of analysis developed in relation to other media. In succeeding chapters, it engages with established and emerging issues in videogame aesthetics – definitions of the form, the status of the audiovisual aspects of games, the relationship of games with other media forms, narrative and genre – and brings perspectives to them that draw on film studies, television studies, media history, new media studies and philosophical aesthetics along with current debates in game studies. The deliberate expansion of the range of sources for the analysis of videogames is consistent with the comparative emphasis of the thesis – videogames are put side by side with a wide range of established and contemporaneous cultural forms and technologies in all of the thesis's analyses. Related to this is also an emphasis – consistent with some recent developments in game studies – on the audiovisual aspects of the fictional worlds videogames create. In synthesizing tools from different sources for
comparing videogames with other media, and analyzing their audiovisual worlds, the thesis carries out close analyses that draw principally on the authors own experiences of play, and therefore carries out a dialogue between debates in videogame aesthetics and close analyses of specific videogames. A chapter outline is offered later in this introduction, but these approaches to the aesthetics of videogames should be understood as threads that connect each chapter’s more specific concerns.

In joining debates in videogame aesthetics, though, the thesis suggests that a greater historical specificity can be introduced into critical analyses of videogames. Just as studies of literature, cinema, television and other cultural forms employ periodising concepts for deepening understanding of creative achievement, this thesis formalizes a periodisation of ‘early games’: it shows that the games designed in the years when arcades were the dominant venue for the reception of games, and the focus of the videogames industry, have a particular interest that derives from their status as a new, emerging medium. The remainder of this chapter is devoted to the initial framing of this periodising concept, but succeeding chapters show the relationships between early videogames and early media art, their mobilization of digital spectacle in an ‘aesthetics of attraction’ (Gunning, 1986), and their engagement with the themes of science fiction as a way of offering a ‘playing out’ of the anxieties they provoke as an uncanny technology.

The remainder of this introduction develops the preliminary periodisation that the remainder of the thesis draws on, offering perspectives on narratives of videogame history. It positions the thesis in relation to ‘popular aesthetics’ (Jenkins, 2002) and ‘new
games journalism'. It offers a rationale for the selection and treatment of the parts of game studies literature it considers, and the videogames it analyses. It also offers a chapter outline that previews the remainder of the thesis.

'Roaring Into the Night': The Promotion of Night Driver

Examining the circumstances and materials surrounding the release of particular games provides a provocative stimulus for re-evaluating our understandings of In 1976, Atari released an arcade videogame, Night Driver (Atari, 1976), which was an influential creative achievement but whose audiovisual design, to twenty-first century eyes, might seem abstract or schematic. The flyer produced to promote the game to arcade owners, along with highlighting certain ‘profitability features’ and operator options, foregrounds specific aspects of the games:

Now from the Atari stable of high profit-scoring racing machines comes the first game to offer players the excitement of night racing. New Night Driver places the driver in the cockpit of their own Sebring type racer. Players select one of 3 tracks, press the accelerator and roar into the night. The monitor displays a twisting, curving road ahead. The harder the acceleration, the faster the track comes at the player. Screeching tires around curves, crashes against road barriers, the whine of changing gears add to the fantastic realism... New "Blacklight" graphics. The ultimate in realistic nighttime simulation. A unique ultraviolet light illuminates car on screen and instructions on the monitor bezel...Exclusive Durastress tested solid state reliability...means your crew can sit back and watch the earnings grow each mile. (Atari, 1976: 2; emphasis in original)

The game is here promoted as embodying technological features that have particular effects. First, the blacklight technology, sound effects, and on-screen display are all advertised as offering a heightened form of ‘realism’ and are all foregrounded as pleasurable aspects of the game. Also, the cabinet design is promoted for its durability in
an arcade setting, and the game is advertised as a reliable, profitable investment for arcade owners, its primary consumers. These aspects of the game are far more prominent in description than any of the ‘configurative acts’ (Eskelinen, 2001) that players might perform. Structural features of the ergodic aspects of the game are taken as read or seen as permeable with the fiction or simulation that the game offers – the player ‘presses their accelerator and roars off’ into a ‘night’ that is present only in the mise-en-scene. These are the elements that might be seen in some quarters as inessential to the game – its visual pleasures and the game’s nature as a commodified spectacle (See for example, Eskelinen, 2001; Aarseth, 2004) – that Atari nominates as the true achievements of Night Driver. It is audiovisual realism and pleasure, and its suitability to a particular context of exhibition and consumption that are used to differentiate it from a host of competing digital and non-digital slot machine entertainments, and to explain to arcade owners how players will derive enjoyment from it.

In light of this, in critically understanding the game, we can go beyond the parameters of its relationship with pre-digital games, or accounts that would assimilate it to a transhistorical category of ‘gameness’ (Juul, 2005). Rather than emphasizing its underlying similarities with other videogames, it is possible to think instead about the ways in which it is different and distinctive from concurrent games and from twenty-first century games that might seem to offer related kinds of spectacle and play. Other driving games that were available at the time, such as Gran Trak 10 (Atari, 1974), have similar controls but offer a top-down perspective on the entire racetrack that the player must negotiate with their avatar. The enhanced ‘realism’ that Atari promises is connected with
the specific, audiovisual construction of space that approximates the view that a car's driver might have. Although many contemporary driving games such as those in the *Ridge Racer* series (1995-2007) have much more richly detailed audiovisual environments, and are often played in the context of the home with console technologies, they seem to be part of a tradition that *Night Driver* initiates: games that offer a fictional experience of driving from a perspective close to that of the driver of an actual car. Our ideas about *Night Driver*'s unique importance as an arcade game can, perhaps, be enriched by thinking about its particular construction of on-screen space, and the sounds and images it employs in enhancing the player's pleasure and sense of immersion. Rather than using it to exemplify a deep underlying structure that it shares with all games, we can see it as a historically specific example of a certain design strategy, as part of a tradition that uses specific audiovisual strategies, and thus understand it through comparisons that are alive to differences as well as similarities. Importantly, we can think about the way in which *Night Driver*, as an aesthetic phenomenon, arises from a particular conjuncture, involving not only a specific set of technological capacities, but an emphasis on certain venues for the enjoyment of gameplay and videogame spectacles. It also represents a specific moment in the ongoing investigation by designers of the possibilities for spaces, fictional worlds, play, and spectacle in videogames.

*Night Driver* is considered at greater length in Chapter Three of this thesis, but here the ways in which it is advertised usefully open out into the questions that preoccupy it and shape its succeeding arguments. The thesis approaches answers to its interrelated questions across a range of topics that have emerged in early debates in the field. Later
chapters approach videogame archaeology, issues of narrative and fictionality, and questions of genre in relation to specific games from the earliest period of videogame design. The chapter that follows this introduction justifies a theoretical framework for answering them that emphasizes the internal diversity of videogames, active comparison with other media, a critical method that generalizes from the experience of playing games, and an attention to audiovisual aspects of videogame play. In all cases, theoretical claims and critical arguments are developed in relation to existing literature so that rhythmically the thesis moves between close considerations of current scholarly debates, and close analyses of particular games and families of games. Before the outline of chapters is given in detail, the category of early games needs to be unpacked, and the thesis’s use of the category and its relationship to other modes and accounts of videogame history explained.

In offering a periodisation that sets up a category of ‘early games’ it is useful to first ask how videogames have been periodised by fans, journalists, and other scholars. Prior periodisations of videogame history are both drawn on and modified in this thesis so that an awareness of them is essential to frame its historical aspects. It is suggested that two broad and somewhat contradictory discourses have framed the periodisation of videogames: the first is the narrative of ‘upgrade culture’ and the second is that of ‘retrogaming’. Both kinds of periodisation contain important insights that are drawn on in later arguments, but this thesis steers a course between the teleological narrative of upgrade culture and the celebratory nostalgia of retrogaming. This is because it avoids attempting chronological history, preferring to approach early games with the thematics
of debates in videogame studies, and because rather than being primarily interested in internal histories of videogame culture, it is concerned with broadening our sense of that history and placing games in a far broader context of media forms and aesthetic traditions.

'Upgrade Culture’: Developmental History

The first discourse that tends to structure views of videogame history is the one that offers a story of development and constant improvement. This is the commonly-articulated idea that videogame designers were more constrained by limitations in the past than they are now and they will be less constrained in the future; as a result, technological constraints are definitive of creative possibilities. Dovey and Kennedy (2006) describe the idea that game designers are perpetually working within limitations that are constantly shifting and expanding with the discourse of ‘upgrade culture’:

New media are produced within a system where technology is never stable – what Kline et al. call a state of 'perpetual innovation'...The Moore's Law effect at the heart of upgrade culture has the effect of both increasing memory available to designers and increasing the speed at which data can be moved. Paradoxically, this has the effect of producing a discourse within the computer design and games industries in which the limitations of available memory and speed are determining and dominant. It is impossible to discuss the creative work of games designers or programmers without the sense that they are constantly constrained by hardware specifications, which will be ameliorated by the ever-promising 'next generation.' (2006: 52-53)

Pessimistically, Steven Shaviro offers an account of a broader logic in which ‘upgrade culture’ is embedded: ‘The whole point of corporate aesthetic innovation, as we have seen, is really “aesthetic ageing”: to obsolesce and efface whatever came before, to eliminate the trace of the past in the present’ (2006). But Dovey and Kennedy show how
'Moore's Law' – the famous prediction by Gordon Moore that the speed and storage capacities of computers would double every eighteen months while the price of these technologies stayed the same – becomes a structuring narrative informing game culture (2006: 52). Projected historically, the idea that succeeding generations of software and hardware ease constraints informs a view of the history of videogames that sees it as a transition from simplicity to complexity, from the crude to the sophisticated, from restriction to freedom.

This discourse is no less present in videogames scholarship than that of journalism or the historical viewpoints offered within the videogames industry. In his (very interesting and productive) book about videogames, Berger (2002) gives a version of this story. After discussing PAC-MAN (Namco, 1981), he writes:

> From this relatively simple game, played on a maze, that featured monsters gobbling up dots, the video game industry has progressed to its current stage in which there are incredibly complex stories with graphics and sound that now rival those in animated films. The changes that have taken place...have been truly startling. (27)

Here, the transition from the past to the present is a transition from the simple to the complex; videogames now have stories and naturalistic sound and graphics whereas before they did not. There is, in the work of other authors, a corresponding belief that just as videogames have developed in the past, they will develop further in the future, overcoming current limitations. Pesce (2002) previews the future by, in part, activating his readers' understanding of the magnitude of technological development in videogames' history as a cultural form:

Consider this: 3D computer graphics, the essence of simulation and the core of modern videogaming, will be a trillion times faster in 2020 than they are
today. Every five years, we get a thousand-fold speed improvement, with no end in sight. The photorealism of movies like *Shrek* or *Final Fantasy: The Spirits Within* will soon look as antique as the Atari 2600 does to us. (131)

Pesce imagines the limitations of the present swept away, just as the limitations of the past have been, with current videogames consigned to the category of the ‘antique’, there keeping company with the Atari 2600. In these examples, videogames history has been, (and in Pesce’s piece, will stay) on a developmental trajectory.

The determining influence of technology is emphasised in even recent, sophisticated accounts of videogames as a cultural form:

The shape and size of Mario in the NES version of *Super Mario Bros.* is determined not simply by artistic intention or narrative logic but by the design specifications of an 8-bit 6502 microchip driving the game software...But this is not a simple determinism on the macro scale of what happens on the micro scale. There are also other influences from the logic of informatics that affect the nature of certain gamic actions...When one plays *State of Emergency*, the swarm effect of rioting is a formal action enacted by the game on the experience of gameplay and incorporated into the game’s narrative. Yet the formal quality of swarming as such is still nondiegetic to the extent that it finds its genesis primarily in the current logic of informatics...rather than in any necessary element in the narrative. (Galloway, 2006: 32-33)

Galloway’s claim here is that the ‘logic of informatics’ and the limitations of whatever the current hardware and software available to game designers happens to be, has just as decisive an effect as the intentions and skills of designers on the way games look and on the form and behaviour of worlds of play. In both *Super Mario Bros.* and *State of Emergency*, it is the ‘...machinic embodiments that emanate outwards from a game to exert their own logic on a gamic form’ that in large part determine the way a game looks and the way the inhabitants of its world behave; in this sense, for Galloway, the audiovisual aspects of games are ‘math made visible’ (Ibid.).
Beyond scholarship, in journalism and the videogames industry, succeeding generations of videogaming hardware and software platforms are often seen in the light of a progressive view of videogame history. An excellent recent exemplification of this tendency is in Sony’s notion of ‘Game 3.0’ (See Miller, 2007), where this generation of gaming, involving user-generated content, has succeeded the ‘Game 1.0’ era of self-contained experiences, and the ‘Game 2.0’ era that saw the beginnings of networked gaming. Periodising primarily by technical capacities, this strategy is similar to the one used for periodisations according to platform processing power, as in when concepts like the 16-bit or 32-bit eras are used in accounting for videogame history (See for example Herman, 1997). In all of these cases, the view of history expressed is a progressive movement towards more integrated, sophisticated, or powerful gameplay experiences. In all of these views, history is ordered by technological change.

Shared narratives of a transition from an antique or primitive past to a sophisticated present in videogame scholarship – what Newman calls ‘... the presentation of technological advancement as progression or development towards perfection’ (2004: 31) – are not necessarily indicative of scholars unreflectively ‘buying in’ to the industry’s framework of upgrade culture. They need to be historicized in terms of the development of the academic study of videogames. Given the turbulence and uncertainty that goes with establishing any new field of study, these can be seen as rhetorical efforts to present videogames as being worthy of scholarly attention. Pioneer researchers in any field are,
quite rightly, often preoccupied with justifying attention to the form as it stands, and perhaps emphasizing its sophistication. Whalen writes of:

A common rhetorical phenomenon in writing about video games is to begin with a broad statement invoking the volume of games produced or the surpassing quality of the most recent generations of games to “wow” skeptics into considering the possibility that games mean something more than play. (2004b)

This is not necessarily unique to videogame studies. For example, Perkins (1972) and Carroll (2003) offer parallel historical accounts of the development of film studies that show how early theorists were preoccupied with asserting the status of film as art, and therefore legitimating serious study of the form. In the context of videogame studies, developmental narratives are an appealing way of demonstrating what has been achieved and what has already happened during their history to a broader scholarly and public audience who may be skeptical that it merits close analysis and study. (It is important to note that Berger’s quoted comments on the development of videogames are made in the context of justifying videogames as an object of study, and Pesce’s in one of the first published collections of academic work on videogames.) But what is equally familiar in the history of cultural analysis and criticism is a return of other scholars, in the wake of such pioneering work, to the early period of a form’s development to discover that, perhaps, there is more there than can be summarized by simple narratives of progress.

There is an important example in the study of early cinema following the 1979 Federation of Film Archives conference in Brighton. Here, a number of scholars began the revaluation of what had previously been regarded in teleological terms as the ‘primitive’ period before cinema had attained its ‘natural’, narrative form:
Post-Brighton scholarship...[broke] with the teleological trends of the past by repositioning this body of films simultaneously as the culmination of various nineteenth-century representational efforts, and as a catalogue of unexpected possibilities for a yet to be disciplined medium...This shift in perspective was profound, rupturing the taken-for-grantedness of the narrative of the medium's progress. (Ulicchio, 2003: 28-29)

This revaluation of cinema history led to a new appreciation of the richness of apparently simple early cinematic efforts as they came to be appreciated as the fruits of one of the ‘...moments of tension and instability [that] offer particularly sharp insights into the construction of media forms' (ibid.: 31). In the first generation of such scholarship, there were insights into film form as profound as Gaudreault's (1990) perception of narrative patterning in the single-take films of the Lumieres, and Gunning's discovery of early cinema's characteristic aesthetic of attractions, its distinctive system of genre, and its particular address to the spectator (1984; 1986; 1990b).

In an analogous way to the revisionist scholarship carried out on other media, this thesis evaluates early videogames as aesthetic phenomena, and to this extent it tries to step outside ‘upgrade culture' to treat early videogames on their own terms. To be clear: there is no argument to be had about the claim that, technologically speaking, videogame hardware and software is more powerful in the 2000s than it was in the period from 1971 to 1984 on which this thesis concentrates. There is no question that, as Newman (2004) puts it, ‘...videogames are inexorably linked with technology' (30) and that ‘...the development of gaming systems has had a profound impact on the form and structure of videogames' (31). The promotion of Night Driver shows in part that videogames have always been designed and consumed in relation to a shifting matrix of technologies: computers and networks, but also display monitors, interface technologies, and storage
media. Similarly, no one would argue with the claims that now cinema has colour images and sound where once it did not and that technological frameworks have been involved in a range of new possibilities that have been realized by filmmakers in the period following what is now called ‘early cinema’, from feature-length narratives to widescreen projection to audible dialogue and soundtracks. But these facts in relation to cinema are not much used anymore to underpin arguments for the relative value or interest of particular works, genres, or practitioners. Technical limitations, in early cinema scholarship, are not identified as limitations in the text. The presence or absence of particular technologies or textual conventions is no longer adequate to form the basis of critical judgement and analysis in film studies. There is a lot of work that concludes that early cinema is distinctive in a range of ways from, say, classical cinema (see, for example, the work collected in Elsaesser [Ed.], 1990), but this difference is no longer expressed in terms of progress from the ‘primitive’ to the ‘narrative’: examples of early cinema are taken on their own terms. In short, the transition between early cinema and narrative or classical cinema is no longer unproblematically spoken about in terms of ‘improvement’ or ‘development.’ This is due to the revisionist histories written in the light of the definition of early cinema as a period of specific interest.

This thesis, it is hoped, will form part of a similar movement in videogame studies towards historically specific analyses of games that see them in their historical contexts and as related to other forms of media culture. What this study shares with the discourse of upgrade culture, perhaps, is the assumption that if there is one constant in the history of videogames, or any medium of creative practice, it is the presence of technical
constraints and technological contexts. However, it differs by not seeing these technological constraints as ultimately definitive of the aesthetics of the videogames of any period, or as the decisive factor by which creative practice can be evaluated. Such constraints are what videogame designers work within or struggle against, and the fact of technological constraint is no more absent in the 2000s than it was in the 1970s and 1980s. But the fact of technological constraints cannot wholly account for the achievements of designers and the experiences of players. Rather than seeing early videogames and designers as being hemmed in by constraints, this thesis tries instead to see early videogames as the realization of specific possibilities that did not before exist, and as giving significance to technological possibilities as they arose. Early videogame designers were responsible for creating media, in the sense that Stanley Cavell talks about filmmakers' creation of media in *The World Viewed*:

...[These were not] applications of a medium that was defined by specific possibilities, but the creation of a medium by their giving significance to specific possibilities. Only the art itself can discover its possibilities, and the discovery of a new possibility is the discovery of a new medium. A medium is something through which or by means of which something specific gets done or said in particular ways...in art, they are forms, like forms of speech. (1971:6)

This is to say, for example, that the existence of a television screen and a mid-1970s Atari 6502 chip does not allow the creation of anything like *Half-Life 2*, but nor does it in any sense 'contain' or entail the design decisions that led to *Night Driver*. The same technology was an ingredient in other markedly different Atari videogames, like *Avalanche* (Atari, 1978), *Boxer* (Atari, 1977), and *Breakout Deluxe* (Atari, 1976), showing that a given assembly of technologies can be an ingredient in very different outcomes. As the exploration of *Night Driver* in Chapter Three of this thesis shows, it
projects an evocative fictional world that reflects the influence of electro-mechanical racing games and the designers’ desire to reproduce the ‘real-world’ experience of driving at night. In Night Driver, possibilities are realized in terms of evocation, audiovisual and spatial design, and thus, fictional world-building which had previously not been given similar significance. And Night Driver’s realization of these possibilities has an evident continuing relevance in the genre of driving games.

In this thesis, critical analysis of a number of videogames from the period between 1971 and 1984, put in the context of key concepts and debates in videogame studies, shows how early videogames can be seen as a distinctive period in videogame design, but one which in which fully-realised videogames provided rich and rewarding experiences for players. In this sense, the thesis seeks to ‘rupture’ or at least nuance the taken-for-grantedness of narratives of videogames history as a tale of technological progress. In this way, this thesis supplements the work already done in videogames aesthetics and history that it draws on.

_Retrogaming: Nostalgic History_

In avoiding the teleological aspects of the discourse of ‘upgrade culture’, this thesis might be seen as falling into an alternative, more recently articulated narrative of videogame history, which still sees technological changes as having occurred, but which simply reverses the valuation of upgrade culture in assessing the import of technological and institutional change. Notwithstanding the affordances and possibilities connected with
technological change, many videogame players, fan communities, independent designers, and magazines have embraced ‘retrogaming’ which according to Newman offers an ‘...opportunity to recapture some of the innovation and invention deemed lost to the interests of the current marketplace’ (2004: 48). Retrogaming practices include: collecting vintage hardware or playing emulated games with applications like MAME (the multiple arcade machine emulator), making tributes to early games in the form of ‘remakes’ for contemporary hardware and software (see Wilson, 2005 for another account of remake practices), or producing, participating, or reading one of the many on- and offline organs of the retrogaming fan community (from David Winter’s Pong-story [1999-2006] website to the United Kingdom-published Retrogamer [2003-] magazine). Artists and curators have also expressed their retrogaming passions through exhibitions such as pong-mythos which toured Germany and Switzerland throughout 2006.¹

Part of Newman’s account of retrogaming culture in Videogames suggests that retrogaming represents a new way for ‘hardcore gamers’ to assert themselves:

While the late 1990s saw hardcore gamers attempting to grab the future of gaming by getting their hands on the latest titles, more recently, hardcore gamers have begun to look to the past for gaming experiences unaffected by consideration of the mainstream audience. The emergence of retrogaming can be seen as an attempt to reclaim videogaming from the mainstream and can be seen as a form of hardcore fan resistance. (2004: 53)

Klevjer identifies this ‘hardcore’ preference for retrogaming with certain tendencies in videogame studies, specifically that of ludology:

...[The] counter-establishment ideology of gaming, partly rooted in the dark arcades of the late 70’s and early 80’s, partly rooted in hacker culture, ...[which is] instinctively sanctioned by a new breed of oppositional

¹ The Pong-mythos exhibition combined artists’ reworkings of Pong with historically-focussed material and essays, including specially-commissioned essays by Wilson (2006) and Lowood (2007).
scholars, vaguely identifying mainstream players and mainstream commercial games with established theory. (2002)

Certainly, the idea that videogames’ past exceeds the industry’s present in terms of creativity and excitement has informed initiatives such as Costikyan’s independent Manifesto Games company, and the polemical document that led up to it:

An industry that was once the most innovative and exciting artistic field on the planet has become a morass of drudgery and imitation. A field that once prized creativity and novelty has become so risk averse that it will fund only franchise titles and licensed drivel; a medium that once spun off whole new genres practically every year has instead become one in which only games that slot into accepted marketing categories can be published. (Costikyan, 2006)

Costikyan’s critique bears out Newman’s claims about the rhetorical emphases in retrogaming culture: his is a vision of the earliest period of videogame design as an inspirational period of designer-led, risky creativity, and his view of the present is one where creativity is stifled by the conservatism of the transnational publishers and gigantic retail chains which together constitute the nexus of ‘big gaming’ (Wilson, 2005). Newman’s reading of retrogaming as ‘hardcore’ may need to be revised in the light of the recent popularity of retro remakes and retro-styled games on platforms like mobile telephones, portable gaming systems, and as downloadable nostalgia items for new generation consoles such as Nintendo’s Wii. But the claim that retrogaming is a value-laden ‘hardcore’ practice still has considerable purchase.

As much as this thesis is nourished, and indeed made possible, by the invaluable efforts at preservation, cataloguing, and historiography in retrogaming culture, its viewpoint differs from that of the hardcore retrogamers described by Newman. The principle

2 See Major Mike (2007) for details on some of the retro games available for the new generation consoles.
difference is that it seeks to offer an account of how early videogames were distinctive, but it allows for a reconsideration of the achievements of early videogame designers without committing itself at all to the idea that current videogames are unsatisfactory by comparison. The continuities between early videogames and those outside the period studied by this thesis, and the way in which more recent videogames use characteristic features of early videogames in innovative ways, are of as much interest as sharp distinctions. For whatever it is worth, the author of this thesis is an enthusiastic player of newer games, and disagrees as much with the proposition that excellent games cannot be made in the globalised, corporatised industry of the twenty-first century as with the notion that no good films are ever made in Hollywood.

Having said this, what this thesis perhaps shares with retrogamers is a feeling that the worlds of early videogames differ from those made and played in the twenty-first century in a sense that is developed over the length of this thesis alongside ideas of formal difference – which comes down to videogames’ lost capacity to astonish. The very early years of videogames as an industry were the first time that a popular technology allowed the direct manipulation of images on-screen, and the first time a mass audience confronted computerised technological spectacles. Aside from being part of a ‘hardcore’ attempt to take back an element of videogame culture, perhaps we can see retrogaming as an attempt to recover the moment when videogames were utterly new.

Gunning (2003: 39) sees media history as evidence of ‘...our fascination with rediscovering technology at its point of novelty,’ and writes that:
To imagine an old technology as something that was once new means, therefore, to try to recapture a quality it has lost. It means examining a technology or device at the point of introduction, before it has become a part of a nearly invisible everyday life of habit and routine. But it also must mean examining this move from dazzling appearance to nearly transparent utility, from the spectacular and astonishing to the convenient and remarkable. (Ibid.)

This thesis concentrates on this ‘point of introduction’ of videogame technologies, and tries to capture this moment of the ‘dazzling appearance’ of a mass medium of real-time play. It does so, though, with a consciousness that the ‘magical performances’ (Ibid.: 45) of new technologies are not unambiguous — they also give rise to our sense of the uncanny:

New technologies evoke not only a short-lived wonder based on unfamiliarity which greater and more constant exposure will overcome, but also a possibly less dramatic but more enduring sense of the uncanny, a feeling that they involve magical operations which greater familiarity or habituation might cover over, but not totally destroy. It crouches there beneath a rational cover, ready to spring out again. (Ibid.: 47)

In many ways, as this thesis shows, early videogames play up to, and even offer opportunities to ‘play out’, both the senses of astonishment and the uncanny that they provoke. Succeeding chapters investigate both the utopian aspects of the new medium, and try to uncover the disquiet it gives rise to, presents, and resolves. In this sense, perhaps along with the discourse of retrogaming, it seeks to recover some of the strangeness that attended on videogames at their point of introduction, which is an aspect of their unique aesthetics.³ Although this thesis does not extensively investigate

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³ It may be that videogames continue to mobilise our sense of astonishment and wonder with succeeding generations of hardware and software: Nintendo’s Wii console, at the time of writing, offered games in well-worn genres but foregrounded its new mode of interaction with a ‘magical’ correspondence between players’ body movements and on-screen events. But this could be seen as marginal compared with the fact
retrogaming practices, it can be said that while these practices may represent a 'vernacular' effort to recover the 'spectacular and astonishing' moment when games were new, this thesis will supplement such practices by more analytical considerations of videogames in their historical contexts.

*The 'Arcade Era' as a Periodising Concept*

If this thesis takes from upgrade culture the idea that technology is part of the context that frames videogame production and play, and from retrogaming discourses the idea that early videogames have distinctive aesthetic aspects, but refuses the evaluative claims that tend to proceed from these positions, how does this translate into a positive framework for periodisation? It is important to emphasize at this point that this thesis is not a chronological history of videogames, although it relies extensively on the work of historians who have worked in this way. And although it draws on published work by, for example, Cohen (1984), Herman (1997), Herz (1997), Sheff (1999), Kent (2001), and Burnham (2001), its concern is not to work in the tradition. It uses Internet fan sites, like David Winter's *Pong-story* (1999-2006) as rich repositories of documents, historical research, and technical information, along with community-generated resources such as *The Killer List of Videogames* and *The Arcade Flyer Database* which are invaluable as thorough and detailed catalogues of videogame history and ephemera. Although its concern is not to challenge the terms of narrative histories by using such material, but to bring it and historical writing into dialogue with debates in aesthetics. It aims to be a part

of manipulability that attended on the introduction of the medium, where, as is shown in Chapter Two of this thesis, people did not yet know what the medium was.
of what Huhtamo (2005) calls the movement of videogame histories away from their ‘chronicle age’ into more contextualizing investigation. His idea of ‘videogame archaeology’ as a foundation of such work is unpacked further in Chapter Two, where it is used as a basis for understanding the earliest videogames alongside early examples of new media art. But the underlying principles of such work, as developed in work by Huhtamo (Ibid.), Jarvinen (2001), and Wilson (2007), of reconnecting games with broader currents of modernity and media culture is a major theme of this thesis. Periodisation in the context of such work is more than clarifying simple technological successions, or even industrial and institutional changes as outlined in economic surveys of videogame history such as Kline et al. (2005) or Aoyama and Hiro (2003). In this thesis, the earliest period of videogame design and play is conceptualized in the sense that it is involved with a particular context towards which game design was shaped and in which games were received and played.

This thesis defines ‘early videogames’ as those manufactured and released between 1971 and 1984. There is a precedent for this precise periodisation in Van Burnham’s visual record, Supercade (2001), whose subtitle dubs it the ‘videogames era’, and the choice is no accident. This was the period when the videogames arcade was economically and technologically the preeminent venue for videogame play. This is not to say that there were no home videogame consoles and players in this period – as Herman’s (1997) history of home videogames shows, this was, perhaps unexpectedly, a period when a bewildering array of home consoles were available, and where important developments occurred in the stabilization of the configuration of home consoles as a hardware
platform that permitted a wide variety of software to be played. Since the mid 1980s, arcade revenues, attendance, and even the number of arcades have fallen (Williams, 2006) while the main focus of the videogames industry (that of designers and manufacturers) – the videogames audience and, arguably, the technological cutting-edge – has shifted to home console and personal computer-based play. It may be, as Williams (2007) says, that the ‘communal’ atmosphere of the arcade has been reproduced in Internet cafes on LANs, and more recently in massively multiplayer online gaming. But the era where the videogame industry was primarily focused on producing dedicated videogames for amusement arcades, and the audience expected to see the latest and most advanced technologies in public rather than private spaces, is past and is mainly confined to the period this thesis concentrates on.

To an extent that precisely reverses the current organization of the videogames industry, early videogames were more often played in arcades, and the industry as a whole was reliant upon arcade revenues. As Williams (2006) research on the social history of videogaming shows, except for a brief period in 1983 – at the height of the boom period for Atari’s successful home game consoles like the 2600 – from 1977 until the end of the 1980s, far more revenues were made in arcades than through home videogaming (see Figure 1, below). Even though Kent (2000) argues persuasively that the arcade ‘boom’ ended as early as 1982, this was not reflected in the relative earnings of the different sectors for some years. Williams characterises the shift as a gradual domestication of what was an arcade-based medium:

Throughout the 1980s, a combination of economic and technological forces moved play away from social, communal and relatively anarchic
early arcade spaces, and into the controlled environments of the sanitized mall arcade (or "family fun center") or into the home. The idea of a home game machine - once confusing and new to consumers - seemed less remarkable in a home with microprocessors embedding in everything from PCs to blenders. This acceptance can also be viewed as part of a general transition of technology-based conveniences away from public areas and into private ones. (Williams, 2006)

Williams' history of videogames is restricted to the USA, but in the absence of specific conflicting data, and on the basis of suggestions in work such as Aoyama and Hiro (2003), it is not unreasonable to assume that trends elsewhere followed that of the largest market for videogames. The factors that brought about the end of the pre-eminence of arcades included the industry-wide collapse of the mid-1980s, which (Williams is careful to argue) was embedded in a broader downturn in consumer spending and spending on entertainment. But home videogames (including dedicated consoles and games made for personal computers) recovered to become the primary focus of the global videogames industry, whereas, after their all-time peak as a revenue-earner in 1981, arcades have never again been as lucrative as they were in 1983. A brief rally in the late 1980s preceded a steady, continuing decline in arcade revenues.

Conversely, the market penetration of home console games was, according to Williams, painfully slow. As shown in Figure 2 below, even at the peak of the Atari VCS/2600's success in 1983, market penetration for videogames was only twenty percent at a time when ninety-eight percent of homes had a television (Media Info Center, 2006). It was not until 1982 that even ten percent of homes owned a games console; before 1981 it was less than five percent. Surprisingly, it was not until 1996 that a majority of American homes had one. In contrast to the amusement arcade industry, which was completely
revolutionised by the arrival of videogames, it took some time for home consoles to become a widely-used domestic technology. (This disparity is explored further in Chapter Two.)
Figure 1. Industry breakdown: Home game vs. arcade sales, in millions of dollars adjusted for 1983 value, USA (Williams, 2006).
Figure 2. Market penetration of home videogames and home computers, USA (Williams, 2006).
This pre-eminence of arcades as a venue in the early history of videogames as a mass-medium is borne out in other ways. The first major commercial successes for videogames as a cultural form were arcade-based games such as Pong, and key games in the period from 1971 to 1984 were arcade games, too, such as Space Invaders (Taito, 1978), Defender (Williams, 1980), PAC-MAN (Namco, 1979), and Asteroids (1979). As many videogames historians remark, arcade systems were consistently more technologically advanced than home systems throughout this period.⁴ The technological superiority of arcade games, and their industrial pre-eminence was reflected in the corporate culture and financial structures of dominant producers of early games such as Atari. As Kent describes the situation at Atari in 1978:

Coin-op engineers [at Atari] worked in teams, consumer programmers worked alone. Most important, through its first year and a half, the consumer division was a financial black hole. Coin-op earned millions of dollars, much of which was used to cover losses accrued by the consumer division. Unlike coin-op engineers, who wrote their code and then gave it to data entry people to input, consumer programmers entered their own code. (2001: 181-182)

At this time, coin-op machines inhabited a range of public spaces beyond dedicated arcades and were thus highly visible. Kent quotes games journalist Eddie Adlum to this effect:

Games such as PAC-MAN and Space Invaders were going into virtually every location in the country, with the exception of maybe funeral parlours, and even a few funeral parlours had video games in the basement. Absolutely true. I believe churches and synagogues were about the only types of locations to escape video games. (Ibid.: 123)

⁴ See Herman (1998), Herz (1997), Kent (2001) or Poole (2000) for confirmation of the technological superiority of arcade machines throughout the earliest period of the videogames industry.
While home consoles struggled to gain a foothold during the period of ‘early games’ as this thesis defines it, arcade games were visible and playable in a range of public spaces, and this was reflected in the priorities and focus of the arcade industry.

As is explored further in Chapter Two, the idea of controlling and manipulating images on a domestic television screen required a change in the rhetorics and practices of television use, arcade videogames had a ready-made infrastructure in already-existing amusement arcades. The chapter details the way in which both early videogame designers and electronic artists were explicitly committed to changing the uses of domestic television. But Williams (2006) shows that acceptance of domestic digital technologies did not come easily or instantly, and much early promotional material is focussed on representations of happy families interacting with the new technologies in order to make them less strange. (Similar promotional rhetorics are identified in Spigel’s [2001] analysis of the introduction of television to the post-war American suburbs.) On the other hand Huhtamo’s (2005) archaeology of home videogame systems, or Darley’s Visual Digital Culture (2000) are just two studies that show how early videogames emerged into an already-existing complex of manufacturers, arcades, audiences, and habits of reception that had been associated with pinball and other slot-machine or fairground amusements. As Huhtamo (2005) puts it:

Video game arcades were direct descendants of the game parlors. The transition that took place during the 1970s was gradual. Mechanical and digital game machines often existed side by side, as photographs from the era demonstrate. There existed a continuity rather than a rupture between electro-mechanical slot machines and video game machines. Not only were the physical interfaces, like the joysticks, simulated guns, steering wheels, etc. often used in earlier games; many game genres, such as
driving simulators, shooting games and sport and fighting games, already existed in pre-digital arcades.

Huhtamo’s demonstration of the infrastructure that was, in a sense, ready and waiting for arcade videogames goes some way to explaining the pre-eminence of the arcade as a venue for videogame play during this period. Although early pioneers of videogame design such as Ralph Baer worked successfully on producing games for home television sets, and whereas the very earliest, non-commercial videogames such as Tennis for Two (Higinbotham, 1958) and Spacewar! (Russell et al., 1968) were produced for large mainframe computers, early videogames were largely received as a mass medium in public spaces — primarily videogame arcades. While arcade videogames had clear precedents in other kinds of spectacular, technologised play, home play met with resistance, and the dominance of home-based play came later in videogames history.

There is some further evidence for the pre-eminence of the arcade as a venue for videogame in this early period in the critical and scholarly reception of early videogames. Martin Amis’s early critical appreciation of videogames, Invasion of the Space Invaders (1982) is primarily concerned with arcade-based videogames, and his own experiences of arcade-based play, along with strategy guides for arcade games. Patricia Marks Greenfield’s early exploration of videogames and children’s culture, Mind and Media (1984), seeks videogame players in arcades, and Greenfield visits arcades in order to play the games herself in order to find out videogames’ social and educational impact and potential. And the contention of videogame archaeologists and historians, like Jarvinen (2001), Huhtamo (2005) and Williams (2006), that most early moral panics were centred on arcades as troublesome spaces rather than on the images and action in individual
videogames, is supported by the evidence of scholarship that appeared during or immediately after the period this thesis focuses on. Fiske and Watts' (1985) early theorising of the 'inverted pleasures' of videogame play responds to Australian moral panics about videogame arcades, and talks exclusively about arcade-based play. Van Moorst's (1983) intervention in South Australian policy-making directly addresses concerns about videogames arcades as a centre of deviant behaviour. Marshall (1997) shows that moral panics around games such as Mortal Kombat (Acclaim, 1993), which led to various kinds of legislative intervention, sprang up in response to the new emphasis on home-based play from the turn of the 1990s.

The pre-eminence of arcades during the period under analysis is the main reason that this thesis focuses its critical analyses of videogames on arcade titles. This is not only due to the pre-eminence of the arcade as a venue for play throughout this period. Newman (2004) rightly argues that the way games are played varies significantly with the venue of play. The introduction of the earliest home console systems into domestic environments would in itself qualify for a specialised study. Such a study would need to more closely consider variations in the use of domestic television, the reorganisation of domestic space, and given the close relationship between home videogame systems and home computer systems, the implication of domestic videogame systems in the broader 'digitisation' of domestic space. As Huhtamo notes, '...the interplay between public and domestic media consumption is an important issue that deserves a full treatment' (2005). Rather than qualifying its claims in relation to the plethora of adaptations of arcade
games for home systems, this thesis will limit its analysis to arcade games and leave aside the issue of the early domestic consumption of videogames.

Besides this, there are practical, methodological reasons for settling on arcade games as the main focus. Though embryonic, the early videogames era was incredibly diverse in the range of home gaming platforms that were available at any given time. (See Herman, 1997, for a richly-detailed history of home videogame systems.) In analysing a game like *Space Invaders*, taking account of the enormous range of ports for home videogame systems, and qualifying claims about the game by reference to home games would make it difficult to make any clear arguments about the original title. And, thanks to efforts such as the MAME project, institutions such as the *Computerspielemuseum*, and exhibitions such as ‘Game on’ (which was reshown at the Science Museum in London through late 2006 and early 2007 after its initial show at the Barbican in 2002), and not forgetting the vogue in the twenty-first century for installing vintage games in bars worldwide, the researcher (and the reader) is more likely to be able to encounter arcade versions of early videogames in playable states. This said, most of the analysis in this thesis should be understood as being confined to arcade versions of videogames, and if it is incomplete in this sense, it recognises the need for more specific research on the early years of home videogame systems.

In framing the period initially in this way — in economic and institutional terms — the thesis is prepared for an investigation of what other authors have remarked on, and what the rest of the thesis shows: that early arcade videogames have distinctive aesthetic
aspects. Though in Chapter Four this thesis takes issue with Newman’s (2004) claim that ‘judic context’ ought to be the principal consideration in accounts of videogame genre, it accepts the insight that underpins this claim: that there are important differences between arcade play and home-based play. Newman cites the brevity and sensory intensity of arcade play, the use of custom cabinets, and the different modes of sociability in an arcade context as three differences. In the kind of analysis this thesis carries out, as is explained in Chapter One, the first two factors are more important than the last, but it nevertheless needs to be acknowledged that the decision to focus on arcade games in analysis has the consequence of selecting for frenetic styles of play, with relatively brief engagements with the fictional worlds of gameplay, and spectacular, often custom-styled presentations. Nevertheless, the point that Newman makes in the same book may counterbalance this: that in the history of videogame studies, arcade games are relatively underrepresented. This is particularly the case with aesthetic arguments, the basic orientation of which can be briefly discussed before a chapter outline is offered.

‘Popular Aesthetics’

The succeeding chapter of this thesis unpacks in detail the basic critical approach it makes in relation to extant literature in videogame aesthetics, and further chapters engage with specific established and emerging topics in videogame aesthetics in relation to early videogames. Nevertheless, some brief remarks are necessary here that explain the direction the remainder of the thesis takes. Apart from seeking to mutually illuminate issues in videogame aesthetics and a particular period in videogame history, it seeks to
make a contribution to the evolution of what Jenkins (2002) has called for — a 'popular aesthetics' of gameplay. Although he has long argued for the textual power of audiences and fans, Jenkins recognizes that the concept of 'popular art' may have more resonance than the 'ideological analyses' that have characterized cultural studies. Carr et al. (2006) describe the choice between audience studies and textual analysis, and the knowledge that either choice might mean missing something important (media studies' perennial dilemma) — a particularly pressing concern for the study of videogames. (Carr et al.'s arguments are pursued further in Chapter One.) Feeling this dilemma, Jenkins writes:

My goal here is not to argue against the values of applying concepts and categories from cultural studies to the analysis of games, but rather to make the case that something was lost when we abandoned a focus on popular aesthetics. The category of aesthetics has considerable power in our culture, helping to define not only cultural hierarchies but also social, economic, and political ones as well. The ability to dismiss certain forms of art as inherently without value paves the way for regulatory policies; the ability to characterize certain media forms as "cultural pollution" also impacts how the general public perceives those people who consume such material; and the ability to foreclose certain works from artistic consideration narrows the ambitions and devalues the accomplishments of people who work in those media. (2002)

Observations of the fate of mass media forms and genres in the twentieth century suggest that Jenkins is right. John Springhall (1998) shows how deep the moral panic around 'gangster films' was on both sides of the Atlantic in the 1930s, and yet that many of the self-same films were critically elevated by Cahiers du Cinema after the Second World War to the status of art under the rubric of film noir. The work of Cahiers was instrumental in broadening the idea that any film might be considered as art, and this notion, once shared widely enough, altered the reception and regulation of film in general. The role of film criticism in promoting a discourse of film as art is also raised in places such as O'Regan's (1992) questioning and critique of the shift to an emphasis on
policy studies in Australian cultural studies in the early 1990s. Like Jenkins, O'Regan argues that room should always be made for cultural criticism that focuses on the explication of cultural value.

Close analysis, and taking seriously the claims of a form to be art, may alter the shape of regulation and the conditions under which a form is made, circulated, and enjoyed. But this is not to say that the operations of aesthetics are simply to be seen as pragmatic and instrumental: also embedded in Jenkins' call for a popular aesthetics is the idea that it takes time to understand the particular kinds of excellence and cultural value that a new form offers. He also suggests that vocabularies for creative achievement and simple 'artistic consideration' might reverse the 'narrowing of ambition' and 'devaluation of accomplishment' that workers in the field might feel in the absence of critical analysis (2002). Carrying out a popular aesthetics of early videogames -- giving them the kind of scrutiny implied in Jenkins' phrase 'artistic consideration' -- holds out the possibility of recovering the accomplishments of early designers, and the pleasure of early players, from the devaluation that the onward march of upgrade culture threatens. Also, if it is engaged with broader issues of videogames aesthetics, it may serve to deepen our understanding of contemporary videogames as well. It is hard to see how an understanding of the early videogame audience, or institutional analyses of the videogame industry, though important, could serve so well the ends that Jenkins has in mind. (Arguments for the precise terms of the critical methodology this thesis embraces, which leave consideration of videogames' complex audience to one side, are given space in Chapter One.)
This, of course, leaves open the question of the form that a ‘popular aesthetics’ might take. I would start my account of what it might be by pointing to the way journalistic criticism, fan analysis, and genre classifications, and other ways of thinking and talking about videogames, are quoted at crucial points in this thesis’s arguments. They are used first because I consider that the ways videogames have been talked about in such contexts can be taken as powerful hypotheses about the ways in which players experience videogames, and they can certainly be fruitfully brought into dialogue with my own experiences of play and scholarly critical arguments that also inform this thesis. If these conversations have been relevant to me and other players in thinking about videogames, it seems odd to exclude them altogether from scholarly conversations. The way in which popular genre categories can be taken forward into scholarly accounts of genre is explicitly argued in Chapter Four, but in general this thesis’s arguments draw from time to time on videogames journalism – in the position it adopts in relation to videogame worlds, and in what this reveals about the player’s position in gameplay.

The second reason I make space in this thesis for non-academic critical accounts is that it is often surprising to me how far scholarly debates have, in a relatively short time, drifted some distance from the currents of critical conversation and understandings of videogames that fans and journalists value. In saying that there should not be such a broad gulf between the evaluative concerns of non-academic games’ criticism and the project of, say, defining ‘gameness’ (this aspect of Juul’s [2003; 2005] and other ludologists’ work will be discussed in succeeding chapters), this thesis does not argue
that the relationship between academic criticism and games journalism or fandom ought

to be a servile one, or that scholarly aesthetics ought to have its agenda determined by the
currents of popular conversations. It is suggested, however, that as a starting point a
popular aesthetics might think about, and leave itself open to, the preoccupations of
journalists and fans, and attempt modes of investigation that speak to a broader
conversation.

In saying this, distinctions need to be made between the methods this thesis follows and
what has been described as ‘New Games Journalism’. The call for a New Games
Journalism was made by Gillen in 2004, largely on the basis that magazine-based games
criticism that simply outlined and recommended particular games was being threatened
by the advent of Internet-based and fan-generated criticism. Gillen suggested that a more
subjective, anecdotal criticism might remedy this allowing feature-length, more
entertaining forms of game journalism to emerge. The two basic principles for this new
form of games journalism as Gillen saw it, were:

1) The worth of gaming lies in the gamer not the game
2) Write travel journalism to imaginary places (2004)

Thus, New Games Journalism seeks to go beyond what it sees as two limitations of
traditional games journalism:

...[New Games Journalism] argues that the worth of a videogame lies not in
the game, but in the gamer. What a gamer thinks and feels as this imaginary
construct takes over all their sensory inputs is what’s interesting here, not
the mechanics of how it got there... That makes us Travel Journalists to
Imaginary places. Our job is to describe what its like to visit a place that
doesn’t exist outside the gamer’s head – the gamer, not the game,
remember. Go to a place, report on its cultures, foibles, distractions and
bring it back to your readers. (Ibid.)
Emphasizing the experiences of writer-as-gamer and reporting on the spaces of videogames as places that gamers travel to, are the two strategies by which Gillen (a former editor of *PC World*) hopes that magazine-based journalism might be revitalized. In using these methods, and in the description he chose for them, Gillen hoped to emulate the ‘New Journalism’ of the 1970s, which foregrounded the subjective experiences of reporters rather than objective, fact-based reportage. Gillen’s ideas have occasioned a broad debate which still persists online at the time of writing, but the details of this need not be engaged with here. What the thesis perhaps shares with New Games Journalism is a conviction that a broader cultural context is relevant and useful to understanding gameplay: just as New Games Journalism is not averse to comparing games with films, television programmes, or other kinds of cultural experiences, this thesis has an explicit comparative agenda, which is explored and justified at length in Chapter One. But perhaps more importantly, although it attempts to generalize from experiences of play, it does not much foreground the writer’s own subjective experiences or cultural biography as a source of critical insight. Rather, the way in which it attempts to offer a contribution to a popular aesthetics of gameplay is connected to broader ideas about what the role of cultural criticism might be.

In fact, this thesis might share more with the descriptive and evaluative emphases of ‘old’ games journalism, where the subjectivity of the author is less prominent, and a mapping of what different contingent experiences of a particular game have in common. If Cavell is right in saying that ‘Criticism has as its impulse and excuse the opening of access between the artist and his audience, giving voice to the legitimate claims of both’ (1981:
26), the way in which a popular aesthetics, as opposed to, say, a journalistic mode of criticism can make its contribution is in connecting videogames with broader currents of cultural expression and debate. A wider range of references, a greater range of critical concepts that inform analysis, and a more supple and persuasive set of claims about the nature of videogames’ aesthetic value are things that a scholarly popular criticism has more time and space to generate than many kinds of journalism do. Notwithstanding the ‘popular aesthetics’ that it could be argued are being carried out in venues such as Edge magazine, this thesis operates on the assumption that the kind of contribution it can make might be set beside, rather than above the practices of videogame design, play, and journalistic criticism.

Selection: Literature and Texts

Having staked out some of the issues this thesis approaches, there are two obvious areas in which it is selective in its coverage of the relationship between early games and debates in videogame aesthetics: the aspects of the debates in videogame aesthetics that it covers, and the range of videogames it considers. There are simple explanations available for this. First, the rate of growth in the literature devoted to aesthetic aspects videogames, at least in some areas, is too large to give full coverage to and major thrusts in the literature can be considered more productively. Second, as is explained in greater depth in Chapter One, a major contention of this thesis, and an important aspect of its critical method, is that close, piecemeal analysis of particular games, rather than blanket critical statements, is a better way at understanding the diverse pleasures of gameplay. Selections
are justified further in the chapters in which they are relevant, but some space can be
given here to the decisions that have, in general, shaped the range of literature and games
that the thesis approaches.

As has been mentioned, this thesis develops its critical analyses of specific games by
situating them in relation to existing scholarly debates in videogame aesthetics. The
rhythm the thesis follows in each chapter involves the explication and critical analysis of
existing scholarship, followed by close analyses of specific histories, games, or families
of games. As well as the literature of videogame history and journalistic videogame
criticism, prior efforts in videogame aesthetics exercise a strong influence on its
arguments, to the extent that every chapter situates its arguments in relation to existing
positions in the already broad and diverse field of study devoted to videogames. In some
parts of the argument, for example in Chapter Two, it draws on existing methods – such
as those found in the emerging literature of videogame archaeology – as a positive
framework for investigation. At times, though, it is critical of existing positions in the
course of the development of its own positive claims.

In particular – especially in chapters One and Three – the thesis gives critical scrutiny to
the arguments made by ‘ludologists’ in the early years of the development of videogame
studies. Rather than simply being motivated by a simple dislike of these theorists, the
rationale for what may seem like a preoccupation with this particular branch of
videogame analysis is that in many respects it represents the opposite of what this thesis
envisages as the most productive methods for videogame criticism and presents the most
serious objections that the arguments in this thesis need to overcome in order to proceed. Especially in their formalism, in their distrust of a concentration on visual or fictive elements of videogames, and in their attempts to secure videogame studies as a branch of knowledge which cannot be usefully integrated or brought into dialogue with existing debates in media and cultural studies, media history, film studies, aesthetics or other branches of cultural analysis, ludologists like Aarseth (1998; 2001; 2004) Eskelinen (2001; 2004) and Juul (1999; 2000; 2003; 2005) hold positions that directly contradict the critical model this thesis brings to bear on early videogames. In this sense, their work provides a useful counterpoint for the arguments to follow, and this is why they loom so large in the body of work this thesis considers.

It is not just ludologists who are critically analysed, and it is in succeeding chapters rather than in this introduction that the full extent of the literature this thesis engages with is developed. However, the extent to which it does prioritise certain authors in its survey of critical positions in videogames studies has its rationale in the need to produce its positive critical claims in dialogue with a field whose development so far has been characterised by trenchant debate, and the determined occupation of crucial critical positions which conflict extensively with the way in which this thesis proceeds.

As for the games that the thesis focuses on, they have been chosen for a combination of reasons. Given that this thesis is not a chronological history, and does not pretend to offer a full coverage of all games in the period under examination, and indeed its arguments imply that to attempt to do so would conflict with the major critical positions it occupies,
issues of space and relevance have predominantly determined which games receive the most extended discussions. In Chapters One and Three, examples have been chosen for their relevance to the critical arguments being made. In Chapter Two, which approaches the earliest period of commercial videogame design, the games scrutinised are simply those that appeared earliest in this context. In Chapter Four, which discusses issues around genre analysis, the selection of ‘space shooters’ is guided by vernacular definitions of the genre, but specific games are discussed in part because of their relatively free availability (in the context of a large family of games) to the critic and the reader.

Deeper and more explicit justifications of game selections are given in the chapters themselves, but it is important here to acknowledge the selectivity of the thesis in terms of its coverage. It is hoped that the issues it raises in connection with these games might stimulate further research into a wider range of early videogames. It is also a commitment of this thesis, as outlined more fully in Chapter One, that criticism and analysis of videogames is, in principle, an always-incomplete project, where analysis can always modify our ideas about particular games, families of games, or relationships between games and other media forms. In this sense, the thesis would not be expected to have the final word on any of the games it does cover, let alone those it does not have space for.

Chapter Outline

The first chapter of this thesis clearly outlines the theoretical framework with which this
thesis approaches its criticism of videogames. Given the ferocity of early debates in game studies, no element of any critical framework can be taken for granted. This thesis devotes significant space to outlining a framework that insists on the validity of comparisons between videogames and other media, and which generates its critical claims primarily from the author’s own experiences of play, concentrating extensively on audiovisual aspects of videogames. It uses a Wittgensteinian tradition in aesthetics and concepts of media convergence to argue against conceptions of videogames as a self-contained, essentially distinct cultural form and uses Manovich’s ‘post-media aesthetics’ to construct a comparative framework. It uses a range of sources to justify its conception of an ‘ideal player’ as inscribed by design, and as a valid ‘subject’ of videogame criticism, and it synthesizes the work of a number of games scholars in arriving at a picture of a ‘gamic mise-en-scene’.

The second chapter considers the development of the very first commercially successful videogame, Pong (Atari, 1972). Pong combines abstraction, contest and a minimal fictive world in instituting the medium of digital games. Pong’s aesthetic features and the new possibilities it realizes for television screens (and its precursors in the work of Ralph Baer), all find striking parallels in the work of early new media artists like Nam June Paik, and in the theory and practice developed within the milieu of 1960s and 1970s ‘postformalist’ art – whether within the Fluxus or art and technology movements or elsewhere. In its analysis of the very earliest games, this chapter also develops and defines concepts used in later chapters – information design and information behaviour, systemic artworks, the aesthetics of attraction, and the aesthetics of intimacy.
The third chapter joins debates about the presence or absence of narrative in videogames, and finds that early games are works of narrative minimalism, that nevertheless seduce players into a necessary intimacy through their construction of fictional worlds. The chapter draws on work in game studies by Henry Jenkins (2004), Jesper Juul (2005), and film studies scholarship by Victor Perkins (2005) among others. It shows that by means of audiovisual design, through dramas created by imperatives of survival in worlds of permanent crisis, by mobilizing genre, and by providing affordances and constraints that are consistent with the rest of the world, early games actually encourage an engagement with sensuous fictional worlds rather than abstract rule systems. It will demonstrate the construction of fictional worlds through attention to a number of early games. This doctrine of minimal narratives in fictional worlds is straightforwardly a critical argument about early games, but it is also a contribution to the broader effort to move game studies beyond the polarized debates of the late 1990s and early 2000s, which Henry Jenkins has described as a ‘blood feud’.

Chapter Four engages with emerging debates around genre in game studies, and works through a range of positions put in videogame studies and genre theory from beyond game studies before offering an account of the space shooter as a genre in early games. While videogames as a whole may be, as Kurt Squire and Henry Jenkins (2002) argue, the ‘art of contested spaces’, early videogames, by comparison with the games of 2006, feature relentless contest within highly circumscribed spaces. In the first part of the chapter, particular scrutiny is given to the genre of space shooters prevalent from the
appearance of *Space Invaders* (Taito, 1978). This genre enjoys membership in a broader transmedial ‘kind’ of science fiction, offers a simple drama of mortal contest, and a predictable, stage-based passage through the game. However, this belies the enormous variation and development of the genre through the period of early games in terms of mise-en-scene, spatial dynamics and arrangements, and the range of affordances and spectacles made available to the player. Arguing for multidimensional accounts of genre in videogame studies, the chapter shows that even in early videogames, genres such as the space shooter combine audiovisual and thematic material from other media, styles of play, and conventions specific to videogames across families of games that can be relevantly discussed together.

Throughout this thesis, ‘videogame’ will be the preferred term for referring to games. This is chosen above ‘computer game’ because as discussed in Chapter One, not all of the games discussed use computer technologies, and preference is given to ‘video game’ for the sake of simplicity and because the term usefully unites the visual and the ludic, in line with the emphases of this thesis. A gameography is provided separately from the bibliography after the conclusion.
CHAPTER ONE

Comparison, the Player and Audiovisuality: A Critical Framework for Videogame Studies

This thesis is particularly concerned with understanding aspects of early videogames in the light of approaches to videogame aesthetics and conversely with intervening in these debates in the light of early videogames. Succeeding chapters carry out an ‘archaeology’ of the earliest commercial videogames, an investigation of early videogames’ constructions of fictional worlds, and an outline of the genre of the space shooter, all in relation to prior scholarly work in these broad areas. There is a basic approach to the analysis of videogames as media texts which can be understood in a broader context and which this chapter explains and justifies in relation to the sometime heated debates that have gone on in the study of videogames in the early years of its development. With the field in a formative stage, no element of any critical approach can be taken for granted.

This chapter explains the framework for the questions it asks about the relationship between players and worlds of play in a dialogue with existing scholarship.

Three central aspects of this thesis’s approach may be seen to fly in the face of some established critical methods in videogame studies. This thesis understands the aesthetics of videogames comparatively, paying particular attention to their audiovisual and representational features and relying methodologically on the close textual analyses that arise, ultimately, from the experience of playing games. It evolves its claims through prolonged attention to particular videogames and families of games. All parts of this are
potentially controversial in the light of existing debates in videogame studies. The ‘ludologist’ moment in game studies was characterised by a suspicion of approaches made using the tools of media studies, film studies, and other branches of cultural analysis. Perhaps thinking about particular games as offering similar pleasures to a range of players might be seen as a reductive approach to the experiences offered by an interactive medium, and as an underestimation of the creativity and diversity of the videogames audience. Also, attention to the visual aspects of videogames may be criticised for missing what is essential to them. Though I hope this approach will be justified by the insights gleaned over the length of this thesis, it is helpful to set out its framework in advance in the light of possible objections.

*On (Not) Defining Videogames and the Possibilities of Comparison*

This thesis explicitly compares videogames with other media forms including nascent forms of new media art, cinema, and television. It also frequently refers to critical debates in these fields and uses critical concepts that arise from them in understanding videogames. The nature of these comparisons is developed further as the thesis progresses, and the aim at all times is to illuminate critical analyses of videogames. But given the debates that have arisen so far in videogame studies, the framework for comparison needs to be made explicit. Additionally, rather than approaching videogames with an *a priori* definition of what they are, it advocates a piecemeal critical approach to videogames, where our understanding of them is gradually extended through close encounters with specific games. This is closely connected with the comparative project of
the thesis: both claims rely on a rejection of the idea that videogames can or should be studied in isolation as if they were a self-contained field of objects. Both need a rationale.

It is necessary in the first place to understand the likely source and nature of objections to drawing on the scholarship and history of film, television, or art in understanding videogames. It might be argued that comparing videogames with other media, or approaching videogames with styles of analysis developed in relation to other media, is likely to misunderstand them in fundamental ways and miss their unique characteristics. This objection is explicit in the work of Aarseth (1997), Eskelinen (2001), and Juul (2005) (authors who are considered at length in Chapter Three) and is connected with a project of formally defining videogames in relation to a more general category of games. In the work of all these scholars, videogames’ relationship with games is the one that counts, and the one that best enables analysis. Aarseth (1997) calls for a scholarship that understands the ‘unique characteristics’ of games as distinct from narrative. Juul (2003, 2005) seeks an essential underlying ‘gameness’ that is common to videogames and pre-digital games. And Eskelinen (2001) attempts a formal analysis of videogames as ‘remediated games’ and holds that their remediation of other forms can be seen as an inessential characteristic. Their particular target, early on, was the assimilation of videogames (or ‘cybertexts’ in Aarseth’s earliest work) to narrative media, but there is also an emerging suspicion of the ‘visualism’ (Aarseth, 2004) that would assimilate games to cinema. The fear is at once that a theoretical violence will be done to videogames by tools that are inappropriate to understanding them, and further that the nascent study of videogames will be absorbed by existing fields in acts of ‘theoretical
imperialism’ (Aarseth 1997, 2001, 2004; Juul, 2000). In response, as in Juul’s work, games and in particular videogames, are constituted as a related unified field which is identical with pre-digital games in important essential, structural characteristics. This definition is intended to prepare the conceptual ground for the future analysis of games. As is explored further in Chapter Three, these claims go along with a taxonomical impulse. In ludologists’ work, the definition of games as a field apart, the classification of different kinds of play, and the formal analysis of games are all centrally important methodological tools.

For Aarseth at least, the nature of the ludologist’s insistence on the radical separateness of videogames from other media has been partly polemical:

...fundamentalism has its uses. In academic discourse, a clear, uncompromising, radically different position can be invaluable simply by forcing the rest of the field to do more critical thinking. If we "naturally" assume that games are cultural texts without questioning that assumption, then we will have very little chance of finding out what is unique about them. (2004)

This position has been useful both in the sense of reminding scholars to be reflexive in their approaches to videogames, and helping to stimulate and form early debates in the field. The scale of ludology’s contribution is brought out further in Chapter Three. Nevertheless, the arguments in this thesis do not require the definition of what games are in advance of analysis, and it is not necessary for its critical analyses that videogame studies be constituted as a separate, autonomous field. That is, this thesis avoids both the method that involves definition of videogames as a unitary field that is radically separate from other media forms, and the mapping of scholarly practice and discourse that deems it a requirement that videogames be studied in isolation from other media. This position
is held despite the fact that the critical insights of ludologists will be drawn upon at various points in the thesis. There are theoretical and methodological reasons for a view of videogames as not sharing an essence and as being relevantly comparable to other media in a convergent media landscape. These reasons need exposition, not least because they frame the positive critical frameworks that this thesis uses.

There are cases in which explicit commitments to comparative analysis of games have been made, as in the introduction to King and Kryzwinska's edited collection, *ScreenPlay*. These often seem to be forwarded as apologies, though, whereas in this thesis a stronger case against taking videogames together as a self-contained cultural field will be made. A number of theoretical considerations from philosophy, aesthetics, and broader cultural criticism inform this thesis's approach to videogames as an irreducibly diverse field that can be meaningfully compared with other media forms, and which is responsive to an accretion of piecemeal critical analyses. One stems, ultimately, from a prominent twentieth century approach to the definition of games. Of the theorists of games and play that have informed ludologists in their attempts to formally define videogames, Caillois (1979) in particular finds some space in the arguments made in this thesis. But one theorist of games that ludologists have tended to reject or ignore (Juul, 2003; 2005) who is more important to this thesis is Wittgenstein. In his landmark late work, *Philosophical Investigations*, Wittgenstein famously comments:

Consider for example the proceedings that we call "games"...What is common to them all? -- Don't say: "There must be something common, or they would not be called 'games'" -- but look and see whether there is anything common to all. -- For if you look at them you will not see something that is common to all, but similarities, relationships, and a whole series of them at that. To repeat: don't think, but look!...And the
result of this examination is: we see a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities. (2001: 27e)

Wittgenstein’s argument is that, while conceptual clarity is impossible in this case, the concept ‘game’ remains useful and relevant to us. However ‘vague’ or ‘unbounded’ the concept ‘game’ may be, it is still perfectly usable and only needs to be defined ‘for a special purpose’. When it is, the purpose and the definition are related:

How is the concept of a ‘game’ bounded? What still counts as a game and what no longer does? Can you give a boundary? No. You can draw one; for none has so far been drawn. (But that never troubled you before when you used the word ‘game’)...How should we explain to someone what a game is? I imagine we should describe games to him, and we might add, “this and similar things are called ‘games.’” And do we know any more about it ourselves?...But this is not ignorance. We do not know the boundaries because none have been drawn. To repeat, we can draw a boundary – for a special purpose. Does it take that to make the concept usable? Not at all! (Except for that special purpose.) No more than it took the definition: 1 pace = 75cm to make the measure of length ‘one pace’ usable. (2001: 28e-29e)

In ‘bounding’ our use of concepts, what is not at stake is not necessarily their usability, but more often the special sense of usability – the purpose – we have in mind. There is not any essence that all games share for Wittgenstein, but instead there is a complex network of similarities and relationships (a network Wittgenstein describes as ‘family resemblance’) that we are able to recognise from our use of words, without necessarily being able to boil them down to a list of universally applicable criteria. Wittgenstein’s position in *Philosophical Investigations* evolved from a realisation that the use of concepts in the stream of human discourse was frequently inexact, or better still endlessly flexible, and always took place in relation to ordinary human needs and practices. Earlier, in the notes assembled as *Philosophical Grammar*, he had remarked:

...[T]he notion that what is needed to justify characterizing a number of processes or objects by a general concept-word is something common to
them all...is, in a way, too primitive. What a concept-word indicates is certainly a kinship between objects, but this kinship need not be the sharing of a common property or a constituent. It may connect the objects like the links of a chain, so that one is linked to another by intermediary links. Two neighbouring members may have common features and be similar to each other, while distant ones belong to the same family without any longer having anything in common. Indeed even if a feature is common to all members of the family it need not be that feature that defines the concept. The relationship between the members of a concept may be set up by the sharing of features which show up in the family of the concept, crossing and overlapping in very complicated ways. (Wittgenstein, 1974:75)

Although we may not be able to offer a rigorous definition of ‘game’ that does not have the effect of excluding some of the ways we normally use the concept, we still know what a game is when we see one, and we can usefully describe various games without recourse to any such definition. The desire to impose a definition of ‘game’ on all the phenomena we are able to describe in this way may lead to an understanding or use of the concept that is ‘too primitive’. It may lead us to insist on features in definitions that not all members of a family share, or to deny membership to examples that do not share all the features our definition contains, in a way that impoverishes the application and flexibility of the concept. This is because we understand a game, for example, in relation to a range of relevant examples, not by learning a conceptual definition in advance.

Wittgenstein’s mid-twentieth century work was developed as a critique of analytical philosophy’s project (and what was once his own) of arriving at a rigorous picture of reality through the analysis of language and meaning. His larger argument was that practices like ‘games’ and linguistic utterances were embedded in ‘forms of life’ and that

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5 See Frege (1998), Russell and Whitehead (1962), and Wittgenstein (2001b) for canonical examples of analytical philosophy.
their meaning arose out of their use in the stream of life, rather than from reference to some ideal or universal essence. But his work speaks to the more general, long-standing philosophical problem of the relationship between ideal universals and material particulars, and has come to influence categorisation in the sciences and social sciences through ‘prototype theory’ (Green, 2001) (which is discussed further in Chapter Four). The important factor here is the way in which his insights have been carried forward into debates in aesthetics throughout the latter twentieth and early twenty-first centuries and the impact this tradition in aesthetic argument has had on this thesis.

The basis of Wittgenstein’s influence on aesthetics is the claim that cultural fields and practices, even if they share a name, do not have shared essences that can be securely defined in advance of an encounter with them. As Hagerberg explains Wittgenstein’s aesthetic implications,

...if [Wittgenstein] had to identify the main mistake made in philosophical work of his generation, it would be precisely that of, when looking at language, focusing on the form of words, and not the use made of the form of words. He will go on to imply, if not quite to directly assert, that the parallel holds to the work of art: to see it within a larger frame of reference, to see it in comparison to other works of the artist in question and to see it juxtaposed with still other works from its cultural context, is to see what role it played in the dialogically unfolding artistic “language-game” of its time and place. In using language, he says next in the lectures, in understanding each other—and in mastering a language initially—we do not start with a small set of words or a single word, but rather from specific occasions and activities. Our aesthetic engagements are occasions and activities of just this kind; thus aesthetics, as a field of conceptual inquiry, should start not from a presumption that the central task is to analyze the determinant properties that are named by aesthetic predicates, but rather with a full-blooded consideration of the activities of aesthetic life. (2007)

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6 The problem of universals is foundational in Western philosophy: one of the earliest attempts at a solution was Plato’s theory of forms. The entire history of the debate is, of course, unfootnotable: Armstrong (1989) and Loux (1998) give considered expositions of its resonance in contemporary analytical philosophy.
Rather than attempting to define concepts like art or medium, or predicates like beautiful, aesthetic understanding should proceed from an encounter with works in their contexts. Rather than defining art or game as conceptually secure categories and then matching phenomena against them, aesthetics should be in part a descriptive practice that starts from works themselves. Further, the Wittgensteinian tradition in aesthetics claims that essential definitions can only be understood as being made 'for a special purpose'. Often, it is argued that definitions in respect of cultural fields actually have a prescriptive purpose or effect regardless of whether or not this is acknowledged. The imposition of coherence on a field or medium that does not in fact possess it is likely to distort our picture criticism produces of it for those working in this tradition, or for those seeking to enjoy it.

The development of Wittgensteinian arguments in aesthetics begins with Morris Weitz’s ‘The Role of Theory in Aesthetics’ (1956). Weitz points out, following Wittgenstein, that 'art' and 'game' are similar in that they are necessarily open concepts – there are always new ways of being a game or being art, and new ways of being a particular kind of art, and whether or not something is or is not art or a game is settled by way of thinking about it alongside relevant examples. Attempts to define 'art', or say, 'painting' (or, we might say, 'game') once and for all are always disguised or unacknowledged critical arguments about the way art ought to be in the opinion of the definers. The problem is not so much in making these normative claims, but in confusing them with (or disguising them as) definitions. Normative claims are obviously debatable in a different way to definitional claims, particularly for the definers. The danger Weitz brings up is that using
unacknowledged preferences in aesthetic definitions tends to produce prescriptive criticism that may in fact inhibit artists' activities, which often seek to extend the range of creative practice beyond the limits of prior understandings of its limitations. On this view, criticism should sensitively react to what has been done rather than attempt to prescribe the range of their activities in advance by defining art in general, or a branch of art (or medium) in particular.

Wittgensteinian species of argument have emerged in film studies, media studies, and even videogame studies in subsequent years. In *Film as Film*, Victor Perkins writes:

I do not believe that film (or any other medium) has an essence which we can usefully invoke to justify our criteria. We do not deduce the standards relevant to Rembrandt from the essence of paint; nor does the nature of words impose a method of judging ballads and novels. Standards of judgement cannot be appropriate to a medium as such but only to particular ways of exploiting its opportunities...Helpful criteria are more likely to be based on positive statements of value than prohibitions... Criteria then relate to claims which the critic can sustain rather than to demands which he must make...Criticism and its theory are concerned with the interplay of available resources and desirable functions. They attempt to establish what a medium is good for. They cannot determine what is good for a medium, because the question is senseless. The search for appropriate criteria leads us to observe limitations; it does not allow us to prescribe them. (1972: 59)

For Perkins, ideas about the essence of a medium, however they might be formulated, cannot tell us anything of value about what makes particular works worthwhile or interesting. Like Wittgenstein and Weitz, Perkins elucidates a critical method that analyses and evaluates examples of practice rather than defining their limits in advance. Criteria of evaluation are developed in relation to encounters with examples of creative practice rather than being imposed *a priori*. Questions of what a medium is or is not may lead to 'demands' or attempts to assert 'what a medium is good for'. Rather than defining
a medium in advance of an encounter with it, criticism ought to generate its claims in the
wake of critical encounters with texts or families of texts.

This Wittgensteinian form of argument is extended further by Carroll. Regarding all
forms of what he calls ‘moving image’ media, including film, television, and new digital
forms, Carroll writes:

No proposal concerning the uniqueness of any medium has been immune
from counterexamples. No sooner are the nature of the medium and its
laws hypothesised, than someone points out that there are some works in
the medium that are generally regarded – from an informed,
nontheoretically contaminated viewpoint – to be successful, but that do not
accord with the putative laws of the medium. (2003: 4)

In sum, Carroll’s point is that the conceptual weakness of definitions of any medium is
always revealed historically – no theory of the medium has been durable due to the
tendency for work in the medium to provide counterexamples to theory. The danger in
trying to enforce notions of medium uniqueness for Carroll is that it disfigures criticism.
Checking particular instances of creativity against formal, a priori definitions becomes a
substitute for active engagement with particular works. When the theorist does this,

...he is no longer treating his claims about the medium to be empirical
hypotheses. Rather, he is treating his own account of the medium as
though it were a conceptual truth – that is, his account is taken to be
definitional of what is [for example] cinematic in the medium. (Carroll,
2003:4)

This is obviously unsatisfactory as a form of evaluation:

One cannot define in advance what will or will not be successful. One has to wait
and see. To say of a work that it is unsuccessful on the basis of a...theory begs the
question. Successful [works] should test the theory, not vice versa. (Ibid.)
Carroll urges critics to ‘forget the medium’ and to focus instead on the properties of the moving image – to critically engage with moving image works on their own terms. He explains this in an interview with Privett and Kreul (2001):

As I understand them, medium specificity theories that emerged in film theory, and that you often find in, say, fine art theory, like Greenbergian modernism, are attempts to identify the nature of the medium for the purpose of then going on to prescribe recommendations about what you should or should not do in the medium. It's not only that these things have a nature but that nature actually tells you or even dictates to you what you should and should not do. It tells you what the legitimate possibilities in a given medium to explore are.

For Carroll, definitions in aesthetics all too easily, even inevitably, become normative claims about what a medium should and should not do. Theorists who attempt to define say, ‘film’, and offer essential claims about ‘filmness’, the ‘filmic’, or the ‘cinematic’ inevitably find themselves having to argue for the exclusion of works that others are persuaded are films from their category. This leads to a situation where theorists and critics may find themselves delegitimising artistic practice in the field because it is, for example, ‘uncinematic’. It should be noted again that Carroll’s philosophical objections to essentialist definitions of media are not unique or unprecedented, and are related to others’ considerations of the difficulty of separating evaluative and definitional claims in aesthetics. Together Wittgenstein, Weitz, Perkins, and Carroll offer a snapshot of the tradition in aesthetics and cultural criticism that informs this thesis’s approach to videogames as irreducibly diverse and as lacking a single essence.

Perhaps surprisingly, among the many attempts to define videogames, concerns about the practical difficulties in doing so have already emerged. In his flag-planting ‘Computer Game Studies: Year One’, Espen Aarseth writes:
Computer games are not one medium, but many different media. From a computerized toy like *Furby* to the game *Drug Wars* on the Palm Pilot, not to mention massively multi-player games like *Everquest*...the extensive media differences within the field of computer games makes a traditional medium perspective almost useless. We end up with what media theorist Liv Hausken has termed media blindness: how a failure to see the specific media differences leads to a "media-neutral" media theory that is anything but neutral. This is clearly a danger when looking at games as cinema or stories, but also when making general claims about games, as though they all belonged to the same media format and shared the same characteristics. (2001)

In large part, here Aarseth is arguing against the incursion of *media studies* into the study of videogames, which he assumes will seek to treat videogames as a given, single medium. Here Aarseth raises the important point that the sheer variety of videogames makes it difficult to make any categorical or definitional claims about them. Aarseth’s main point is that given the diversity of videogames, approaches from media studies that take them together are bound to fall short of an adequately nuanced view of videogames as a cultural field, and only concepts like ‘play’ and ‘game’ are likely to synthesise their diversity. Some further critique of using the latter concepts as broad definitional tools for the study of videogames is made in Chapter Three of this thesis, but here it is enough to point out that ‘play’, ‘game’, and even ‘ergodic’ run up against the same problems as approaches to videogames that conceive of them as a single medium: they cannot account for the material diversity of videogame design or encompass all the phenomena that scholars have studied within the rapidly growing field of knowledge that deals with videogames.

More recently, Atkins raises similar concerns about the coherence of videogames as a medium and the ability of criticism to make general claims about them:
Things get a little bit messy in video game criticism if we attempt to make sweeping definitive statements about all games...it is as well to remember whenever anyone claims to be speaking about video games in universal terms that they are often attempting to force into a single category a huge range of phenomena that differ from one another in the most obvious and radical of ways. (2006: 134)

Atkins makes these claims in the course of an argument about the videogame gaze – which is specific in its ‘future-orientation’ (Ibid.: 139). This is perhaps something that many videogames do share, but the objection stands as a warning about efforts at definitions of the entire field of cultural practices and production. Newman raises much the same point when he writes that ‘...the variety of technologies and experiences makes it hard to define a videogame in positive terms’ (2004: 15). More than being difficult, as the tradition in aesthetics I have referred to shows, definitions are often constraining and limiting, and definitional arguments are often reductive in relation to the field they are addressed to.

One example of the problems of definition in advance of analysis in videogame studies is warranted here. Though many writers grapple with definitional work,7 Juul’s (2005) work in the area is clearly articulated – it is intended as inclusive and furthermore as a central element of his critical project. Juul’s formal definition of the essential ‘gameness’ that underlies all games – explored more thoroughly in Chapter Three – counts out ‘simulation games’ like Sim City (Maxis, 1989) and The Sims (EA, 2000) as games in the full sense because of their lack of a ‘fixed outcome’ (Ibid.: 43). For Juul such games are a ‘borderline case’ lying outside the ‘classic game model’, a substrate that informs all games and ‘spans millenia’ in its application (Ibid.: 54). But such borderline cases have

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been at the centre of interest in videogame scholarship for fans and for the industry. *The Sims*, for instance, has been a particular focus in videogame studies. Many writers have carried out analyses that seek its underlying ideological aspects or its relationship with broader cultural debates. Some have written about the structures of play in the game (such as Consalvo, 2003 and Helio, 2005). Jenkins (2005) has continued to strategically use the game as a good example in his arguments for more gender-inclusive styles of videogame play (which begins with Cassell and Jenkins, 1998). And authors like Nutt and Railton (2003) and Tsikalas (2001) have explored the uses of the game by fans and by young people in identity construction. In all of these cases, writers have tried to extend our understanding of videogame aesthetics and cultures by means of a close analysis of *The Sims*. As for *Sim City*, one of the earliest, most productive, and most widely-cited attempts to understand videogame ‘textuality’ is Friedman’s (1995) analysis of the position players are invited to take up in relation to that game. In all these cases, while there may be a recognition of the differences between this kind of play and, say, arcade play, nowhere else are these titles considered less than games, and no attempt is made to draw boundaries around the concept of ‘game’ that it might be seen to straddle. On the contrary, in most of the scholarly examples it is positively assumed that scrutiny of these games will illuminate other areas of videogame play and culture.

In erecting a conception of gameness that excludes games like *Sim City* and *The Sims*, Juul (2005) appears to marginalize games that are understood elsewhere as videogames in the full sense and which are taken by scholars to be informative examples in analyzing

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8 See for example Flanagan (2003), Frasca (2003), Brady (2003), Curlew (2005), Kline et al. (2003), and Wark (2006).
videogame aesthetics and culture. It serves as a reminder of the problems for the project of definition raised above. These are videogames that are 'generally regarded as successful' (Carroll, 2003: 4) but which '[do] not accord with the putative laws' of 'gameness' (Juul, 2005). To say that Sim City or The Sims are not videogames in the full sense begs the question in the sense that their exclusion is beforehand made a condition of the success of the definition (Juul, 2005). This raises a number of important questions: the first might ask what is at stake in putting these games at the borders of the definition of what games are? The risk is that this move will underpin normative distinctions between different kinds of games. Certainly, as Klevjer (2002) points out, the 'radical ludology' of Eskelinen (2001) runs a typology of videogames based on the conception of them as remediated games into a normative exclusion of narrative and story material from analysis. Thus it appears to bear out the concerns outlined above from wider debates in aesthetics. Juul does not necessarily make this move towards prescription himself, and considers Sim City 4, (Electronic Arts, 2003) for example, in his discussion of different kinds of game time (2005). But, if they are useful examples in some senses, what is gained then by the definition that makes such games marginal? In Juul's work it is support for the following claim:

...[The classic game model] is an abstract platform upon which games are built, a platform that games use in various ways. Games do have something in common; we can talk about the differences between games and what is not a game – video games are the latest development in a history of games that spans millennia. (2005: 54)

Setting the borders of this model in a way that marginalizes specific examples is a way of giving this definitional model clarity and shape. The 'special purpose' for this definition
is demonstrating the continuity of games and videogames, and demonstrating the separateness of games from other media. But the potential consequences lie in disallowing the comparison of videogames with other media and in denying the name of ‘game’ or ‘videogame’ to forms that lie outside this definition. With videogame scholars turning to even less structured examples of ‘play’, such as Second Life (Linden Labs, 2003), as relevant areas of operation for videogame analysis (see, for example, Herman et al., 2006; Deuze, 2006), these consequences are potentially problematic for the field.

If scholars talk about certain things qua videogames which are on or beyond the borders of Juul’s (2005) definition, setting such borders risks being unable to account for this. Videogame designers and players have made, played, and talked about videogames perfectly well in the absence of such definitions. Although Crawford (1982) did offer a definition of videogames that Juul draws on, there is little evidence that this is used universally as a manual for videogame design, and it emerged after many of the videogames analysed in this thesis were made. The more important consideration is that in, say, journalistic reviewing, fan evaluations of videogames and developers’ accounts of their work, the question as to whether something is a game or not does not emerge as clear or pressing; the question as to whether a game is good or not does quite frequently, but it is a different kind of question.

Aspects of Juul’s approach to videogames have yielded productive insights, which will be drawn on throughout this thesis, and once again, his work is forwarded as a useful example of a sustained attempt at a coherent definition rather than being singled out as
particularly unsatisfactory. It is also worth pointing out that the arguments made here in no way deny that videogames can be usefully considered alongside pre-digital games, as Juul wants to do. But videogames are not a unitary field, and, as following sections argue, they are not just games either. Rather than defining videogames, this thesis will follow, and offer as a model for videogame studies, the approach that emerges from Wittgenstein's conception of 'game' as a model for how we come to understand resemblances and relationships between objects: "How should we explain to someone what a game is? I imagine we should describe games to him, and we might add, "this and similar things are called 'games'"." (2001: 28e) This implies an open-ended, always-incomplete critical project where thick description and close analysis enriches our picture of what videogames are without bringing us any closer to final definitions, or complete understandings. There are always new ways of being a videogame, we can always enrich our understanding of what videogames are, and no definition of 'games' or 'videogames' can be exhaustive, or predict the future course of creative work or scholarly interest. If videogames are popular art, we could expect that criticism would be able to return to the same games again and again in the light of new developments and further enrich our understanding of particular games in the wider cultural and creative field. Criticism in this view needs to understand and evaluate what has been done and not risk prescribing what ought to be. It is a discourse that is in conversation with practice and play, rather than being an attempt to definitionally frame it. This does not mean we do not know what a videogame is when we see one, and the activities of fans and designers show that a thoroughgoing knowledge of videogames does not need to be premised on definitional clarity. Importantly, where we do not seek an essential list of characteristics that all
videogames share, there is room for us to ask what they share with other media forms. The methods and contexts this thesis uses in comparative analyses will be developed following a consideration of how issues of media convergence impact on the idea of videogames as 'separated' from the rest of the media landscape.

**Videogames and Convergence**

The foregoing arguments (drawing on debates in philosophy, aesthetics, and film theory) partly ground this thesis’s avoidance of definitions and taxonomies that project an internal coherence on the diverse field of videogames, and its positive critical project of more specific engagement with and analysis of specific games. Additionally, a range of scholars suggest that the external boundaries between media forms are increasingly permeable, and that the mediascape is undergoing, or has undergone, a process of ‘convergence’. There are different views of the nature and import of convergence, but there is common ground in claims that the boundaries between media are being effaced by technological change, and that media content increasingly circulates in a wide range of media and formats. One recent definition neatly encompasses the senses of the concept as an approach to media history, technological change, and changes in the nature of media content:

Convergence began in the 1980s, with the rise of popular personal computing and the rapid expansion of global computer networks, and it continues today. It describes a process through which previously discrete media forms, media industries and media contents are drawn together, so that many old media forms are remediated, and many new forms are produced, though distinctions between new, old and recombinant media are rarely absolute. (Bassett, 2006: 220)
Convergence here is pictured as a process that blends the technologies and texts of previously distinct media, or which recombines formerly distinct streams of media content using new technologies. Although convergence is widely acknowledged as a feature of the contemporary mediascape, its nature and importance are widely debated.

Perhaps the most apocalyptically complete vision of convergence is Kittler's:

The general digitalization of channels and information erases the differences among individual media. Sound and image, voice and text are reduced to surface effects, known to consumers as interface...Inside the computers themselves, everything becomes a number: quantity without image, sound, or voice. And once optical fibre networks turn formerly distinct data flows into a standardized series of digitalized numbers, any medium can be translated into any other. With numbers, everything goes. Modulation, transformation, synchronization; delay, storage, transposition; scrambling, scanning, mapping – a total media link on a digital base will erase the very concept of medium. (1999: 1)

Digitisation is linked here with 'functional convergence', (Flew, 2005: 10) the increasing tendency for different kinds of content to be processed by computers and to be delivered across digital networks which are 'impartial' to the nature of content (Ibid.: 3), and which can be 'accessed by users via their personal computers, as a single media platform' (Ibid.: 11). Kittler's (1999) neo-McLuhanist argument sees technological change as determining this convergence and sees it as accomplished or inevitable.

A different concept – Bolter and Gruisin's (1999) 'remediation' – is a useful way of thinking about the convergence of media content. It is in part a historical concept, that describes how ‘...in their efforts to reach audiences with a new media form, designers or creators refashion practices that are already understood and appreciated by those audiences’ (MacIntyre et al., 2006: 32). New media, in other words, often rehearse the
representational strategies and even the forms of existing media in their attempts to attract participation and consumption. The repetition of the presentational styles of other media within new media lends ‘hypermediacy’ – a heightened representational immediacy – for the new medium in question. But it also has a resonance in describing the relationships between concurrent media forms: it is a ‘...complex and ongoing process...in which the tactics, style and content of rival media are rehearsed, displayed, critiqued, extended’ (Thorburn & Jenkins, 2003: 10). Bolter (2000) and Bolter and Gruisin (1999) develop the concept in relation to various videogames in a way that is discussed further in Chapter Four. Jarvinen applies this concept to videogames too, defining it in his ‘archaeology’ of Quake and the first-person shooter genre:

Remediaiton accounts for the means of re-purposing narrative techniques and modes of representation from historical forms of media, and also co-evolving with the existing ones. Rather than mediating messages between people, media begin to mediate each other. (2001: 72)

In general, remediation describes the way in which texts, images, representational styles, narrative conventions, and other materials circulate across media. Rather than being a teleological model of convergence, remediation describes the promiscuity of content and the capacity and tendency for media forms, and media practitioners, to borrow and share materials and representational strategies. By showing how such materials circulate across the boundaries of media forms, remediation is a way in which the permeability of those boundaries can be understood. It also points to the usefulness of comparative methods in understanding such circulation.

Perhaps a more complex view of the process of convergence comes from Jenkins (2004). Jenkins argues that convergence is ‘not simply a technological shift’ but is a broader
change that ‘...alters the relationship between existing technologies, industries, markets, genres and audiences’ (Ibid.: 34). Along with the technological factors nominated by Kittler (1999), convergence refers to the tendency of media conglomerates to distribute content across a range of channels and the tendency for audiences to consume and produce media across a range of technological forms. For Jenkins, convergence is both a ‘top-down corporate-driven process and a bottom-up consumer-driven process’ (2004:34) where companies accelerate the flow of content across channels and users attempt to bring media flows under control and communicate across channels. Specifically in aesthetic terms, Jenkins takes up Marshall’s (2002) notion of ‘the new intertextual commodity’. Whereas previously successful media content might be ‘adapted’ into other forms, now a ‘more integrated structure’ is observable where:

...each media manifestation makes a distinct but interrelated contribution to the unfolding of a narrative universe...The interplay between such works can create an unprecedented degree of complexity and generate a depth of engagement that will satisfy the most committed viewer.’ (2004: 40)

This is a model that sees the current boundaries between media as still in place, but as troubled by the tendency for content to proliferate in processes of ‘transmedia storytelling’, and by the ability of audiences to recognise and consume transmedia narratives across media boundaries.

In all of these understandings of convergence, there is the claim that media content – images, sounds, texts – is increasingly dispersed across a range of media forms. In the light of the Wittgensteinian tradition of aesthetics already considered in this thesis, it might be said that clear borders between media forms have always been elusive, but the
concept of convergence implies that they are even more uncertain in the contemporary media and technological landscape. For all theorists of convergence, the borders between media need to be re-evaluated, and for Bolter and Gruisin, and Jenkins, media and cultural studies needs to take account of the promiscuity of content across media channels. These authors see this as a relatively recent development, but this thesis shares the view that from their beginnings, videogames have blended and recombined media streams. Finn writes of home console videogames as having exhibited long-embodied functional convergence:

Games consoles actually represent an archetypal example of convergence. Long before the Web became popular, home video game consoles were already positioning computer technology as entertainment, by functionally integrating it with the established medium of television. Games were in fact offering a form of interactive television decades before the term became fashionable. (2002)

On this view, videogames can be seen as one of the forms that initiate the history of convergent media. Finn explains this in terms of the succession of home games technologies which combined various technologies with television: home computers like the Commodore 64, CD Roms in the 32-bit era, and technologies like DVDs in the early twenty-first century. Videogames often (though not always) appear on television screens -- in this way they can be understood as a parallel technology to television part of whose technological and cultural import is the projection of new kinds of images and offering new ways of using television, an idea which is explored further in Chapter Two. Arcade games similarly combine computers and television, and as Huhtamo (2005) shows, they also combine elements of pre-digital amusement technologies like pinball. Because of their blending of televisions and computer technologies, videogames are an inescapably hybrid medium from the beginning.
The relationship goes beyond functional convergence. The presence of a screen, the need for mechanisms of engaging play, along with the embeddedness of videogames in a wider context of media culture, mean that videogames also feature images, sounds, and narrative and generic conventions that are derived from, or which relate them to, other media. Jarvinen is one theorist who recognises this, both in his work on the archaeology of the first-person shooter (2001) and in his development of the concept of ‘audiovisual motifs’ as components of videogames’ representational environments that are ‘borrowed’ from cinema or other media (2002).

Many examples of the exchange of images, generic conventions, and other materials between videogames and other media will be developed over the course of this thesis, but to clarify this idea it is possible to turn briefly to some early videogames. Track & Field (Konami, 1983) presents a viewpoint on in-game athletic events that strongly resembles the mise-en-scene in television coverage of sports. The game’s point of view on the action, complete with a ‘pan’ that follows the athletes, is identifiable neither as the perspective of the crowd that is depicted in the background, nor as that of the protagonists, who are visible from a third-person perspective. Rather, it matches one of the well-established strategies of sports broadcasting in that it is viewed from the position of an imaginary ‘ideal’ spectator’ (Whannel, 1992: 3). As in athletics broadcasting, it offers a ‘wide-angle’ view on the action that tracks, for example, long jumpers to the pit using a horizontal ‘camera movement’. In this sense, we might even see the game as mobilising a fantasy of participation in televised sport. All of this implies a recognition of
the fact that television, as a technology, is at the heart of the game’s construction and presentation of spectacle and space. More simply, Star Wars (Atari, 1983) draws (in vectors) outlines of the imperial tie-fighter, instantly recognisable from the successful Star Wars franchise. In each case, images and styles of presentation from television or cinema are clearly used in inflecting the pleasures of engagement. According to King and Kyzywinska, videogames’ sources for remediated materials extend beyond screen media, for example, ‘three-dimensional graphics draw, ultimately, on traditions of ‘realistic’ perspective painting’ (2002: 7).

Understanding this sharing of representational images and strategies requires a model of analysis sufficient for absorbing this aesthetic ‘complexity’ under conditions of convergence defined by Jenkins (2004). Accounting for the extension of the pleasures of play through such strategies requires a frame that recognises convergence and remediation and which moves beyond a focus simply on games. The remainder of this thesis unpacks these claims further in relation to early videogames, but at this stage it is necessary to develop the framework of analysis that will be used in order to see videogames comparatively, one which is largely derived from Manovich’s ‘Post-media aesthetics’ (2001).

Manovich’s Post-media Aesthetics

The foregoing debates in aesthetics and claims about the nature of media convergence are among the factors that lead this thesis to focus on close critical studies and comparative methods. Many early sorties into videogame aesthetics have usefully developed concepts
and taxonomies of videogames play that this thesis draws on. Those who have focused closely on videogames as a distinctive form have stimulated research by forcing a focus on the player’s role in gameplay. However, given the thesis’s aims and the already examined considerations of the coherence of videogames as a cultural field and their convergence with other media, it will use a framework for understanding the relationship between players and worlds of play that allows a far wider comparative scope. It will mobilize and use ‘ludic’ concepts from play-oriented research, but in order to more broadly contextualise videogaming it will take forward the concepts of information design and information behaviour from the work of Manovich (2001).

Manovich’s outline of what he calls a ‘post-media aesthetics’ (2001) gives us the conception of creative practice as ‘information design’, and of innovations in creative practice necessitating new kinds of ‘information behaviour’ from users, and additionally allows comparison between different kinds of work by provisionally putting aside differences in their contexts of exhibition and reception. One advantage of this framework is that it is specifically designed in order to make comparisons across media and to allow comparisons between media artifacts produced in different historical periods. At once it is concerned to address media convergence and to criticize narratives of a fundamental ‘break’ between digital and pre-digital culture.

Manovich’s motivation is his own dissatisfaction with art history and art theory’s continued reliance on a rigid typology of media forms. He argues that these are less and less relevant in the face of multiplying media technologies, multimedia as a norm, and
digital media technologies that do not distinguish between different kinds of content. From the 1960s, new forms of artistic practice developed at pace and through the ‘sheer fact of their multiplicity’ (Manovich, 2001) they problematised relatively stable media typologies. The inception of digital media carried out a further, radical destabilization of media typologies:

On the material level, the shift to digital representation and the common modification/editing tools which can be applied to most media (copy, paste, morph, interpolate, filter, composite, etc.) and which substitute traditional distinct artistic tools erased the differences between photography and painting (in the realm of still image) and between film and animation (in the realm of a moving image). On the level of aesthetics, the Web has established a multimedia document (i.e., something which combines and mixes different media of text, photography, video, graphics, sound) as a new communication standard. (Ibid.)

The indifference of digital media technologies and networks to the nature of the content they carry here undermines the relevance of continuing distinctions between media. For Manovich, the combination of functional convergence made traditional distinctions between media less important and hybrid aesthetic forms such as websites combined previously distinct media in new ways.

Where videogames are concerned, we can see that they too form a part of the avalanche of media forms whose multiplicity Manovich thinks destabilised media typologies. This is in part due to the way in which they attached themselves to, and changed the uses of television as a technology, an idea that is explored more extensively in Chapter Two. Also, the way that videogames juxtapose images, sounds, and text with the capacity for interaction shows that they, too, present multimedia spectacles. Donkey Kong (Nintendo, 1981), for example, is not alone in presenting multiple streams and forms of information
to the player: the ‘diegetic’ world of play is constructed from images, the iconographic representation of ‘lives’ remaining, numeric figures showing scores, high scores and bonus amounts, diegetic synthetic sound, and non-diegetic soundtrack music. The visual styles of videogames are explored further later in this chapter and in the context of the visual construction of fictional worlds in Chapter Three, but here we can see that some videogames coordinate different kinds of information in the construction of worlds of play.

For the reasons above, Manovich (2001) argues that aesthetics needs a range of more inclusive concepts for thinking about the continuities across media and between contemporary art and art history. This is presented as necessary in order to think past the alleged ‘rupture’ brought about by digital technologies and to return to our conceptions of artistic practice a continuity of human needs and practices, and suggests that computer and network cultures are a fertile source for finding them. He sees a need to develop concepts and categories that can accommodate audience activity in the light of both a recent history of critical theory that emphasizes the audience’s role in the construction of meaning, and the advent of forms of art that explicitly rely on the audience’s bodily, cognitive, and affective participation. Manovich therefore applies the metaphor of ‘software’ to all forms of artistic expression, since:

...thinking of culture, media and individual cultural works as software allows us to focus on the operations (called in actual software applications “commands”) that are available to the user. The emphasis shifts on user’s capabilities and user’s behavior. Rather than using the concept of medium we may use the concept of software to talk about past media, i.e., to ask about what kind of user’s information operations a particular medium allows for. (Manovich, 2001, emphasis in original)
This is reminiscent of the approach of the 1960s theorist Jack Burnham to nascent media art works as ‘software’ and his attempt to read art history in this light, as will be discussed in Chapter Two. The difference is that Manovich is writing from a context where economics, societies, and aesthetics have been even more thoroughly interwoven with the extension of real-time computing.

Perhaps because of the scale of this transformation, the extension of the concept of art as software is much greater in Manovich's work, as can be seen when he offers the linked idea of the artist as an ‘information designer’:

We can describe Giotto and Eisenstein not only as an early Renaissance painter and a modernist filmmaker, but also as important information designers. The first invented new ways to organize data within a static two-dimensional surface (a single panel) or a 3-D space (a set of panels in a Church building); the second pioneered new techniques to organize data over time and to coordinate data in different media tracks to achieve maximum affect on the user. In this way, a future book on information design can include Giotto and Eisenstein alongside Allan Kay and Tim Berners-Lee. (2001, emphasis in original)

Artists organize, coordinate, and display data in different forms and contexts for different results. His framework takes account of convergence by conceiving of the contents of artworks as ‘data’ or ‘information’ that can be flexibly, variably presented. In his outline of the concept here, the differences between specific deployments of data are furnished in description, rather than being settled in advance by conceptual distinctions between media. Importantly, the idea of them as ‘information designers’ overlaps with the conventional understanding of their work: their achievements are discernible at once in their historical contexts and fields of practice and in their shared project of arranging and presenting content in new ways. Manovich’s framework suggests a comparative analysis
that also allows a focus on the more specific factors governing particular instances of creative practice.

Given the idea of artists as designers or organizers of information and that of art as software which makes certain operations available to the user, Manovich introduces another term to describe the range of interaction that a particular text (or kind of text) allows:

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\text{Information behaviour [describes]... a particular way of accessing and processing information available in a given culture. We should not always a priori assume that given information behavior is “subversive”; it may closely correlate to the “ideal” behavior suggested by software, or it may differ from it simply because a given user is just a beginner and has not mastered the best ways to use this software. (2001, emphasis in original)}
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The concept of information design covers all the operations of organizing ‘data’ – such as images, sounds, moving pictures, framing technologies – in order to address the users of that information, and Manovich explicitly offers this as a tool for comparison. Information behaviour covers both the range of interaction with a work intended or implied in its information design, the range of ‘mistaken’ behaviour that takes place as users learn to become ‘ideal users’, and the range of behaviour included in the “systematic mis-use” of cultural software’ (Manovich, 2001) in activities like remixing, game modding,\(^9\) hacking, or mash-ups where information design is turned to unexpected purposes by the audience.

Manovich’s (2001) comparative aesthetic categories can be criticized on a number of grounds, but if used carefully, they offer both a productive way of approaching

\(^9\) This more recent practice involves modifying existing games for new gameplay experiences.
videogames in the context of media culture and an opportunity to move past some of the
impasses encountered by videogame studies in its early history. Manovich is reasonably
careful in balancing his comparative concept with the description of differences between
forms. However, it might seem like a totalizing move to offer concepts of art, artist, and
audience that can be applied to every period and context of cultural life, or which can at
least equally encompass Giotto’s Florentine Renaissance, Eisenstein’s Soviet montage,
and contemporary new media art. It suggests an equivalence of all information as ‘data’
before the fact of its presentation, as if the skills and techniques involved in its
presentation, and the discourses that inform our ideas as what counts as relevant
information for presentation do not change the nature of what is presented. In other
words, it runs the risk of not according enough specificity to particular kinds of art and
putting aside all differences between media as unimportant. Even in Jenkins’ (2004)
‘convergence culture’, the suggestion is not that the technological, institutional, and
aesthetic boundaries between media have altogether disappeared, but that they are not as
clear or decisive as they may once have been. And in Wittgenstein’s (2001) account of
the concept of ‘game’, we can still know games when we see them, even if we can’t (and
shouldn’t) securely define them. Additionally, as Manovich (2001) himself concedes, this
approach does not offer immediate resources for thinking through the affective dimension
of artworks, and this is perhaps because the concept of content as ‘data’ militates against
any conception of particular kinds of information having varying amounts of affective
force.

These difficulties need to be balanced against the advantages of this concept. It offers an
image of the artwork as ‘worked on’ both in information design and ‘information behaviour’, thus making room for the notion that games’ range of ‘information behaviours’ include the requirement for ‘configurative’ or ‘ergodic’ acts from the player.\textsuperscript{10} Ludologists offer these ideas of the relationship between the player and the videogames as the essential distinction between videogames and other media, but the price to be paid for this is a decoupling of the analysis of videogames from media studies. Manovich’s model leaves room, in the relatively open and inclusive categories of ‘information’ and ‘software’, for a style of videogame design and new media art alike as including and coordinating data such as narrative and fictive material, generic codes, images, sound, interfaces, and ergodic emphases, thus allowing for the clear commonalities between videogames and other audiovisual media to be drawn out. It offers a way of asking questions about videogames that leads us to thinking about them in relation to the other media with which they are contextually related, and also functionally and aesthetically convergent with. It is a model which, used in relation to games, lets us think of players as engaging in behaviour that adapts to the pleasures offered by such information design, and of design as inscribing or assuming a model of information behaviour in producing the ‘software’ that is the artwork. It allows videogame analysis to suspend the formalist quest for the underlying commonalities between videogames and instead to critically analyse particular examples of game design in a way that is informed by broader cultural knowledges. It entails a recognition of the interdependence between the different streams included in information design and the limits of a particular piece of cultural software in what it allows users to do: information design is directed towards

\textsuperscript{10} This approach is consistent in this sense with the work of Aarseth (1997), Eskelinen (2001) and Juul (2005).
producing certain kinds of information behaviour.

Given these advantages, it is suggested that the disadvantages can be overcome by two methodological commitments in this thesis. The first is prioritising thick description of particular works and families of works so that their specific qualities can be seen along with their relationships with other media forms. In Chapter Two, for example, the information design of Ralph Baer’s Odyssey games and Pong (Atari, 1972) and the affordances and constraints offered in information behaviours are described in detail alongside claims about their relationship with forms of new media art. The second is the underlying idea that the most important element of the context of any particular videogame is likely to be other prior or concurrent videogames. Comparisons amongst videogames themselves are as informative as relevant comparisons across media. This is reflected in Chapter Four, which offers an account of genre in early videogames. Though this thesis does not define videogames once and for all, and although it does not need to seal them off from other media, it still works on the assumption (explored above in relation to Wittgenstein and popular journalism) that we can recognize a game when we see one. But a videogame’s relationship with other games cannot be settled in advance, and its relationships with other forms of information design and information behaviour need to be taken into account.

The use of Manovich’s framework of information design and information behaviour, combined with a commitment to thick description of particular games, offers the opportunity of seeing videogames not simply as remediated games, but as complex
'cultural technologies'. The concept of cultural technologies has been taken up, particularly in Australian media research (See for example, Flew, 2005; O'Regan, 1990), as one that offers the opportunity to step beyond simple technological histories, and formalist analyses, in a way that recognizes the complexity of media texts and practices. O'Regan describes Eric Michaels' treatment of television as a kind of cultural technology:

...[A critical] practice [that] involved a description of TV as a synthetic medium (made up of diverse objects, strategies, audiences, and styles). His analysis could, at times, look like every possible branch of TV studies – policy analysis, textual analysis, production studies, technological issues, folklore, 'effects' research, audiences – with a couple of wildcards thrown in...thereby redispersing TV analysis towards the holistic description of TV....[This] is an attempt to create out of this diversity an integrated practice of TV analysis equal to the diversity of the object. (1990)

Similarly, this thesis will draw on a wide range of sources in coming to understand videogames’ combination of diverse styles of information design and information behaviour. Informed by a conviction about the impossibility of securely defining a medium, the embeddedness of videogames in a convergent media environment, it will attempt holistic descriptions that understand games in their context as they are related to a broader media environment, and as specific outcomes of processes of information design.

This thesis will use the interrelated concepts of information design and information behaviour in two complementary ways which might be seen as 'macro' and 'micro' applications. On the 'macro' level, the approach used aims to facilitate comparisons between the technologies, images, sounds, affordances, and constraints offered by a videogame and other forms of information design in a broader media landscape. On the
micro level, the goal is to use the concepts as a way into understanding a particular game’s coordination of these elements. In this thesis, ‘gameplay’ will be understood as the relationship between the spatial stories, images, sounds, interfaces, and technological environments embedded in a videogame’s information design and the affordances and constraints possible within the parameters of its information behaviour. Gameplay therefore arises from particular systems of information design and behaviour, rather than being a fixed quality or property that can be defined in advance and then have examples checked against it. Gameplay as a property will be shown to be something that is responsive to close analysis rather than a priori definition. The possibilities for information behaviour will, however, be examined as a product of design. This is the second possibly controversial element of the chosen approach to videogame aesthetics, which will be developed next.

*The Player of Videogames? Rules and Imperatives*

Much of what follows in this thesis makes mention of ‘the player’ as an undifferentiated, singular entity in discussing particular games. Games are conceptualised as outcomes of a process of design which necessarily directs and constrains the possibilities for players’ configurative acts in game spaces. Particular videogames are addressed in an analogous way to critical approaches to media such as film or literature with the assumption that, for example, despite the fact that there are in principle limitless contingent encounters to be had with the world of *Space Invaders*, it can still be critically analysed in a way that is informative about all those encounters. This is to say that the information behaviours
adopted by particular players in relation to a particular game will have significant common ground. This common ground is what this thesis tries to map. It is not unprecedented in constructing a theoretical framework through which videogames might be aesthetically analysed, nor is it alone in using entities such as ‘the player’ or ‘players’ as critical categories. Indeed it draws heavily on scholars like Jarvinen, Jenkins, Juul and Wolf who talk about players in this way. Admittedly, it might be criticized on the grounds that it fails to acknowledge that players’ encounters with games must be inflected by their social and cultural biographies and the circumstances in which they play particular videogames.

There are two main criticisms that might have a bearing on this critical strategy. The first is that it underestimates the manifest creativity of players and their tendency to modify games, turn them to their own purposes, and exhibit ‘tactical’ information behaviours not anticipated by designers. The second is that talking about ‘the player’ as an undifferentiated entity underestimates the complexity of the videogame audience and the range of relationships that players and onlookers have with games. Both are usefully mapped in the work of Newman (2002; 2004). These objections, as they are encapsulated in Newman’s work, need to be contextualized slightly: for example, he does consider how rules, the nature of in-game spaces, and representation frame the possibilities for interaction. But his claims for players usefully point to some of the things that this thesis’s method might be seen as obscuring.

In *Videogames*, Newman (2004) points out that players do not always act in the way they
might be expected to. Like many videogame scholars, Newman is struck forcefully by the activity of players and the possibilities that they exploit or open up in play. He remarks that:

Videogames can offer both paideia and ludus rules thereby allowing players to engage in goal-oriented or ‘free play’ activity. In this way, videogames are not merely to be viewed as restrictive rule systems and recognition is given to the necessity of exploration and deduction as well as the player’s ability to ignore or even subvert a designer’s intention. A player can develop tactics and strategy, perhaps exploiting weaknesses or flaws in the game, or they may even define their own games in the world made available, thus imposing their own ludus rules. (2004: 28)

Newman’s position here has a relationship with a long history of arguments based around the idea that meaning is framed by the context of reception in literary and cultural studies.\(^\text{11}\) It perhaps derives more force from the fact that videogames are transparently an interactive medium. From this perspective it might be argued that to talk of ‘the player’ as an undifferentiated singularity is to adopt a reductive perspective on the range of responses particular players may have to videogames.

Elsewhere, Newman draws on Frasca (2001) in thinking about videogames as ‘playgrounds’ where ludus – or rule-governed – play rules are encoded in videogames, but where players carry the ultimate decision about how they will act within and use worlds of play, and may engage in ‘paideia’ or open-ended play:

While videogames may appear (especially to the non-cognoscenti) to be restrictive experiences with...rules channeling the player into certain behaviours and responses, Frasca encourages us to consider videogames as worlds, or rather as ‘playgrounds’, in which many different kinds of activities can be performed. Importantly, these playgrounds need not be restrictive but may be open and flexible, and, while designers may suggest possibilities, it is ultimately players who

\(^{11}\) Ang’s (1986, 1996) discussion of audiences and work in cultural studies like Jenkins’ (1992; 2006) and Hills’ (2002) on the productive vigour of fan cultures are just signal examples from a long tradition which is particularly pronounced in cultural studies.
decide which activities will be performed. (2004: 21)

Newman’s observation – that players often creatively ‘subvert’ or otherwise exceed designers’ intentions for videogames – is undoubtedly true, but perhaps more particularly for contemporary videogames. In addition to the activities he describes are phenomena like cheating, fan modding and level building, and the embedding of games into wider structures of competition, as in the fan or developer-organised tournaments that construct ‘games within games’. All these are the activities that Burnett (2004) describes as ‘hacking the game’. The creativity of fans and players is now often harnessed by the videogames industry, as is shown by Banks (2003) and in more recent developments such as Sony’s idea of collaboratively produced videogames under the rubric of ‘Game 3.0’ (See Miller, 2007).

But of course, players are not the only ones who can be found engaging with videogames. In another piece, ‘The Myth of the Ergodic Videogame’ (2002b), Newman points out that there are different kinds of engagement possible with a particular videogame, an observation which carries implications for our accounts of the videogame audience. Newman forwards a continuum of engagement between wholly ‘off-line’ – say, during cut-scenes – and wholly ‘on-line’ – during the most intense moments of ‘ergodicity’. He goes on to point out that, for example, ‘secondary’ players often have a more intense involvement during ergodic moments than ‘primary’ players do during cut-scenes. He thinks that the variability of contexts and styles of play calls for certain kinds of research:

The nature of play and interaction in videogames has necessitated ethnographic research that is not out of kilter with approaches adopted for the study of television. This is because, like television, the videogame cannot be considered as a technology or medium used solely on an
individual basis outside any kind of context for its use...the importance of revealing the complexity and embeddedness of videogame consumption within everyday life, and in the context of non-videogame consumption, is brought into sharp relief. By investigating only the experience and engagement of the primary player, the richness and diversity of uses of videogames is lost, and claims to contextual sensitivity are hard to sustain. (2004: 96)

Newman’s case is that the sheer variability of contexts, variety of play, and complexity of the audience’s relationship with videogames means that proceeding with a critical model that accounts only for the primary player’s experience is bound to oversimplify the nature of videogame play. It might be argued that this thesis’s category of ‘the player’ may be too simplistic to account for this broad spectrum of play.

It is worth putting Newman’s arguments into a larger context. Contentions about the relative merits of audience study and textual analysis are not new in cultural analysis, and Newman explicitly draws on television scholars like Ang (1985; 1996) who have carried forward the proposition in television and cultural studies that audience work gives us a more nuanced, specific, and situated account of the nature of media experiences. Newman’s position (and his views on genre which are reviewed in Chapter Four) show that he has made a decision in relation to what Carr et al. (2006) call:

...[the] dilemma that media studies have long (and perhaps quixotically) contended with: if we focus on analyzing the structure of texts, do we risk underestimating the cultural specifics of the audience, and the degree to which such factors might alter their ‘reading’ of the same material? If, on the other hand, we focus on the audience, and ignore the specifics of the particular text they are engaging with, do we risk misunderstanding the audience’s experience? The tension between textual analysis...and audience-based research...is impossible to ignore in the context of computer games and gaming culture, precisely because the text is playable. (12)

As Carr et al. point out, the visible interactivity of videogames makes this dilemma even
more pressing. But is it possible to still productively consider the relationship between player and text using strategies of textual analysis? Is it necessary to deny player autonomy in thinking that player experiences have enough in common to make a meaningful textual criticism of games possible? In answering this question, it is worth pointing out that the dilemma has not been entirely settled in other branches of cultural analysis.

Gibbs and Pye (2005) have recently deployed an architectural metaphor (more of these will be encountered in Chapter Three) in making the case that films, and indeed all works of art, can be understood as significantly authored and as not simply awaiting interpretation. This position has useful resonances with Jenkins' (2004) and Manovich's (2001b) versions of videogames as spatial narratives (which, again, are more fully developed Chapter Three). Introducing a collection that is part of the recent 'aesthetic turn' in film and television studies, Gibbs and Pye write:

> Works of art are not like shipwrecks on the sea-bed which inertly form a home for different corals, but significantly organised artefacts which interact with and reflect upon the culture. They are more like a well-designed house: not every occupant will choose to use the rooms in quite the same manner, but the building has been shaped to facilitate certain ways of living, certain ways of moving through it. Our readings can be similar because creating works of art involves skilful and complex attempts, through the detailed texture of the work, to channel our response to its areas of representation, dramatised subjects, themes, propositions, concerns. The objective features of a text are organised in such a way as to make some readings possible, and others unsustainable. (2005: 23)

For Gibbs and Pye, the 'architecture' of artworks is the result of an intentional design which is shaped to encourage certain kinds of engagement. Although audiences can approach works in different ways, nothing that audiences might do in principle can really
be counted out, but in practice, engagements with a particular artwork will usually have
enough relevant similarities for critical discussions to take place.

This thesis argues that videogames are works of art in Gibbs and Pye’s sense. Players’
undoubted ability to circumvent designers’ intentions notwithstanding, videogames direct
players’ responses to the worlds they project in a range of ways. Though they are more
weakly directed than films or television, where perspectives on the world of the film are
decided by the filmmakers frame by frame, the capacity for players to act at all within
videogames, and the features that make them worthwhile arenas for action, are outcomes
of design. Videogames are significantly organized (some more satisfactorily than others)
and this organization is an outcome of design. They are constructed in order to encourage
certain modes of inhabitation and movement, and discourage or prevent others. Different
players’ responses to videogames have much in common because our responses and
forms of inhabitation are to a large extent channeled and conditioned by videogame
design – the print genres of videogame walkthroughs and strategy guides are only
possible because our inhabitation of videogame worlds is subject to the same set of
affordances and constraints.

Divergent responses and inhabitations of videogame worlds, or the exploitation of
‘loopholes’ in design (the kinds of activities that Newman rightly points to) are possible
because of videogames’ complexity as cultural artifacts. That is to say that the capacities
of videogames as ‘playgrounds’ arise from their status as designed objects, and not just
the inherent creativity of audiences. Some kinds of inhabitation of videogame space are
impossible, or put another way, many videogames are designed so that a specific kind of inhabitation is a condition of our continued presence in the particular game’s fictional world. Bringing an attitude of pacifism to *R-Type* (Nintendo, 1987) and refusing to shoot enemies will result in a very short and unsatisfying tenure in its fictional world and a limited experience of the spaces and pleasures it offers. It is not possible to compete in the same ways in playing *The Sims Online* (EA, 2002) and *Unreal Tournament* (2004), a fact that is not wholly attributable to players’ expectations or tactics but to the fictional world-building of videogame design. Every time a player engages with *PAC-MAN* (Namco, 1979) they, and any other secondary players who happen to be looking on, will bear witness to a regular succession of stages (first stage one, then stage two …), a relatively consistent assortment of images (ghosts, mazes, *PAC-MAN*), and the primary player will have to do a similar range of things in order to maintain contact with the world (avoid/eat the ghosts, eat the dots and pills, negotiate the mazes). Importantly, any ‘free play’ that players engage in will only be in relation to those images, spaces and stages that designers create, otherwise the players would not be playing *PAC-MAN*, but doing something else. The fact that expert players have taken advantage of a programming flaw in *PAC-MAN* to stage time trials in search of the ‘perfect’ game\(^{12}\) does not change any of the foregoing observations. This kind of play on the part of the videogame ‘cognoscenti’ (Newman, 2004: 20) does not reflect the experiences of play that novice and intermediate players have, particularly with arcade games – a desperate, frenetic attempt to maintain contact with the game’s world, where any question of videogames as a multi-purpose ‘playground’ are very much subordinate to inhabitations

\(^{12}\) See Day (1998) for details of tournaments organised around the possibility of a ‘perfect game’ in *Pac-Man* which is considered to be unplayable beyond the 256\(^{th}\) level due to a programming error.
of the world that are maintained precisely to the extent that players are able to conform with designers' intentions.

Just like the works of art Gibbs and Pye (2005) discuss, this thesis shows that videogames, as popular new media artworks, are susceptible to the kinds of aesthetic analysis that adopt Manovich’s (2001) concept of information behaviour as often ‘following patterns’ laid down in information design. Going beyond the formalist analysis of rule systems offered by authors like Eskelinen (2001) and Juul (2005), we find conceptions of the constraints embedded in interactive works in studies of videogames, new media, and media history. Penny writes about videogames and new media art and defines an ‘aesthetics of interactivity’:

Each work affords, accommodates or permits only certain kinds of behaviour. So the behaviour of the user is constrained and in a sense modelled. The quality of this behaviour becomes a key component of the user’s experience. Many works, both at the desktop and in installations... encourage a calm contemplative manner. Some, like Quake, elicit rapid reactions and adrenaline rushes. (2004)

For Penny, information designers embed constraints that model information behaviours. Their decisions at once create affordances and permissions, but users' behaviours are undoubtedly shaped by these decisions, and as a result, we can speak of interactive experiences of various kinds as having a particular character. White puts it slightly differently in her account of new media spectatorship where she characterizes the user as ‘active by design’:

Individuals do more than use the Internet and computer; they are instructed to personalize things and follow rules...Internet sites and computer interfaces address the individual, depict the kind of bodies that are expected to engage, and render and regulate the spectator. Spectatorship affects how settings and interfaces are understood. (2006: 1)
White’s model of internet spectatorship suggests that new media interactions are regulated and subject to the rules embedded in systems of interaction. Our interactions are with designed objects, but they are also framed by design: even tactical uses such as personalization are limited by how interfaces encourage us to understand new media artifacts.

This relationship between seeing, configurative acts, and design – where information behaviour is significantly constrained by design – does not originate with ‘new media’ nor is it specific to videogames. Huhtamo (2005) insists that, ‘The roots of electronic gaming go back to the time of the industrial revolutions of the 19th and early 20th century,’ and shows that pinball and other slot-machine amusements were a ‘...veritable laboratory for designing and testing forms of human-machine relationship.’ Jonathan Crary’s account of the ‘observer’ of nineteenth century optical amusements talks about how:

...observe means ‘to conform one’s action, to comply with’, as in observing rules, codes, regulations and practices. Though obviously one who sees, an observer is more importantly one who sees within a prescribed set of possibilities, one who is embedded in a history of conventions and limitations. (1992: 5)

We do not have to pursue all of the consequences of these arguments here to preserve this insight: software design prepares a place for software’s users – it prescribes what Manovich (2001) calls ‘ideal behaviours’ which may, in many circumstances, only be exceeded when a user is unable to use the software properly. The process of becoming an ‘ideal user’ and exceeding the range of ideal behaviours by mistake is a familiar source of
frustration for players of videogames. Players to an appreciable extent resemble Crary's 'observers' in that they 'see' and act within a set of possibilities inscribed by design. Videogames from *Space Invaders* (Taito, 1978) to *Gyruss* (Konami, 1983) are actually in part dramas of mastery where scores and level progression act as tokens and measurements of players' approximation of ideal behaviour, their understanding of the limitations that hedge in their inhabitation of worlds of play, and the extent to which they, as users, have allowed themselves to be 'configured' by the videogame as a piece of design (Woolgar, 1991).

The most important source for this thesis's attempts to tease out the contours of the ideal behaviours, the constraints *and* affordances embedded in design, is the author's own experience of playing the videogames that are analysed. In this respect, the method has important resonances with other modes of cultural criticism (such as film analysis, literary studies, or television reviewing) which assume that analysis by a single author can relevantly speak to a wider experience, and that terms like 'the viewer' or 'the reader' can be used as both a displacement of the author's observations and as a gesture towards what is inescapable in the work. Given the thesis's aim to make a contribution to the kind of 'popular aesthetics' called for by Jenkins (2004), it is important to note that a similar strategy to this is used in journalistic videogame reviewing which also assumes that design constructs certain limiting factors on players' information behaviours.

The notion of ideal behaviours and of invoking a generalized 'player' to stand in for the range of behaviours permitted within the fictional worlds of videogames is a familiar
device in journalistic videogame reviews. A review of *Enter the Matrix* (Atari, 2003) reads:

The game has the player control Niobe or Ghost as they go through the Matrix. Along the way, they have to fight cops, SWAT teams, and of course, agents...The player can dodge bullets, run on walls, cartwheel around, perform ludicrously long jumps, and essentially perform the same five moves repeatedly...Sometimes, the player has to pick something up or hit a switch along the way, but this is the general format of most of the missions. (Serrant, 2003)

A review of *Indiana Jones and the Emperor’s Tomb* (LucasArts, 2003) reads:

The movement keys will cause Indy to move in different directions in the game world based on which angle the camera is facing. That causes the gamer to spend huge chunks of time frantically moving the camera around to make sure that when they press a key, Indy's going to go where they want him to go ... Given that the fight system encourages the player to use the environment (slamming enemies against walls, into furniture, and over cliffs) a good handle on Indy's position is crucial during fights and the freaky camera controls simply don't help. (Rausch, 2003)

In both cases, when making evaluations of the videogames in question, the reviewers mix discussion of the features of the videogame's fictional world with an outline of affordances and constraints offered to players. The fictional worlds of the games and the requirements games exert on the player are permeable and design is seen as producing structures that constrain behaviours. The rhetorical figure of 'the player' stands in not only as a displacement or surrogate for the author's own experiences of the respective games, but for the range of behaviours permitted and demanded by design. We could say that an idea of the ideal player is an enabling condition of possibility for this kind of journalistic criticism. Although this move is generally unauthorized in journalistic reviewing, we can find support for it in Manovich’s (2001) notions of information design, information behaviours, and ideal behaviours. In a similar way to these writers, this thesis
uses this terminology as shorthand for the place for players which is inscribed in videogames by designers.

Chapter Three of this thesis approaches the complex interrelationship of rules, fictional worlds, and player acts both in early videogames and in debates in videogame aesthetics, but at no stage does it offer a formalist or structural account of videogame rules. It does, though, offer and develop a more specific vocabulary to understand how videogames shape, model, and constrain player behaviours. It develops a critical concept that is a way of thinking about the way that games encourage or demand certain kinds of action, or makes them a condition of remaining in the game’s world. Rather than attempting to analyse rule systems as formal structures that underlie all videogames, as in Eskelinen (2001) or Juul (2005), this thesis thinks about those requirements exerted on players by videogames as imperatives. The word has useful resonances, denoting both an authoritative command and a mood of verbs which implies command or exhortation. This description of the requirements inscribed in videogames is suggestive of the way they are revealed gradually in the course of information behaviour as a condition of remaining present to the worlds projected by games. Imperatives suggest a dialogic relationship between information design and information behaviour, where videogames, by various strategies, let players know what they need to achieve in order for their contact with the game’s fictional worlds to persist: ‘do this...do this...now do that...’ Imperatives are occasionally given to players as an explicit, complete set of instructions, but are more likely to emerge in interaction and vary over the course of the game. The concept of
imperatives speaks to the way in which players can be fulfilling a number of goals at once.

To take an example: in *Galaga* (Namco, 1981) there are regular stages in which players must avoid enemy fire, target individual adversaries, attempt to clear the level or stage completely, and make it through as many stages as possible. In the experience of play these are felt simultaneously. Imperatives are therefore *layered* in *Galaga* and are experienced as urgent, simultaneous demands. In ‘challenging stages’, players must simply try to shoot as many of the mobile craft as they can to accrue bonus points. Intermittently, they have the opportunity to allow their craft to be taken by an alien ship with a tractor beam, and then shoot the adversary to get two craft firing as a ‘double shooter’. Imperatives are therefore *varied* in *Galaga*, and the difference between the regular stages and the ‘challenging stages’ is experienced as a change in the game’s mood since one of the *layered* imperatives – that of self-preservation – is relaxed. The rule set of the game – including the patterns in which aliens gather and move, the timing of the emergence of the tractor beam equipped ships, the velocity at which player’s projectiles travel – is never explicitly revealed, but the imperatives are immediately and constantly apparent. It is always possible that expert players of *Galaga* could develop new forms of paideia play within the spaces offered in the game, as Frasca (2001) and Newman’s (2004) arguments above suggest. There are ‘cheats’ and tricks available in respect of *Galaga*, which circulate among the game’s cognoscenti. In practice, when playing the game or observing others playing it, the author of this thesis has not seen any player do anything more than desperately attempt to destroy the contending aliens and avoid their
attacks in a way that the designers of the game have clearly anticipated and intended. The full rule set may be important in formalist or 'algorithmic' accounts of rule structures (Galloway, 2006), but imperatives define what is more important to players in their moment-to-moment information behaviour. While the full rule set might be useful to the player, and while experienced players of a particular game might come to know all of this in detail, the imperatives of survival and destruction within the game's world are far more pressing. *Galaga* resembles other videogames (and Chapter Four specifically analyses the space shooter genre it belongs to) but the language of imperatives gives us a different understanding of the aesthetic experiences offered to players than would a general, formal analysis of rules.

As well as forwarding imperatives, videogames must give players ways of fulfilling them. Along with the constraints and demands, the imperatives, inscribed by design, offer affordances. Galloway (2006) offers a useful bifurcation of player actions. 'Move acts' are those where a player changes the on-screen position of their avatar or surrogate. 'Expressive acts' are those that exert an expressive desire outward from the player to objects in the world' where they 'select, pick, talk, examine, use, fire, attack, cast, apply, type, emote' (2006: 23). *Galaga*, for example, offers the capacity for 'move acts' on a single, horizontal axis and a single 'expressive act' - firing at the alien adversaries. Galloway's distinction will be used throughout this thesis in discussing players' actions. With this vocabulary of information behaviours, imperatives, and commands, the thesis hopes to bridge the gap between textual analysis and the audience by understanding how design builds-in capacities and requirements for players to act. It should be added that
these affordances for action are also seen as being defined by design and presented to the player as their means of inhabiting the game’s world.

It might be noted here that neither in much journalistic criticism, nor in this thesis, is the complex sociability of play factored into analysis. Except briefly in Chapter Two, Newman’s arguments about the collaborative nature of much videogame play are not seriously explored. Newman’s point that videogames, particularly in arcades, constitute a ‘social space’ might seem to be occluded by this thesis’s use of the ‘player’. The simplest answer to this is that the nature of this complex audience is beyond the scope of this thesis, particularly given that it would require ethnographic study in order to deepen our understanding of it. Social spaces require specific kinds of analyses and methodologies that this thesis does not pursue. Although many of the early videogames mentioned in this thesis can be played in their original formats, they are very rarely seen in their original contexts – arcades – and it would be difficult to carry out an audience study that spoke to these original contexts of reception without engaging in specific kinds of historical research (even though similar work on retrogaming cultures would be interesting and productive). In deriving insights from a relatively rarefied experience of play, such as in emulations, in ‘museological’ contexts, or in out of the way venues which still have playable examples of the videogames that are analysed, the thesis suspends consideration of the complexity of the audience that Newman points to. Although considerations have been presented that justify this approach, it is done with two qualifications. The first is that wherever possible and relevant, the address of videogames to an audience beyond their ‘primary’ players is discussed. The second is that a more
socially-oriented history of the reception of early videogames, which seeks the 
complexity that Newman demonstrates, is a research priority that this thesis recommends 
and hopes to make a background contribution to.

To conclude this justification of the use of a generalized ‘player’ in analysis, it is useful 
to return to the considerations in Newman’s work that might possibly have been seen to 
militate against this usage. It can be conceded in advance that in practice players’ 
interaction with videogame worlds might exceed designers’ intentions, but in many cases 
these interactions will follow prescribed possibilities, and often players will only exceed 
expectations to the extent that they are still learning how to play. Players’ information 
behaviours are significantly constrained by design, and ideal behaviours, as well as the 
affordances and constraints offered by videogames, can be understood as inscribed by 
design and as discernible through play experiences. While the range of players’ 
productive misuses of videogame software, and the range of contexts and kinds of 
engagement with gameplay may be the subject of useful and interesting ethnographic 
research that shows the creativity and productivity of players and audiences, these are 
parts of videogame culture that this thesis does not explore. Rather, it is in noticing these 
constraints that are products of design that the thesis builds critical accounts that speak to 
more generalized experiences of particular games.
Videogames as Audiovisual Media

A third major element of the approach adopted by this thesis is its attention to audiovisual and representational aspects of videogames as key components of their information design, and as informing and staging information behaviours. It will be argued in succeeding chapters that, for example, videogames' projection of fictional worlds and participation in generic systems are both partly dependent on audiovisual factors and on relationships with other media. The insights of other fields that analyse visual art, cinema, and television, and that argue for the significance of the relationship between these forms and videogames will be usefully employed. The position this thesis takes can be understood in relation to existing debates, and the framework it uses for approaching the audiovisual aspects of videogames' information design is a synthesis of the approaches of other videogame scholars to audiovisual style and design in videogames.

Once again, objections to an overemphasis on audiovisual aspects of videogames centre on the possibility that videogames might thus be misunderstood and that the study of videogames might simply be absorbed into variants of media studies or film studies. Eskelinen (2001) polemically describes the visual design of videogames as being amongst the 'window dressing' that gets in the way of understanding what is actually unique about them -- their remediation of games. In 'Genre Trouble' (2004) and in his responses to comments on the piece in Wardrup-Fruin and Harrigan’s First person (2004), Aarseth argues that representational aspects of videogames -- for example the visual properties of Lara Croft as an avatar -- have little bearing on 'gameplay', which he
sees as being the essential part of the experiences videogames offer to players. To underline a point, this is a separation of gameplay from visual aspects of play, and an assertion that inhere elsewhere than games’ audiovisual environments. He warns of the ‘visualism’ that would assimilate videogames unreflectively to other audiovisual media:

The pleasures of gameplay...are not primarily visual, but kinesthetic, functional and cognitive. Your skills are rewarded, your mistakes are punished, quite literally. The game gaze is not the same as the cinema gaze, though I fear it will be a long time before film critics studying games will understand the difference. (2004)

The visual pleasures videogames offer are secondary or inessential to them on this view, or at the very least the part that visual material plays is so different and ‘specific’ as to problematise analysis using the traditional tools of film studies.

For Atkins, such arguments in videogame studies can be related to the conversations between players and developers about the relative importance of ‘gameplay’ and ‘graphics’ (2006). Atkins, like Newman (2004) and Klevjer (2002), points out that ‘hardcore’ player preferences often gravitate towards an emphasis on gameplay, seeing ‘fancy’ graphics as inessential to play experiences, and a preference for them is sometimes identified with a mainstream audience. He concedes Aarseth’s point that the ‘gaze’ of the videogame player must be understood as specific (for Atkins, its specificity is in its future-orientation), but considers examples of production processes as a means by which play experiences are ‘sold’ to the audiences of videogames. For instance, Doom (id Software, 1993) and WipeOut Pure (SCEE, 2005) show that the visual aspects of videogames are a significant part of the pleasures they offer and that where the production of contemporary videogames is concerned, ‘look’ is as important as ‘feel’ to
commercial success. For Atkins, therefore, the nomination of ‘gameplay’ as the primary locus of pleasure in games is problematised by the behaviour of players and the videogames industry. On this basis, Atkins suggests:

...even if such a young field as videogames studies might seem too fragile to withstand it, perhaps it is already necessary to consider acknowledging a distinction between two potential schools of game studies... and videogame studies, where the latter must attend to the specificity of the image and the gaze if they are to adequately account for the object of their attention. (2006: 132)

This thesis, as a part of its focus on early videogames, closely considers representational specificities of videogames and chimes with Atkins’s recommendations in this way. In doing so, it draws on prior accounts of audiovisuality in videogames. It recognizes the need to show that the videogame gaze is distinct from the cinematic gaze (and perhaps not even unified or singular in itself) and that images and sounds in videogames are positioned in relation to different kinds of information behaviour than in cinema or television. But it uses a framework derived from other scholars interested in the videogame image to show that images in videogames have meaning, significantly inflect play experiences, draw explicitly on other visual forms for images, sounds, and modes of presenting them, and are responsive to analytical tools and frameworks developed in relation to other forms of visual and audiovisual media.

One scholar who has paid significant attention to the audiovisual elements of videogames is Jarvinen (2002). His analysis of the audiovisual elements and style of videogames has an important interface with analyses of film and other media. When supplemented with the work of other scholars, it provides the resources for an account of ‘gamic mise-en-scene’ that this thesis carries forward into considerations of early videogames. In ‘Gran
Stylissimo’ (2002) Jarvinen argues that the audiovisual aspect of videogames can be understood in terms of the interaction of a number of discrete elements. The element of 
dimension

addresses whether a videogame is three-dimensional or two-dimensional in its presentation of space. Jarvinen thinks that ‘...a three-dimensional game environment often creates a more powerful, or at least more complex sense of space than a two-dimensional does...’ but that for some games ‘...two dimensions or an isometric perspective may well be...appropriate’ (2002: 115). Dimension and what Jarvinen calls 
point of perception ‘together make up the game environment’s rough form’ (Ibid.). ‘Point of perception’ is exactly equivalent to ‘point-of-view’ in other moving-image media: it can either be first-person, where the player’s view is equivalent to that of their player-character’s, or third-person, from a perspective external to the action, or more rarely ‘second-person’ (Jarvinen’s example of this is certain text-based adventure games). The game’s visual outlook for Jarvinen is the visual texture of the game’s world: the form that point of perception and dimensionality make together is simply ‘a stage upon which the visual outlook of the game is drawn,’ and if the world of the game is wholly fictional, ‘the visual outlook is based on graphic design’ (Ibid.). Whereas if the game is a simulation (for example, a sports game), the characters and environments are ‘based on real-life counterparts’ (Ibid.). Among the real-life counterparts that games can simulate for Jarvinen are other forms of media experience, for example, the reproduction of televisual aesthetics in sports simulations.

Audiovisual motifs are isolated elements occasionally found in videogames through which relationships to other media forms can be established. Jarvinen’s (2002) examples
are the common use of ‘bullet time’ effects, used first in The Matrix (Wachowski, 1999) and then Max Payne (Rockstar, 2001), and Alien vs. Predator’s (Rebellion, 1994) repetition of the visual device of the infra-red sensor from the Alien films. In this way, Jarvinen’s framework makes room for understanding the intertextuality of videogames and allows comparative analysis of in-game images. The game’s soundscape is the audio environment it offers, and for Jarvinen:

...[It] follow[s] very closely the distinction between so-called diegetic and non-diegetic sound in film art. Diegetic sound is a form of sound that originates from the game environment the game simulates...Non-diegetic sound equals the musical soundtrack that usually changes according to events in...the game. (2002: 119)

Jarvinen includes sound as an aspect of videogame design that is interrelated with visual elements, and the work of other authors such as Bessell (2002), Stockburger (2006), and Whalen (2004c) evinces a growing interest in the role of sound as an element of videogames’ information design.

One element of the visual construction of videogames that is not discussed extensively by Jarvinen is off-screen space. This is a familiar concept in film analysis where off screen spaces are always implied since films record an environment but the camera’s frame is an inherent limitation on what can be captured and seen. Cinematic techniques such as editing and camera movement work to join on- and off-screen spaces over time, and conventions such as the ‘180 degree rule’ allow cinematic narrative to alternate between the two in the construction of dialogue.13 Wolf points out that unlike cinema, the on-screen spaces of videogames are not photographed, but produced from scratch so that

13 See Bordwell and Thompson (1990) for a discussion of cinematic on- and off-screen space, and of the relationship between editing, point of view and dialogue in the 180 degree rule.
different possibilities present themselves in the relationship between on- and off-screen space (2002). He says that, 'The video game has no default structure for its off-screen space, that space can be shaped and structured in new ways that did not develop in film or television' (Ibid.: 52). This means that off-screen space can be related to on-screen space in a number of ways. Players can progress through discontinuous levels (as in Space Invaders [Taito, 1978]), action can continuously scroll into off-screen spaces (as in Xevious [Atari, 1982]), and eventually, in fully-rendered three-dimensional environments, movement through hitherto unseen spaces can be continuous and span a number of dimensions, even though players’ point of view on these spaces is always framed by the screen. Wolf’s typology of on-screen spaces is important for raising it as an element of videogames’ visual construction, but this thesis will consider off-screen spaces as they are realised in the information design of individual videogames. In any case, given the imperative of spatial exploration in videogames (which as discussed below, is seen by many authors as central) off-screen space is important as a locus of desire and promise, and as a crucial element in the dramas of revelation that imperatives of exploration are connected with.

Additionally, an important part of the visual outlook of videogames are the player and non-player avatars or surrogates. In contemporary first-person shooter games, the player may not be able to see their avatar in the normal course of gameplay due to a first-person point of perspective, but they will encounter non-player avatars who are active presences in the game. In strategy or simulation games, they may not have a single avatar, but an
entire system of interrelated objects to manipulate and coordinate. But in many games, and in a significant number of early games, the player’s sole avatar will be an element of the spectacle, centred or privileged in visual composition, with contending avatars marked out from it.

The player avatar marks the player’s presence to the game’s world, and is the vector or focus for their information behaviour. The literature on the complex position of the avatar in digital culture and videogames is large, and there is no easy answer to the question of the avatar’s role in digital spectacle and gameplay. The critical analytic responses to Lara Croft – ‘celebrity’ avatar of the Tomb Raider series (Eidos, 1996-2006) – are an indication of the complexity of the avatar as an element of audiovisual design. Lara has been described as part of a ‘digital star system’ and as having transformed modes of visual identification (Flanagan, 1999). Also in terms of identification, she has been seen as an example of a new kind of visual and affective ‘suturing’ of player to world (Murphy, 2004), or as a way of disrupting the way gender is presented, structured, and mobilised in identification in screen media (Fantone, 2003). And she has been analysed as the focus of a new mode of digital or ‘postmodern’ fandom (Rehak, 2003). This does not exhaust the range of literature on Lara Croft, let alone on digital avatars, but it shows how rich in meanings and uses avatars can be. In much of this work, contra Aarseth, the writers are reacting to the visible aspects of Lara as an avatar in relation to issues of visual pleasure, celebrity and gender. In multiplayer games, each player will have an avatar.

14 See Friedman (1995) and Newman (2004) for elaborations of the idea that gameplay involves forms of identification with ‘cyborg systems’ of play, and the entirety of a game’s visual and ludic environment.
Non-player avatars are those with whom the player contends with in videogames’ dramas of contested space. In *Pong* (Atari, 1972), there are no avatars controlled by the alien intelligence of the game (as is explored in depth in the next chapter) although many early videogames have a range of computer-controlled avatars with whom the player contends. These are worth marking out in the general visual prospect of the game: more than inert features of the videogame’s world, these are experienced as a contending intelligence (as analyses of games later in this thesis show). Consistent with its overall approach, this thesis will ask questions about the specific role of avatars within particular games rather than offering a general account here of their role in information design. But here it is enough to note that in games with a third-person point of perspective, avatars will be a visible element of their visual prospect.

All of the above elements contribute to videogames’ construction of dramatic spaces – what Galloway calls their ‘diegetic’ environments:

> Gamic action is customarily described as occurring within a separate, semiautonomous space that is removed from normal life... he diegesis of a video game is the game’s total world of narrative action...While some games might not have elaborate narratives, there always exists some sort of elementary play scenario or play situation – Caillois’s “second reality” – which functions as the diegesis of the game. (2006: 6)

Many authors agree that space is crucial to videogame play. Aarseth (1997) sees space as a central element of videogames, and Newman (2004) sees the creation of space as a central aspect of videogame design, and exploration as a central aspect of play. He notes that, ‘Typically, videogames create “worlds,” “lands” or “environments” for players to explore, traverse, conquer and even dynamically change and transform in some cases’
Squire and Jenkins (2002) see game design as the ‘art of contested spaces’ and gameplay as largely revolving around such contests. While the ‘second realities’ of pre-digital or ‘offline’ games may construct their boundaries ritually or through ‘real-world’ spatial demarcations, videogames rely extensively on audiovisual design in their constructions of space. Though conceptual design and the grammar of stages and levels play a part in the construction of games’ worlds and spaces, the most immediate presentation of these worlds is visual. While Tong and Tan (2002) are careful to differentiate the constructions of space and cues in the visual worlds of cinema and games, and are specifically concerned with distinguishing the ‘viewing subject’ of games from that of cinema, they still think that visual ‘spatial composition’ is the way that players are cued in the environment and that videogame narratives are constructed audiovisually. Avatars may have many functions, but one thing that they often do is provide a focus for players’ explorations and contestations of space, or mark the entities with whom the player must contend for control of spaces. Stockburger (2006) argues persuasively for the role of sound in producing a sense of space in videogames. The nature of gameplay’s fictional worlds and their relationship to visual design is considered in greater depth in Chapter Three. What should be underlined here is that the diegetic spatial worlds of gameplay are presented audiovisually. But this diegetic space is not all that players see, and it is often juxtaposed or alternated with informational, rhythmic, or spectacular visual elements that are not a part of diegetic space.

Jarvinen’s (2002) framework largely avoids any explicit discussion of the non-diegetic visual elements that can be important parts of the audiovisual style of videogames. He
does offer the category of *senso-motorism* to describe the interface, namely the means by
which the player is connected to and acts within the game’s world, but in a short piece
this is not extensively filled out. Galloway’s analysis of ‘gamic action’ is partly focussed
on the range of non-diegetic player and machine acts that occur during and around
gameplay including ‘... interstitial acts of preference-setting, game configuration, meta-
analysis of gameplay, loading or saving, selecting one player or two and so on’ (2006:
13). Each of these may have its own characteristic, non-diegetic visual context and
perhaps even an entirely different visual outlook, in Jarvinen’s terms, to the main diegetic
game screen. Where these occur, following Galloway, we can call them *interstitial*
spaces. Bjork and Holopainen’s (2003) outline of what they call ‘the physical and logical
components of games’ – all of which must be represented in videogames’ visual design –
lists elements which are non-diegetic: representations of specific *game states* (e.g. time
counters, score) and representations of ‘*extra-game* information’ (e.g. explicit rules or
imperatives). These often supervene on the diegetic screens of gameplay. Though not
explicitly part of Jarvinen’s discussion, these could be considered as an additional non-
diegetic component of ‘visual outlook’ since they are part of any game’s visual
environment without being part of the game’s narrative or fictional world. We can think
about them as the superimposition or alternation of the diegetic with other kinds of space
– informational or interstitial.

These elements of visual style together compose what this thesis will call the ‘gamic
mise-en-scene’. The term ‘mise-en-scene’ is taken most directly from film theory but
originally was derived from theatre criticism where it referred to the arrangement of
properties on the stage (Bordwell & Thompson, 1990; Gibbs, 2001). The history of its
use in film analysis is dealt with extensively in Gibbs (2001) but it has been used productively to understand how filmic narratives are produced in part by films' treatment and use of space. In its widest uses, it is understood as referring to all visual elements of cinema (Gibbs, 2001). The term allows the analysis of film, and it can be further broken down to allow specific attention to particular components like lighting, décor, actors’ performances, framing, lighting, and in some cases even diegetic sound is included (See, for example, Lacey, 2004). In this thesis, ‘gamic mise-en-scene’ will refer to the audiovisual elements discussed above (namely dimension and point of perspective) but will also generally be accompanied by a more detailed description of separate elements.

All the elements of gamic mise-en-scene as outlined above are shown in Table 1.1.

To briefly develop an example of this framework in use, *Phoenix* (Centuri, 1980) can be considered. *Phoenix* is two-dimensional with a third person point of perspective that means that the player’s avatar is visible. Its dimensionality is complicated slightly by the presence of two picture planes, one for the player and non-player avatars, and one for a background of stars and galaxies that defines the game’s fictional setting and lends some spatial depth to its visual outlook. The player avatar is a spacecraft and it offers a contrast with the non-player avatars which are alien birds (some of whom hatch from eggs during play). Variation is provided by the ‘motherships’ that appear occasionally, which are
Table 1.1

*Elements of Gamic Mise-en-scene*

<table>
<thead>
<tr>
<th>Element</th>
<th>Diegetic (D) or Non-diegetic (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensionality</td>
<td>D</td>
</tr>
<tr>
<td>Point of perspective/view</td>
<td>D</td>
</tr>
<tr>
<td>Visual outlook</td>
<td>D</td>
</tr>
<tr>
<td>Off-screen space</td>
<td>D</td>
</tr>
<tr>
<td>Avatars (Player and non-player)</td>
<td>D</td>
</tr>
<tr>
<td>Sound</td>
<td>D&amp;N</td>
</tr>
<tr>
<td>Interstitial screens/scenes (Menus, attractor screen, stage markers)</td>
<td>N</td>
</tr>
<tr>
<td>Game-states information (Time, scores, lives)</td>
<td>N</td>
</tr>
<tr>
<td>Extra-game information (Rules, explicit imperatives)</td>
<td>N</td>
</tr>
</tbody>
</table>

Derived from Bjork and Holopainen (2003), Galloway (2006), and Jarvinen (2002)
large and are shaped like flying saucers, and there is a distant resemblance with the alien craft in *Close Encounters of the Third Kind* (Spielberg, 1977). (*Phoenix* was one of the first games to employ such ‘bosses’ in crucial transitions.) Though two-player play is available, it works on the pattern of alternation between one-player rounds so that this arrangement of player and non-player avatars is consistent.

*Phoenix* was one of the first full-colour games and the avatars are rendered in bright colours, such that overall, the visual outlook presents a varied, colourful spectacle by comparison with previous or competing games. *Phoenix* has an interstitial title screen, and offers ‘attractor’ screens that reproduce gameplay, but also between stages, the game’s mise-en-scene scrolls upwards and each stage’s background of stars appears to be left behind and replaced by a new vista. At the top of the screen during play, a range of non-diegetic game-state information is displayed: from left to right are columns with player one scores and an iconic representation of lives remaining, high score and coins remaining, and player two score and lives. The title screen shows very little extra-game information presented beyond ‘insert coin’ and a roster of scores alongside various kinds of enemy and brief demonstrations (‘demos’) of gameplay sequences. One of the most interesting things about *Phoenix* is its sound design: although noted for the eerie and striking noise that players’ diegetic laser fire makes, the game is also remarkable for the mournful, affecting non-diegetic music at the beginning. It marks itself out from contemporary games by means of full-colour graphics, but also by the strange, downbeat emotional register of its music. From here, the relationship of the game to other visual
texts, or the inflection of gameplay by the audiovisual environment could be further explored.

The use of the terms of gamic mise-en-scene need not always be so programmatic, but here it is shown that specific aspects of the pleasures and affective force of videogames can be brought about by due attention to these aspects of audiovisual design. This framework is not intended as an exhaustive or definitive account of audiovisuality in videogames, but a way of framing questions that might inform analysis of it. It synthesizes the work of a range of authors on videogames in order to frame the questions it asks about videogames' visual aspects at various points throughout the remainder of this thesis. It should not be read as a claim that videogames are just audiovisual, and much of the remainder of the thesis will try to understand how visual aspects of particular games are related to information behaviour. As Wolf reminds his readers in discussing visuality and space:

> While the video game's use of space relied on the precedents set in other media, such as the conventions of stage space, cinematic space, and the use of space on television and video, the video game's added elements of navigation and interaction lend an importance to diegetic space which is unlike that of other media. (1997: 12)

In using this model of a gamic mise-en-scene, this thesis will try to understand both the specifics of particular videogames' constructions of space and their relationships to their precedents in other forms.
Conclusion

This chapter has developed the critical framework and methods that inform the remainder of this thesis. It has developed the detail of this framework in relation to possible objections that might be seen as emerging from extant debates in videogame studies. In the proceeding chapters, early videogames are understood comparatively within a mode of textual analysis that generalises from experiences of play and pays particular attention to the audiovisual aspects of videogame design.

The broad comparative emphasis of this chapter has been directed at understanding videogames in a larger context, particularly in relation to scholarship that recognizes videogames as a medium apart. This understanding of videogames has employed a defining relationship with pre-digital games and might be misunderstood or perceived as 'colonised' by scholarship relating to other media. It has drawn on arguments from philosophy, aesthetics, and film and media studies suggesting that definitions of a medium as having a unique essence risk prescriptive modes of criticism, and it demonstrated this in relation to aspects of Juul's concept of 'gameness' (2003). It also has considered theories of media convergence in this connection that suggest that functionally and aesthetically, the boundaries between media are becoming more permeable. The idea that videogames are a product of functional convergence has also been canvassed, and it has been suggested that they regularly 'remediate' images and styles of presentation from cinema and television. Given all of this, Wittgenstein (2001) and arguments descended from and related to his have been utilised in committing to a
descriptive critical model (a move which is supported by journalistic critical practices). Further, this chapter forwarded Manovich’s (2001) ‘post-media’ aesthetic framework which uses information design and information behaviour as inclusive categories for understanding and comparing disparate forms of practice. Manovich’s model offers a broad comparative scope but close description offers a balancing specificity in understanding the qualities of particular games.

Secondly, the chapter developed its method of ‘textual analysis’ – namely developing critical claims about videogames on the basis of play – in relation to arguments by Newman (2002b; 2004) that players often exceed the limitations of information design in their information behaviour, and that the complexity of the videogame audience means that understanding games only from the perspective of the primary player is reductive by comparison with audience studies. While conceding that players use games in unexpected ways and that the audience is diverse and complex, it showed that because of the way that information design – in videogames, new media, and predigital forms – directs and constrains behaviour and interaction, there is room for understanding interactions with videogames as having enough in common for a meaningful textual criticism to develop. It showed that the idea of an ‘ideal player’ is embedded in non-academic reviewing as a rhetorical device for accounting for play experiences. In this light, it offered a further specification of information design and information behaviour. This thesis understands the most immediate demands a videogame makes on a player as imperatives, and drawing on Galloway (2006), it made a distinction in player actions between move-acts and
expressive acts. Imperatives are embedded in design, and constrain player behaviours, and player actions are responses to these imperatives.

Third, the chapter outlined its framework for understanding audiovisual and representational aspects of videogames in relation to concerns that such attention would deflect analysis from the essential pleasures of videogames which revolve around gameplay. In response, it considered Atkins’ (2006) propositions regarding a criticism that focussed on the specificity of images in videogames and for a ‘videogame studies’ alongside game studies which gave attention to the representational aspects of games. Drawing largely on Jarvinen (2002), but also Bjork and Holopainen (2003), Galloway (2006) and Wolf (2002), it outlined the elements of a gamic mise-en-scene, a concept which is used in the rest of this thesis in approaches to specific videogames.

Overall, what distinguishes this framework is that it allows a range of questions to be posed of videogames in new ways, but that it does not foreclose on any other approaches, except perhaps the project of securely defining videogames as a medium or cultural field that is essentially different to others. Even though it rejects this project of definition, it does not dispute what tends to go along with it – the idea that videogames have important relationships with pre-digital games. Though it was necessary to develop it in relation to Newman’s arguments about the complexity of the videogame audience, it in no way conflicts with audience work and ethnography and simply exists in order to offer different kinds of insights. It is a framework directed at broadening the scope of analysis
that can be brought to videogame studies rather than closing off the possibilities for other kinds of insight.

Having said this, the framework is provisional. Like any other critical methodology, its value is contingent upon its development of illuminating perspectives on the phenomena it addresses itself to. The elements of this framework are employed throughout this thesis, and their application is developed in relation to narrative, genre, and in the next chapter, they are used in understanding the relationship between the very earliest commercial videogames, emerging practices in art, discourses that saw artworks and art practices as undergoing substantial alterations, and changes in the technological imaginary.
CHAPTER TWO

‘Participation TV’: Videogame Archaeology and New Media Art

One of the foremost tasks of art has always been the creation of a demand which could be fully satisfied only later. The history of every art form shows critical epochs in which a certain art form aspires to effects which could be fully obtained only with a changed technical standard, that is to say, in a new art form.


Although the art of the future could take any one of a number of directions, it seems to me that, with the steady evolution of information processing techniques in our society, an increasing amount of thought will be given to the aesthetic relationship between ourselves and our computer environments — whether or not this relationship falls into the scope of the fine arts ... As our involvement with electronic technology increases ... the art experience may undergo a process of internalisation where the constant two-way exchange of information becomes a normative goal. We should rightfully consider such a communication shift as an evolutionary step in aesthetic response.


The dream of technical control and of instant information conveyed at unthought-of velocities haunted Sixties culture. The wired, electronic outlines of a cybernetic society became apparent to the visual imagination.


One of the clear commitments made in the thesis so far is the investigation of videogames with a sustained attention to their contexts. This chapter investigates the earliest commercial videogames alongside early iterations of new media art. Specifically, the chapter compares the television works of Nam June Paik, the efforts of Ralph Baer to
arrive at the Magnavox Odyssey console, and the process that led Nolan Bushnell to *Pong* (Atari, 1972), the first commercially successful videogame. While not arguing for an explicit dialogue between early videogame designers and the 1960s artists who were engaging with media technologies, it shows that they both emerge from a broader context where artworks were beginning to be conceived as ‘systems’ rather than objects, where the technology of television was being rethought and repositioned outside the nexus it had shared with the institutions and the apparatus of broadcasting, and where such practices were informed by a profound technological utopianism that optimistically linked technological change with the possibility of social change. This chapter shows the complexities in the relationship between Paik’s, Baer’s, and Bushnell’s outputs and points out that their resemblances and what they share are just as important as their differences. Moreover, the chapter’s ‘archaeological’ approach to the earliest videogames yields a different understanding of the characteristics that made *Pong* a ‘killer app’ that gave significance to the possibility of real-time manipulation of images on television, and began a slow, fundamental transformation of the relationship between audiences and television technology.

The framework introduced in this investigation is ‘videogame archaeology’, an emerging avenue of scholarship in videogame studies (examples of which are reviewed in the first section of the chapter). While previous archaeologies have related games to prior or parallel forms of popular culture or to the ‘military-entertainment complex’, this examination differs in linking games to gallery-based art and changes in media culture. The chapter then examines Nam June Paik’s television works which showed the
possibilities for television as a surface for new kinds of image-making and as a component in new forms of information design which encouraged new forms of information behaviour in audiences. Paik’s critical stance on the nexus between television and broadcasting is considered in relation to key media scholarship on the history of television. Following this, Paik’s works are put in the context of: changes in the nature of artistic practice during the 1960s and 1970s, his affiliation with the Fluxus movement, ‘postobjective’ and ‘systemic’ practice, and a then-prominent discourse of futurist utopianism. This awareness of Paik’s works and the currents and principles that informed it is taken forward into a re-examination of the development of the Magnavox Odyssey by Ralph Baer and Nolan Bushnell, and Atari’s experimental pathway to Pong. As will be seen, this story has been told elsewhere, but here I am concerned with positioning this history in relation to television as a technology, the emerging context of postobjective information design, real-time interaction, considerations of audiovisual representation and abstraction, and utopian technological discourses.

A concluding section discusses Pong as a ‘killer app’ or killer application. This is a term taken from the software industry, and describes an application that ‘breaks’ or demonstrates the usefulness of a new technology: a killer app is, ‘... the application that actually makes a mass market for a promising but under-utilized technology’ (Jargon File, 2001). Following Manovich’s (2001) recommendation that the terms of computing culture be adapted to more general cultural criticism, it is used here to think through moments such as the release of Pong, when technologies cross over into mass market

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15 Huhtamo (2005) calls this part of a ‘founding fathers’ discourse in videogame studies. Examples can be found in Burnham (2001), Herman (1997), and Winter (1996-2006).
acceptance. *Pong* was a killer app – both as a videogame and more broadly as a form of postobjective design. Its success counts among the moments that began the long progression towards our current ‘postbroadcast’ era and a present where real-time interaction has come to ‘underpin the whole apparatus of communication and data-processing by which our contemporary techno-culture operates’ (Gere, 2006: 1). This section involves a side by side comparison of *Pong* with Paik’s and Baer’s work and makes suggestions as to the features of *Pong* that made it successful. It includes a discussion of the varying fates of these forms of ‘participation TV’ in terms of Brian Winston’s framework of technological change (1998). The further insights gained from this comparison illustrate the usefulness of an archaeological, comparative method and attention to representation and context in videogame studies. Such an approach not only helps us to see games in their broader contexts, but generates new kinds of critical claims about them.

*Videogame Archaeology*

The ‘archaeology’ of videogame play and culture is emerging as a productive focus for scholarship. As videogame history moves beyond what Huhtamo calls its ‘chronicle era’ (2005), more researchers are trying to ‘...broaden the historical perspectives of digital games from the internal history of computing to the general cultural history of modernity and modern media technologies ...’ and to understand the ‘...rules, practices, conditions and functions governing the actual instances of cultural events’ (Suominen and Parikka, 2006). More simply, Huhtamo (2005) defines the project of videogame archaeology as
‘...the cultural and historical mapping of electronic gaming. Its basic premise is at least seemingly simple: electronic games did not appear out of nowhere; they have a cultural background that needs to be excavated.’ Jarvinen’s description of the method similarly expresses the idea that it is a way of viewing videogames history that allows researchers to understand and frame that history in a way that takes a broader context and longer history into account:

If we try to uncover the historical roots of a practice like game-playing as a form of media use, we need to look farther into history than the date when the first computer game was programmed or the first game console was released to the market. (2001: 69)

Rather than seeing videogames as a self-contained cultural field with only an internal, technological history, the archaeological approach instead seeks to connect games with other media technologies and cultural forms. Rather than offering linear accounts of the medium’s development that focus on succeeding hardware and software systems within a discourse of ‘upgrade culture’, as discussed in the introduction to this thesis, videogame archaeology tries to understand videogames as enmeshed in wider cultural, economic and technological structures. It is premised on the conviction that an understanding of other media forms, mobilized in comparison, can usefully illuminate the history of videogames.

Huhtamo links this approach to his own more general project of media archaeology which is concerned with ‘(re)placing technologies into their cultural and discursive contexts’ where the discourses informing and surrounding technological change are just as important as any concrete technologies that emerge:

Registering false starts, seemingly ephemeral phenomena and anecdotes about media can sometimes be more revealing than tracing the fates of machines which were patented, industrially fabricated and widely
distributed in the society…From such a point view unrealized ‘dream machines’, or discursive inventions (inventions that exist only as discourses), can be just as revealing as realized artifacts. (2004)

This means that failed technologies, the discourses informing technological practice and change, as well as the technologies favoured in more linear chronicles of technology can be useful to critical histories and aesthetic understandings. Huhtamo’s exposition of media archaeology sees media history as:

...[having an] ambiguous role as a mediator and a ‘meaning processor’ operating between the present and the past (and, arguably, the future). Instead of purporting to belong to the realm of infallible truth (with religion and the Constitution) historical writing is emerging as a conversational discipline, as a way of negotiating with the past. (2004)

By extension, videogame archaeology would be less a blow by blow chronicle of technologies superseding one another in a narrative that is removed from the wider context in which these events take place, and more a contextualizing attempt to negotiate with the technology and its legacy in the present.

In light of these goals, what does videogames archaeology mean in practice? There has already been significant and valuable work in the broad project of linking videogames to previous or parallel cultural forms, fields, and histories (even where the researchers do not explicitly identify with the recently-coined ‘archaeological’ label). This work has two main thrusts. First, there is a range of research that places videogames within the history of popular culture and popular amusements. Early on in the history of game studies, Fuller and Jenkins (1995) connect the ‘spatial stories’ of platform games with popular travel writing. Darley (2000) ties videogames and other ‘new media genres’ with the history of fairground amusements and attractions. Flynn (2003) talks about games in
relation to a variety of navigational and spatial media (including formal gardens and
baroque architecture). Huhtamo (2005) traces the connections between videogame play
and the entire modern history of slot-machine amusements, showing that videogames
emerged into a matrix of venues, audience behaviours, and even censorious official
discourses that had developed in relation to forms from the stereoscope to pinball.
Galloway (2006) devotes a chapter of Gaming to understanding the relationship between
point of view in cinema and first-person shooter (FPS) games. Jarvinen (2002) links the
same FPS genre with the aesthetics of baroque landscape panoramas and early cinema.
And a range of authors – including Juul (2001; 2005) and Frasca (1999) – insist on the
continuities between videogames and pre-digital games.

Methodologically, this first kind of archaeology involves the critical elucidation of links,
analogies and resemblances between videogames and other cultural forms, and draws
conclusions about videogame aesthetics or the discourses that animate play from this
process. The evident visual similarities between FPS games and other forms of visual
culture lead Galloway (2006) and Jarvinen (2002) to try to formally pursue and articulate
historical relationships. The fact that videogames involve spatial navigation and pleasures
of revelation, lead Flynn (2003) and Fuller and Jenkins (1995) to compare them to prior
forms that evoked the same pleasures. Darley (2000) and Huhtamo (2005) pursue the
various commonalities between videogames, fairground attractions, and slot-machine
amusements based in part on their being exhibited and consumed in similar ways, and in
similar venues. All of these archaeologies connecting games to other forms of popular
culture allow comparative illumination of videogames by drawing out analogies between
them and earlier forms of popular culture, and often seek the discourses and the
imaginary that frames videogames. This could be called ‘deep’ archaeology, since it
seeks the resonances of what are usually past forms of popular culture in the aesthetics
and contexts of videogames.

There is a second broad emphasis in archaeology on the connections between videogame
technologies and the ‘military-entertainment complex’ or the more recent history of
human-computer interaction. Lowood and Lenoir (2003) show parallels between the
emergence of the videogames and military simulation industries, and note that there is
significant overlap in terms of personnel and institutions between these industries.
Crogan (2003) reflects on similar issues, and in an analysis drawing on Virilio (1989;
2002), compares real-time strategy games with the pre-digital military war games that
they superseded. Lowood (2007) covers similar historical ground to this chapter, but is
keen to see how Pong (Atari, 1972) is enmeshed in the history of institutions and
technology in Silicon Valley and the university system in the United States. This
emerging research direction reminds its readers of the close links between videogames
and the technological changes that underwrite the information economy and new forms of
conflict. There is still a re-placement of games in the broader context of the histories of
technology, media, and modernity, but the method is less one of tracing videogames’
roots in past forms and more of an attempt to grasp the dynamic ongoing interactions
between the evolving aesthetics and technologies of videogame play, and the needs and
influence of an increasingly technologised and mediatised military apparatus, high-tech
industries, and educational institutions. This is still an essentially comparative project,
and seeks to enlarge the frame through which videogames are understood. In distinction to 'deep archaeology', it could be called 'flat' archaeology, since while trying to (re)place games in their contexts, it is less concerned with the echoes of past forms in gameplay than in their mutual interaction with a network of technologies, institutions, and discourses.

This chapter extends the range of videogame archaeology by considering the relationship between the earliest videogames and the artistic and creative milieu that pertained throughout the West and beyond in the 1960s and 1970s in the context of the technology and institutions of television. It lies somewhere between deep and flat archaeology since it deals with origins and histories, but seeks to understand relationships that were current at the time the earliest videogames were produced. It differs from those attempts to locate videogames in relation to popular forms due to its comparative focus on gallery-based artworks. It could also be said to differ from much of the work in 'flat' archaeology so far in that its focus is not on military and technological histories, but rather a more playful genealogy for videogames in works that lie at the headwaters of new media art.

The direct comparisons that are made in the chapter between videogames and art may run counter to the sense, which can be detected in the work of many artists and theorists, that videogames are a problematic, reactionary counterpoint to the critical work of new media artists. Charlotte Davies, the designer of important works of virtual art such as Osmose, represents a tendency to rhetorically position games in opposition to new media art when she writes:
Commercial computer games approach interactivity as a means of empowering the human subject through violence and aggression. These conventional approaches to digital media reflect our culture's Cartesian world-view, with its tendency to reduce the world and its myriad of inhabitants to a 'standing-reserve' for human consumption. (in Shinkle, 2003)

The negative positioning of games in relation to art here is emblematic of the fears that arise from games' status as the "repressed" of the cybercultural enthusiasm for interactivity" (Lister et al., 2003: 263). I hope to show that because of their deep, mutual involvement at their origins, there is no easy way to separate videogames and new media art, and that drawing sharp binary distinctions between the two is less productive than seeing their complex pattern of differences and resemblances. Importantly, early games and new media art embody a series of shifting relationships with the technology and institutions of television, which in the 1960s and early 1970s (the focal period of this analysis), were firmly bound together in mass broadcasting. Also, in this contribution to videogame archaeology I will go beyond Wolf's (2003) noting of the countercultural engagement of many early game designers in relation to the abstract visuality of early videogames. Apart from the happenstance of "hippie programmers", I will argue that the earliest examples of new media art and videogame design were produced from similar impulses and involved with similar changes in aesthetic paradigms and economic and social structures. Further, games and artworks alike are informed by a discourse of technological utopianism that was prominent in the culture of the 1960s, during or immediately after which these works were made and unveiled. In this way, the chapter also chimes with the comparative emphasis of the thesis as a whole by positioning early videogames in relation to other emergent forms of information design.
Nam June Paik’s TV works

Nam June Paik had his first television exhibition at Rolf Jahrling’s Galerie Parnass in Wuppertal-Elberfeld in March 1963. He had already been involved in the reconfiguration of institutional art and this exhibition signified his on-going project of attempting to change the relationship between television technology, images, and the viewer. Paik was a Korean-born artist who came to Germany in 1956 to study music at the University of Munich. Not long after this television exhibition, he moved to the United States where he was centrally involved in the activities of the Fluxus movement (whose aims are detailed further on in this chapter). Throughout his career (which fed into developments in video art, conceptual art, and virtual art), Paik was to return to using the technology of television in a variety of ways. In these first television works though, Paik sets out the parameters for new uses of television that are important in considering videogames archaeology.

In Zen for TV (1963) Paik redefined television as a technology of rapt attention, rather than distraction as it had hitherto, and has even hence, been seen.\textsuperscript{16} The work consists of a single, vertical white strip on the blank, dark background of a television monitor, produced by distorting the television’s monitor image with a magnet. It is a highly abstract, static image set within the television set, a technology which is here reconceived as the basis of a new kind of sculptural work, or as a new kind of frame for abstract pictorial works. Its visual simplicity is conveyed in the way the work reveals its own

\textsuperscript{16} See for example, Ellis (1990).
importance. It announces that from this moment, ‘... television was not simply an iconic presence, but a malleable medium’ (Goodman, 1997). In *Zen for TV*, television’s malleability as a technology saw it reconceived as an object for meditation whose visual output was in this case given transcendent, religious significance.

The means by which Paik produced *Zen for TV*’s image – a magnet on top of the set – revealed the televisual image as amenable to direct, local action and defined the screen as a pictorial surface for the artist. In an allusion to the vertical ‘zips’ which appeared in the work of mid-century abstract artist Barnett Newman, from *Onement I* (1949) forward, Paik not only playfully mocks the seriousness of high Modernism, but takes over some of Newman’s purpose – the reorientation of the artwork toward the establishment of a closer relationship with the observer’s body, and the relocation of the sublime in the products of human industry\(^\text{17}\). Here, Paik uses television in a new form of information design, combining pictorial abstraction and television as an electronic medium.

From the same exhibition is *Magnet TV*, a work that further sculpts the image produced by direct manipulation of the electronic image. Like *Zen for TV*, *Magnet TV* was produced by means of magnetic interference with a television monitor image, however, this time the image was a more complex and aestheticised abstraction – a spiraling, greenish nest of vector lines. Though it is only accompanied by ambient sound, Richard Tancin argues that with this work, Paik:

...draws our attention to what had become a commonplace object by 1965: the television. By displacing the television set from the living room to the art gallery, Paik forces the public to separate the physical properties of the

television from its content and to evaluate the object for what it is: image and sound. (2001)

*Magnet TV* removes television from its customary venue of reception (the home) and estranges it from its usual purpose (the reception of broadcasting). As well as revealing television's bare audiovisual properties, *Magnet TV* underlines and extends *Zen for TV*’s discovery of television as a surface immanent to the artist’s localised practice – and it shows that there are even greater possibilities for manipulating the television image. In contrast with *Zen for TV*’s depthless flat line, *Magnet TV* is far more complex and sculptural.

Perhaps the most striking of Paik’s television works from this exhibition in 1963, and the most relevant to videogames, is *Participation TV*. In this piece, a television set’s visual output is not fixed: by speaking, yelling, or singing into an attached microphone, the viewer is able to produce a variety of abstract shapes on the screen. The technical means for this new mode of image-making are a microphone and a sound frequency amplifier that transform and feed the signals directly to the TV’s CRT and its steering coils to produce scattergun kinetic images. The importance of *Participation TV* lies not so much in the images themselves, however striking they may be, but in the way Paik incorporates them in a playful, participatory, ‘real-time’ work. Television had long offered real-time or ‘live’ images, and indeed most early television broadcasting was transmitted live rather than recorded.18 Ivan Sutherland’s Doctoral thesis incorporating Sketchpad, a graphical user interface (GUI) for computers, was published in 1963, and the technology allowed the production of on-screen line drawings of considerable complexity, but these

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18 See Briggs (1979), Barnouw (1990) or Jacobs (2000b) for details of the importance of live broadcasting in early television in the United States and the UK.
efforts were directed at monitors attached to large, mainframe computers in specialist institutions. Few if any visitors to Jahrling’s gallery in 1963 would ever have been able to directly manipulate electronic televiual images in real time. For all its innovations, *Participation TV* is a charmingly jury-rigged technology. It answers nicely to the description Lowood would later give to *Pong*: it represents ‘... a modest investment in electronic components, a modified television set, and some ad hoc wiring and parts’ (2007: 2). Yet it produces an astounding result that combines television, interactivity, and a kind of utopian critique. *Participation TV* is permanently unfinished, and rather than a realised pictorial work it is a playful structure that invites the viewer into certain kinds of physical intimacy, constituting an invitation to perform and labour within it. It divides the gallery audience: there are still spectators separated from the work as subjects from an object, but one by one the visitors who step up to the microphone inhabit a new kind of productive spectatorship. While it contrasts with the various kinds of separation between spectator and object that had pertained in the experience of visual art, it resembles the bifurcated model of videogames spectatorship offered by Newman where ‘...the pleasures of videogames are frequently enjoyed by those that commonsense might encourage us to consider as non-players – ‘onlookers’ that exert no direct control via the game controls’ (2002). Here, the technology of TV is not only defined as something open to local pictorial activity, but also as a space for the cooperative activity of a complex audience and an artist, the latter responsible for designing structures of playful interaction. Even though the images produced by Paik’s work are of interest, the questions we ask
ourselves about them are less to do with the use of colour, line, and composition within the space of the frame, less the kinds of questions we ask of a work which is separated from us as object from subject, and more about the elegance of the relationship the artist proposes between our bodies and pictorial space, the kinds of actions we can take within this structure, and the quality of our pleasures of co-creation.

Paik put his innovations, and the immersion in the techniques of electrical engineering that led to them, down to his discovery that television ‘... was made of electrons and protons. It made sense to me that I might as well use protons and electrons directly’ (in Kearns, 1988). He looked forward to ‘...the day when the collaboration of the artist and engineer will progress into the unification of the artist and engineer into one person...’ (since the practice of the artist getting things made to order missed the possibility for ‘precious error’), and ‘...found that the by-product is often more valuable than the envisioned aim’ (Ibid.). This idea of the union of artist and engineer foreshadows Grau’s conception of the ‘media artist’ who represents ‘...a new kind of artist, who not only sounds out the aesthetic potential of advanced methods of creating images...but also specifically researches innovative forms of interaction and interface design’ (2003: 3). Another similar concept is Popper’s ‘virtual artist’ who differs from traditional artists in pursuing ‘techno-aesthetic creative commitments’ (2007: 1).

In 1965, talking about the tendencies in his work of the early 1960s, and looking forward to projects like Video Synthesizer, Paik said he wanted his own interventions leading to:

...[something] which anyone could use in his own home, using his increased leisure to transform his TV set from a passive pastime [sic] to
active creation....Communication means the two-way communications. One-way communication is simply a notification...like a draft call. TV has been a typical case of this non-communication and [the] mass audience had only one freedom, that is to turn on or off the TV...My obsession with TV for the past 10 years has been, if I look back and think clearly, a steady progression towards more differentiated participation by viewers (in Kearns, 1988).

Paik is critical here of the way television experiences had been framed and organised to this point, and in particular, targets the domestic consumption of broadcast television which was the hegemonic use of that technology in the early 1960s. By using television technology for a new purpose, Paik explicitly critiques the nexus between television as a technology and the apparatus and institutions of broadcasting which had assumed and gathered a mass audience, and which as Spigel’s (1992) work shows, was so involved with the ‘suburbanisation’ of life in America and the capitalist West after the Second World War. Television has been seen as crucial to the ‘mobile privatisation’ that allowed the great transformation that was suburbanisation (Williams, 1974; Spigel, 1992; 2001).

It resolved the contradiction between the isolating privacy of suburban life and the continuing dependence of suburban households on the city centres they had evacuated. By providing a ‘window on the world’ (Spigel, 1992) and a small range of simultaneous broadcast experiences for a dispersed population, television helped constitute the ‘imagined community’ (Anderson, 1983) that sustained social cohesion in the face of geographical fragmentation. Paik’s identification of mass broadcasting with a Vietnam-era ‘draft call’ shows that his desire to vary the uses of television is bound up with a challenge to the conformity and authority that he sees television as being bound up with.

19 See Boddy (1990), Morley (1986) and Spigel (1992) for extended accounts of television’s position at this time.
This attitude to television and its social role was not unique to Paik. During the 1960s, television became a more generalised object of critical scrutiny. Horsfield’s history of video art talks about a range of 1960s art practices that took a critical stance on television:

The goal was to create a new type of cultural production and alternative institutions to support more egalitarian and pluralistic notions of political and cultural interaction....Television was a primary target. Throughout the 1950s television had gained enormous power; more than 85% of American households owned at least one television set by the end of the decade. While the masses were increasingly mesmerised by television’s presence, others, particularly intellectuals and media theorists, saw that it reinforced the status quo. (2007: 7)

Harvey is speaking about film, the origins of video art, and other kinds of critical art practice in the 1960s when she writes:

The argument was not merely about producing new form for new content, it was about changing the nature of the relationship between reader and literary text, between spectator and spectacle, and the changing of this relationship was itself premised on new ways of thinking about the relationship between art (or more generally, representation) and reality. (1978: 56)

Whatever we might think of Paik’s and others’ position in the light of long-held notions of TV’s active audience,20 or of warnings such as William Boddy’s (1994) about the recurring tendency to feminise and passivise the television audience in the promotion of new media, there is a clear intention to change and vary the uses of television by fragmenting the publicity of broadcasting and constructing systems of interaction within which the audience could take their place as co-creators. In this ambition, Paik’s work was consistent with strong currents in the 1960s counterculture.

In and of itself Paik’s work did not translate into a wholesale transformation of the uses

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20 Hall’s (1997) ‘The television discourse – encoding and decoding.’ Fiske and Hartley (1989) were perhaps the earliest examples of the development of the concept of the active television audience.
of television, or ever feed directly into any mass-market domestic media technology. Indeed, beyond a few avant-garde television broadcasts, his television work was notably confined to the public spaces of galleries and theatres. As McCarthy notes, television has always been in part a publicly-consumed medium, and indeed continues to function in regulating public space (2001). Nevertheless, it is striking that Paik’s ambition to turn television to new uses – even though he envisions his work as efforts to change a domestic medium – requires him to bring television’s new possibilities forth in public view. What Popper calls the ‘antitelevision stance’ (2007: 22) of Paik and other video artists had less of a direct effect on mass media consumption patterns than it did on the emergence of new kinds of artistic practices in public galleries and, later, the Internet. But the technological developments, changing discourses of the artwork, technological utopianism and broader underlying structural changes that informed Paik’s work and its production of new possibilities for television had a resonance beyond the gallery. These are outlined further below.

*Paik’s Context: ‘Postobjective’ Art, Fluxus, ‘System Aesthetics’, and Technological Utopianism*

Paik’s work with Participation TV was interesting and unusual in its elegance and originality, but it arose in a specific conjuncture in the history of twentieth-century culture where a very broad range of engineers, artists, and a number of people who combined the interests and skills of both were enthusiastically engaging with areas of interactivity, mass culture, and then-emerging digital and electronic technologies. Beyond the world of art, utopian discourses about the capacity for widespread social change to
follow on from technological change were circulating. This conjunction was part of
deepen changes in economic and social life and informed the desire to turn television to
new uses, encouraging the construction of interactive, real-time works. This conjunction
overlapped with the emergence of the earliest videogames.

In particular, Paik’s work can be set alongside what Drucker (2005) calls ‘postformalist’
or ‘antiformalist’ tendencies in art from the 1960s and 1970s. This is particularly evident
in the work of his colleagues in the Fluxus network, but also the ‘art and technology’
movements of the 1960s and early 1970s, and theorists of those movements like Jack
Burnham. Understanding this context for Paik’s TV works can help us to further our
understanding of its relationship with early videogames by showing how the desire for a
new kind of relationship with the artwork was widespread and was conceived as soluble
in terms of technological changes. This allowed for the intriguing possibility that where
such movements in avant-garde practice gave way to the hegemony of conceptual art in
the galleries (Gere, 2006), some of their objectives, enthusiasms and tendencies persisted
in early videogame design.

An important formative influence in the context of Paik’s work comes from his
connection with a broad postformalism that was changing discourses of artwork at the
time. As Drucker puts it, in the 1960s and 1970s:

A serious rethinking of the very idea of ‘art’ appeared on the edge of radical transformation...Experience-based rather than object-based work sprang up
in one location after another...The concepts of interactivity, algorithmic
processes and networked conditions were not fully distilled as principles of
digital art until recently, but their broad outlines were apparent by the 1970s.
(2005: 40)
Like many other recent historians, (Manovich, 2001; Grau, 2003; Gere, 2006), Drucker sees important precursors not only to the new media art of the 1990s and after, but to the entire landscape of ‘network culture’ and the ‘network society’ (Castells, 1996/2000) in the work of the 1960s and 1970s avant-garde. Historians of the ‘information economy’ trace many fundamental structural changes in the capitalist mode of production to the period of the 1960s and 1970s when post-formalist art was taking shape. This was a time when the postwar economic system changed into something else, and western economies became more geared to the production of ‘immaterial’ and ‘symbolic’ goods such as services and information.\(^{21}\) As we shall see, these transformations were not lost on artists or theorists working at the time. Post-formalist tendencies were, for a time in the 1960s and 1970s, present in a range of artworks which engaged with technology, the possibilities of offering viewers a new, participatory place in the artwork, and the construction of systems rather than objects. This idea of the artwork as a set of conditions that lies in wait for the audience’s intervention, and which is only determined by way of that intervention, is increasingly familiar in scholarly and critical approaches to new media art, and art more generally. In fact, Popper (2007) suggests that this idea of the artwork is now close to being hegemonic.

The first person to describe as ‘postformalist’ this ‘rethinking’ of the nature and possibilities of the artwork as experience was a late 1960s artist and theorist, Jack Burnham (Drucker, 2005). Burnham was himself a sculptor, and produced artworks using light before working as an academic and curating a number of exhibitions like the 1970s

\(^{21}\) See, for example, Cohen (2003), Castells (1996/2000), Harvey (1990) for accounts of these economic change).
Software, Information Technology: Its New Meaning for Art’, which Srebowski describes as ‘a major early Conceptual Art show, setting vanguard work alongside information technology’ (2006). The term is taken up by Drucker when she describes ideas such as Burnham’s that were responding to new kinds of art:

The critical vocabulary of postformalism is sprinkled with terms and phrases that call attention to this change from object-based to process-oriented work. The earlier-twentieth-century notion of the ‘languages of art’, for instance, was replaced by reference to ‘systems’. ‘Processes’ became more significant than mere ‘objects’. And the vocabulary of ‘operations’ or ‘procedures’ appears in work with and without technological components, as if the linguistic phraseology of a technological mode were the new lingua franca of conception and production. An overall emphasis on dynamic manipulation of knowledge (again, ‘the idea is a machine that makes art’) replaces the long-standing legacy of ‘resistance in material’ as the condition for a work’s coming into being in form. (2005: 48)

Rather than the objective artwork emerging from the artist’s heroic struggle with their materials, through their reformulation of the language of art — for this was the view of artistic practice that had informed Modernists like Barnett Newman, who Paik references (Wilson, 2004) — artists on this model put in place processes, procedures, and relationships. This view of the artwork is now part of critical orthodoxy in relation to new media art, and is the paradigm that informs a wide range of artistic production. As Norbert Pfaffenbichler put it:

The moment of the work’s intended mutability through the user’s input represents a paradigm change in artistic production. Artists now provide a certain framework for action and define the esthetic parameters within which the user can operate; the work itself is a variable. (2004)

In the first moment of postformalism, as in so much contemporary art, the object disappears: it is no more than a ‘variable’ and ‘mutable’ element within the framework that determines its parameters and the parameters of users’ actions upon it. The artist is no longer a producer of finished objects within this paradigm, but a producer of
affordances, constraints, and fields of action. In this respect at least, Fluxus, and Paik’s work in particular intersected with the ‘Art and Technology’ paradigm, whose influence faded in the face of conceptualism over the course of the 1970s (Drucker, 2005; Gere, 2006), but whose commitment to exploring the aesthetic possibilities of new technologies, and the creation of systemic artworks persisted in early videogame design (as shown further on).

The idea of postformalism grows out of the notion of systemic artworks, first proposed by Burnham in 1968 in ‘System Esthetics’ (1978), an essay that makes room for a flexible discussion of the relationship between players/viewers, technologies, and the audiovisual spaces created in work such as Paik’s, and which further, can inform our discussion of videogames. Burnham’s work, which drew upon his reading of systems theory in biology, is receiving renewed attention from researchers in new media, visual culture, and art history (Drucker, 2005; Gere, 2006; Srebowksi, 2006). Burnham’s lucid account of the first wave of interactive and kinetic gallery-based art – which was discussed and exhibited under the rubric of ‘Art and Technology’ – begins with the observation that:

A polarity is developing between the finite, unique work of high art...and conceptions that can loosely be termed unobjects, these being either environments or artifacts that resist prevailing critical analysis. (1978: 160)

Burnham compared the artistic development to a Kuhnian paradigm-shift in the sciences, where sudden and irrevocable shifts transform the nature of inquiry and practice. He insisted on its close relationships to the changes he already saw emerging in the West’s capitalist economies, where the management of systems and information was
increasingly important, and the production of tangible goods was relatively less important. These changes in the artwork were reflective of broad changes in society as a whole: ‘We are now in transition from an object-oriented to a systems-oriented culture. Here, change emanates not from things, but from the way things are done’ (Burnham, 1978: 160). According to Burnham, systemic practices are focused on the ‘creation of stable, on-going relationships between organic and nonorganic systems’; he identified these with the military-industrial development of systems analysis, claiming that the aesthetic impulse must, as technology progresses, ‘identify itself with the means of research and production’ (Ibid.: 162). He identifies informing trends in Twentieth Century art whereby Marcel Duchamp and others showed that ‘art does not reside in material entities, but in relations between people and the components of their environment’ (Ibid.). He sees art freed from the production of objects as an art that can take its place in a variety of contexts:

In systems perspective there are no contrived confines such as the theatre proscenium or picture frame. Conceptual focus rather than material limits define the system...Inasmuch as a system may contain people, ideas, messages, atmospheric conditions, power sources and so on, a system is, to quote the systems biologist, Ludwig von Bertalanffy, a ‘complex of components in interaction’, comprised of material, energy and information in various degrees of organization. (Ibid.: 164)

This ‘complex of components in interaction’ presents a new standard and focus for evaluation, forcing the consideration of:

Goals, boundaries, structure, input, output, and related activity inside and outside the system. Where the object always has a fixed shape and boundaries, the consistency of a system may be altered in time and space, its behaviour determined both by external conditions and mechanisms of control. (Ibid.: 165)

This opens the way for considering the artwork as a system of relationships, and as a
process or a set of possibilities rather than as a fixed object. For Charlie Gere (2006), Burnham’s work amounts to a reconception of art that provides the basis for an understanding of creative practice as no longer focused on the production of self-sufficient objects, conceptually removed from the stream of time, to a view of art as ‘software’. A similar conception of artistic practice as software – a product of design by the artist that allows the user certain actions and behaviours – recurs in Lev Manovich’s recent notion of information design and information behaviour as ‘post-media’ aesthetic categories (2001).

One important variant of the post-formalist moment is the Fluxus movement (Drucker, 2005). Paik is seen by art historians as a central figure in this movement (Popper, 2007; Smith, 2005; Drucker, 2005). Fluxus as a network was active from the late 1950s but was most visible in the 1960s and 1970s, and formally has never ceased to exist. At least rhetorically, the movement is less about its individual members than about certain crucial ideas and methods (Smith, 2005). These central ideas include ‘first, the primacy of the event (or act), with a correlated concern for participation, and second, a centrality of information exchange, modelling and education’ (Smith, 2005: 122). A more specific account of Fluxus’s underlying principles is given by Fluxus artist Ken Friedman, who has written an intellectual history of Fluxus (2002), and who edited the Fluxus Reader (1998). Friedman sees Fluxus as having been a ‘laboratory’ where:

The research program...is characterized by twelve ideas: globalism; the unity of art and life; intermedia; experimentalism; chance; playfulness; simplicity; implicativeness; exemplativism; specificity; presence in time; and musicality.

(2002)

For Friedman, these principles underlie the whole variety of Fluxus’s output, from
performances, to musical compositions, to later experiments with forms such as 'mail art'. They require some exposition in relation to Paik's work.

Several of these principles can be usefully considered in relation to Paik’s TV works (and, later in this chapter, in relation to videogames). Friedman’s first idea of the unity of art and life, is explained as being that 'art and life are part of a unified field of reference, a single context' (2002) – this underpins Fluxus’s attempt to demystify the art object, figure of the artist, and the system of art itself. There is a resemblance here between Fluxus and contemporary developments such as Pop Art, which attempted to efface or question the distinctions between art and commercial culture. The boundaries between the 'auratic' art object and the everyday outputs of mass consumer culture are confused by Zen for TV's combination of painterly visual abstraction and a sacred reference on the one hand, and Paik’s playful technique and the framing device of the television set on the other. With Participation TV, there is a deliberate confusion between acts of artistic creation and the participatory acts of the artwork’s audience. Moreover, in Paik’s practice there is an integration of engineering practice and aesthetic image-making. Participation TV fulfils the criteria of 'intermedia' ('If there can't be a boundary between art and life, there cannot be boundaries between art form and art form'), mixing real-time sound, real-time vision, an electronic visual technique and the 'found object' of the television set itself. Zen for TV and Participation TV alike embrace simplicity, for which 'Another term...is elegance. In mathematics or science, an elegant idea is that idea which expresses the fullest possible series of meanings in the most concentrated possible statement' (Ibid.). Zen for TV’s density of reference (to religion, Modernism, popular
culture), its indication of the possibilities for new uses of television, its conceptual daring in staking out a new area of artistic practice, and its beauty are all remarkable in a work produced with such a simple expedient. And though Participation TV’s apparent simplicity belies Paik’s immersion in the techniques of electronic engineering prior to making the artwork, it introduces real-time electronic images, electronically-mediated interactions, and a simultaneous critique and extension of the uses of television.

Certainly the TV works by Paik are tied in relations of implicativeness, the idea whereby ‘an ideal Fluxus work implies many more works’ (Friedman, 2002). The possibilities of inscribing the television revealed in Zen for TV implies both the further elaboration of the qualities of that image in Magnet TV and the opening up of the image to the co-creative activity of the audience in Participation TV. In retrospect, the latter work seems to imply much more than this by handing the new pictorial space of television over to an audience engaged in participation with the work. And the fact that all of this is so clearly legible in these works may be because of their exemplativism; the Fluxus antidote to what they saw as the Gnostic complexities of art criticism, ‘is the quality of a work exemplifying the theory and meaning of its construction’ (Ibid.). The meanings of these works are not concealed in depth, and require no specialized critical knowledge to understand, but are revealed clearly in the titles, on the surfaces, and crucially in the use of the works. With Participation TV, meaning, as in Wittgenstein’s (2001) view of language, seems to overlap extensively with use. The audience understands the work not through contemplation, but through engagement with it.
Perhaps most important of all the Fluxus principles underlying Paik’s TV works is the one of *playfulness*. Friedman describes the function of this idea in Fluxus artworks: ‘Playfulness has been part of Fluxus since the beginning. Part of the concept of playfulness has been represented by terms such as jokes, games, puzzles and gags’ (2002). This playfulness was more than just a rejection of the fetishisation of art objects and artistic practice that led to the ‘rigidities of conception, form and style’ (Ibid.) that the Fluxus artists saw as characteristic of the late Modernist consensus they were reacting against. In positive terms it was seen as a new mode of comprehension within their artworks, which were not just ‘gags’:

> Play comprehends far more than humor. There is the play of ideas, the playfulness of free experimentation, the playfulness of free association and the play of paradigm shifting that are as common to scientific experiment as to pranks. (Friedman, 2002)

This ‘playfulness’, which interacts with the values of simplicity, the unity of art and life, and participation, is visible in the inclusiveness of individual Fluxus works, and of the movement as a whole:

> Of the multitude of directions and ideas that Fluxus has explored, the most significant one is that it models a way of being creative that offers a communal, participatory and open-ended alternative to the traditional forms and functions of art-making....By rejecting both the romanticized frames of art as visionary and the modernist notions of art as professional and exclusionary practice, Fluxus returns to a simpler engagement open to all... In this way, art becomes a social act, because of its participatory nature, and transformative as well, because of this very same inclusionary stance. Although this open, often seemingly uncritical and playful aspect of Fluxus is sometimes dismissed as insignificant or lacking a serious motivation, it is of fundamental import for a collective, collaborative and global-based mentality. (Smith, 2005: 123)

The playfulness of *Zen for TV* and *Magnet TV* can be seen in terms of Paik’s own relationship with his materials, and in his willingness to experiment with television as a
media technology. In *Participation TV*, the playfulness is extended to the construction of relationships with the audience – this is a work whose playfulness is explicitly social and inclusive, comprehensible not through initiation into the professional secrets of late Modernism, but through experiential play. In terms of the distinction between *paideia* (‘free’ play) and *ludus* (rule-governed games), originating in the work of Caillios (1979), and so important to early debates in videogame studies, Paik’s and Fluxus’s versions of play are firmly in the former category. This is not rule-bound, competitive play, but open-ended experimentation on Paik’s part, or in the case of *Participation TV*, an invitation to the audience to engage in similarly open, playful experiences. However, Paik puts in place a set of initial conditions and a framework within which play can take place, so there is a limit to its results in terms of what will be visualized.

Burnham’s account of the changes that were taking place in the nature of art, and the kinds of artworks he was speaking to, were examples of a technological utopianism that, according to Gere (2006) ran deeply through 1960s culture. Although some expressions of media technology – television being the key example – were seen by countercultural figures as bolstering conformity and the established order, an idea that social change could be effected or hurried through technological innovations was a feature of the pronouncements of artists throughout the decade. Specifically, changes in information behaviour in relation to mass media forms were seen as having significant potential as a liberating, evolutionary step. Burnham writes:

> As our involvement with electronic technology increases...the art experience may undergo a process of internalisation where the constant two-way exchange of information becomes a normative goal. We should rightfully consider such a communication shift as an evolutionary step in
aesthetic response. (1970: 50)

The implication here is that an emphasis on systemic practice in information design is part of an evolutionary development in aesthetics. Gere also considers the ‘utopian optimism’ (2006: 120) of figures like John McHale whose practice involved art, writings on the possibilities of human-machine prosthetics and environmental management, and the curation of exhibitions influenced by communications theory. At the same time, ‘futurologists’ like Herman Kahn, Buckminster Fuller, and Alvin Toffler were articulating optimistic visions of a human future transformed by technological change.

One theorist who had a large cultural impact at the time was Marshall McLuhan. McLuhan’s 1960s celebrity and the prominence of his ideas were such that Robinson calls him in retrospect a ‘celebrity brand’ (2006: 273). McLuhan explicitly argued that changes in media technologies regularly effected social change. Horsfield (2007) summarises the impact of McLuhan’s ideas and views from his then contemporary bestseller, Understanding Media (McLuhan, 1964):

McLuhan outlined a new utopian vision for media that emphasized a new relationship between media and the human senses. The vision imagined that electronic communications systems were an extension of the human nervous system and operated in a binary kind of progression – as technology progresses, so does the human sensory perception needed to receive it. This spoke directly to artists, media visionaries, and those in the counterculture that were already experimenting with altered states of consciousness... McLuhan’s ideas placed technology at the centre of human transformation and emphasized that the emerging technology would not only transform consciousness but also provide a very powerful path to social change. (8)

McLuhan’s ideas were seen as embodying a pronounced technological determinism in prominent critiques of his work, not least by figures like Williams (1974), but his ideas were influential at the time when they were emerging, and remain so in the work of some
media theorists. For Cramer, work like Paik’s can only be understood in relation to theories of the media and technology such as McLuhan’s. They were:

...driven by a McLuhanite concept of ‘media’. The inventor of the GUI, Alan Kay credits McLuhan for the initial inspiration of his work, saying that it began with the insight that the computer was a ‘medium’. In its most powerful manifestations, ‘media art’ took the same theoretical base apart. Nam June Paik’s early gutted-out TV sets were the critical counterpart to McLuhan’s ‘global village’. (2005)

The utopian idea that technological change, and particularly media change, could and should be seen as a means for broader social change, is one that was widespread in the 1960s and we can see articulated by Paik in the expression of his desire to change television. The idea that technological advancements in communications technology were an evolutionary step, and that technologies should be brought to the widest possible audience is one that, as is shown below, informs the first steps in videogame design.

Paik’s TV works could be considered within the frames of: the context of a broad postformalism (which saw the aim of artists as the production of processes, procedures, relationships, and mutable fields which registered users’ configurative practices), the principles of the Fluxus movement, and the theories of ‘systemic artworks’ such as Burnham’s. Further though, they are useful in understanding and analyzing the development and aesthetics of the earliest, commercially-available videogames which, although they appear subsequently to Paik’s works, have a history which stretches back beyond Paik’s first exhibition, and which gives further evidence of the breadth of the aesthetic ambition to create systemic works which left a participatory place for the user or viewer.
Altogether, Fluxus’s principles and Burnham’s ‘system esthetics’ and post-objective art, including Paik’s work, all speak of a milieu in which there was a certain amount of faith in the capacity to use technology in creative and critical ways, and an appetite for artworks that did not definitively separate themselves from the audience and ask to be regarded as objects for contemplation. The technological utopianism that saw Paik take up a soldering rod in order to critique and change broadcasting was not idiosyncratic, but was part of a general mood that percolated not just through the world of art, but more broadly through 1960s culture.

*Ralph Baer, Television, and the Third Spot*

A decade before Paik revealed these possibilities in the public space of the gallery, an engineer named Ralph Baer began working on his own problem, which bore close resemblance to Paik’s. Baer’s ambitions were articulated in similar ways to Paik’s, but his outcomes had important differences. At this time, television (as a channel of broadcasting) was making its most forceful contribution as a vector of ‘mobile privatisation’ and operating centrally in the postwar reconfiguration of the American (sub)urban landscape (Spigel, 2001). Baer, like Paik, was trying to develop a means of fragmenting the publicity and simultaneity embedded in TV’s hegemonic uses, its institutional frameworks, and address. Baer returned from World War II and graduated on the GI bill from AT&T in Chicago in Television Engineering. He returned to his home in New York City, and in 1951 he found work with Loral, then a small electronics company.
Its chief engineer put Baer and a colleague to work on designing a home television set, with the instruction to make it ‘the best TV set in the world’ (Baer, 2003). Baer immediately suggested building games into the sets. His idea was rejected by his supervisor, and he was only able to devote serious time and resources to it from 1966, when he himself was a chief engineer at military contractor Sanders Associates. In the meantime, though, Baer recalls that:

I had frequently been thinking about ways to use a TV set for something other than watching standard broadcasts. There were about 40 million TV sets in the USA alone at that time, to say nothing of those many more millions of sets in the rest of the world. They were literally begging to be used for something other than watching commercial television broadcasts! (2004)

Here, Baer’s intimate knowledge of television electronics and his scientific and creative ambitions led him to conceive of TV and its domestic presence in a way that is tantalisingly similar to Paik’s. For both, television was not so much a fixed medium as it was a readymade technological infrastructure, which might allow an ecology of varying uses, the insertion of parallel and parasitic technologies, and a plurality of relationships with its screen. Though they have this view of television in common, it is worth noting that Baer’s expression of this view is far less critical than Paik’s: he wants these games to be an addition or supplement to broadcasting, rather than a replacement of television for a radical purpose. For Baer, instead of necessarily buttressing social consensus and deadening authority, television is seen as a set of unrealised technological potentialities. Varying television’s uses is less a political or critical project than an engineering challenge.

Baer perceived this transformation as primarily a technical problem, but Oliver Grau’s
reminder to us is important here: where the ‘media artist’ is concerned, scientific and aesthetic problems are difficult to unpick (Grau, 2003). We need to remind ourselves of Paik’s electronics learning curve leading to his early TV works and Baer’s struggle with the aesthetics of play, detailed below. Still, it may be that the ‘media artist’ as defined by Grau is less a unified figure than a continuum between the poles of artist and engineer, along which we can locate various kinds of practice. To take some contemporary examples: whereas Char Davies (1998) conceptualises her highly technologised virtual artworks primarily as interventions in the hegemonic Cartesian aesthetics of the virtual, the game designers that Dovey and Kennedy (2006) interview often scorn any self-descriptions as artists, despite having a highly-developed aesthetic sense. Additionally, however Baer conceived his practice, it was his work rather than Paik’s that eventually led to a wholesale variation in the uses of television. His self-conception as more ‘engineer’ than ‘artist’ allowed him to consider the articulation of his work with the institutions and apparatuses of consumer culture – namely mass production, mass distribution and retailing – that would deliver it into ordinary households.

Later, when Baer came to work for Sanders Associates, his thoughts about the challenge of changing television had not gone away. Some crucial notes from 1966 show him mapping out ideas for a ‘...range of low cost data entry devices which can be used by an operator to communicate with a monochrome or color TV set of a standard, commercial, unmodified type’ (in Baer, 2004). This is strikingly similar to what Paik achieves in Participation TV, but Baer’s ambition has subtle differences in its direction. He considers

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22 This idea of the artist as engineer has, of course, historical precedents, most prominently in Soviet Constructivism (See Lodder, 1987) As well as being locatable on a continuum of practice, the ambition to unite art and technology has an historical dimension.
different possible means of connecting games machines with television, different kinds of
games with different kinds, and different levels of interaction (‘Action games...Board
skill games...Artistic games...Instructional games...Board chance games...Card
games...Sports games...’) (Ibid.). Importantly, what is implied in his plans is a retention
of television’s capacities as a representational medium, a consideration to which we will
return.

There was a long period where Baer and engineers under his supervision tinkered with
the problems of ‘TV games.’ Working initially with valve-state electronics, he worked on
devices that would produce manipulable television images. His experiments with
controllers and transmission yielded one moveable spot then two, and eventually
produced his first game, *Fox and Hounds* (which worked on the principle of tag).

Ongoing involvement by engineers like Bill Rusch led to the concept of a ‘third spot’:

...[this] was born sometime in October or November [1967]; unlike the two
manually controlled spots we had been using so far, this spot was to be
machine-controlled. Bill Rusch came up with the idea of making that spot
into a ‘ball’ so that we could play some sort of ball game with it. We batted
around ideas of how we could implement games such as Ping-Pong, Hockey,
Football and other sports games. I am not sure that we recognized that we
had crossed a watershed but that’s what it amounted to. (Baer, 2004)

By the end of 1967 Baer had built and tested prototypes, including one for a light gun
which could be used in play, and one for the ‘ping pong’ game, and by 1968 had filed
patents which were finally issued in 1971 for a ‘Television gaming and training
apparatus’ (Baer, 2004). The ‘ping-pong’ game was developed with engineers at Sanders
associates, then demonstrated in 1967 before Baer’s patents were filed, and by 1968 was
incorporated in a ‘...complete switch-programmable video game unit capable of playing
ping-pong, volley-ball, football, gun games and using coloured, transparent overlays as backgrounds' (Ibid.). Baer modified this design further to create the ‘brown box’ which was the ‘first fully-programmable, multi-player video game unit’ and was displayed to American television manufacturers in 1968, picked up and dropped by RCA, and finally accepted for manufacture by Magnavox in 1971 (Baer, 2004; Winter 1999-2006). In the prototype and in the eventual commercial release player movement, the range of actions the player’s avatar could take in the visual world of the game was produced and limited by a range of controllers – namely a dial and the light gun. Baer’s essential design was to be issued as the Magnavox Odyssey in 1972. It toured trade shows with the ‘Magnavox profit caravan’ in 1972, and this is how Nolan Bushnell came to play the tennis game and sign the firm’s guestbook at the Airport Marina Hotel in Burlingame, California (Baer, 2004).

Following its ‘tour’, the game was released in March 1972. The basic unit included twelve games with plastic overlays – four of the games were variants on the ‘tennis’ game made possible by the third spot, with one, Cat and mouse, being a renamed Fox and hounds. Winter describes the console as shipped:

Most of the games used special plastic overlays placed on the television screen to simulate the background graphics that the system could not draw. Each of the twelve games had two identical overlays in order to fit on a small or a large screen. Some games used a special scoreboard to mark the scores. Some others used plastic chips, cards, or other accessories such as a pair of dice, small chips and game decks. Several games used the same cartridge. The difference was made by using accessories or by changing the game rules, since the games were mostly played with the accessories rather than with the elementary graphics shown on the screen. (1999-2006)

Taken together, the Odyssey’s games involve a considerable variation along the
continuum of what Newman describes as ‘online’ and ‘offline’ play (2002). At times, players are engaged with on-screen events and environments, and at times they are directed by the screen to ‘real world’ play using boards, dice and pieces. Some of the games simply cue far more involved offline play by illuminating various parts of the TV screen. Others, such as the game eventually called Table Tennis (which provided the underlying basis for the Tennis and Hockey games that used different overlays), involve fairly continuous interaction (the commentary and interest of this chapter is limited to these). Having said this, the Odyssey’s packaging with overlays can be remarked on here as an indication of the representational urge and ambition that was already present in the earliest period of videogame design (which will be considered further below). Additionally, other aspects of this console’s introduction of screen-based play, with its unique mixing of media and various kinds of interaction, though beyond the scope of this discussion, seem to merit further consideration in videogame histories.

In any case, Baer’s work, particularly with Tennis and related Odyssey games, does bear comparison with Paik’s to the extent that other authors besides the present one have remarked that Paik’s work can productively be seen as an informing element of Baer’s context (Lowood, 2007). Like Paik, Baer’s efforts involve an immersion in electronics, an effort to turn the television screen to new purposes, and the desire to create a ‘postobjective’ work using television technology (in the sense that his efforts are directed at the production of a system of interaction rather than pictorial works with a comparable level of sophistication to those of broadcasting). Like the postobjective artworks discussed by Drucker (2005) and Gere (2006) above, processes, systems, and frameworks
for action are the goal. The significance of the ‘third spot’ was not so much in its enrichment of the screen image, but its ability to bring about a more satisfactory relationship between the image and the behaviour of users in relationship with it. This is not a finished objective work like a broadcast television programme that viewers can watch and interpret but not change, this is a new form of ‘information design’ that has as its primary goal a new form of ‘information behaviour’ in relation to television (Manovich, 2001). In this sense, we can think about Baer’s work in relation to the movement toward postobjective creative practice in the 1960s and 1970s.

Baer did not talk about his work in precisely the same way as Paik, but we can see the early Odyssey games in terms of some of the Fluxus principles that explicitly inform Paik’s TV works. Baer’s games are ‘intermedia’ in the sense that they combine electronic images, transparent overlays, and games themselves in a new kind of cultural product. It offers a ‘unity of art and life’ in the same sense that Paik and Fluxus looked to dismantle the barriers between art and audience, and offer televisual images as something the audience might act upon. Baer clearly expresses a desire to give the technology of television over to local uses, and thus at least implicitly is prepared to complicate the centralised apparatus of broadcasting.23

Baer’s games are certainly centrally ‘playful’, but there are important differences with the quality of playfulness we find in Participation TV. This can be seen in the way that Baer does not stop with Fox and Hounds. Baer’s goal is not the institution of unstructured

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23 Certainly, the ongoing consequences of Baer’s work, including the global videogames industry, have played their part in the formation of what has been called the ‘postbroadcast age’ (Wark, 1999).
paideia play, or the aleatic randomness of Paik’s image’s response to voice inputs, but the construction of a structured ludus game, on the dimension of agon, or competitive play, and in retrospect Baer identifies the construction of a viable form of agonistic play as the moment of success. A collaboratively produced image is enough for Paik in designing Participation TV; whereas Baer considers his team’s key achievement to be the organisation of competition in interaction. This competitive play raises the stakes of interacting with on-screen images: rather than simply allowing free play, Baer’s (and later Bushnell’s) work make demands of the player as a condition of play continuing. Rather than simply offering opportunities for interaction, the game forwards a range of imperatives that the player must fulfil in their information behaviour.

Also, importantly, there are differences in the function of images in Baer’s and Paik’s work. Paik’s images can be enjoyed on several levels – we can appreciate Zen for TV’s allusion to High Modernism; Magnet TV’s beauty and complexity; Participation TV’s relationship to the human voice. But none of these images are truly representational, and indeed only exist as the surface evidence of a conceptual transformation of television’s possibilities. Though Zen for TV alludes to Barnett Newman and religion, the image is there as a bare sign of the manipulability of television by the artist. The variable image in Participation TV is no more than a variable that demonstrates the application of the conceptual title: though the abstract images produced have their own pleasures, they do not represent anything except the results of participation. To paraphrase Galloway, Paik’s work simply offers ‘participation made visible’. But in Baer’s games, images and play are thought about by analogy with existing games, and part of Baer’s satisfaction with the
‘third spot’ is due to the game’s approximation of tennis; there is a new-found capacity for representing something in the world. This representational ambition informed the journey made by Nolan Bushnell to producing the first commercially successful videogame, *Pong*.

**Nolan Bushnell: Computer Space to Pong**

Nolan Bushnell’s newly formed Atari released *Pong* in 1972. It is often remarked that its commercial success\(^{24}\) followed the relative failure of Bushnell’s attempt to port *Spacewar!* (designed by Steve Russell and others for MIT’s PDP-1 computer from 1961) to a cheaper, more accessible arcade format in the form of *Computer Space* (Burnham, 2001; Cohen, 1984; Herman, 1997; and Winter, 1999-2006). The history of the development of *Spacewar!* at MIT is a fascinating one, and crucially important in the history of videogames. Though it is not a focus of this thesis, it is covered in depth in Burnham (2001), and is made part of an archaeological investigation in Lowood (2007). Bushnell’s unusual background led him to take on the technical challenge of porting *Spacewar!* (which had played using a cathode ray tube monitor attached to the mainframe computer) for use in arcades. Bushnell had been, in his youth ‘obsessed with technology’ (Burnham, 2001: 66). He was a teenage radio ham but had also worked during his university education in an amusement arcade in a management role, so that he knew ‘...everything he needed to know about the industry – the games, the players and the business of coin-op’ (Ibid). At the University of Utah in 1965, he encountered *Spacewar!*

\(^{24}\) See for example, Burnham (2001), Cohen (1984), and Winter (2001-2006).
and immediately thought about its potential as a coin-operated amusement technology. The expense of computer technologies in the mid-1960s deterred this ambition. But by 1970, Bushnell was able to start working on a prototype which would become Computer Space.

In his later efforts, Lowood suggests that Bushnell was influenced by the utopian ideas of Ted Nelson about using games as a part of a programme to extend computer use to a much wider audience.

Nelson and others pondered the impact of computing on human potential. Nelson called for "computer liberation" in Computer Lib/Dream Machines (1974), proclaiming that everyone “can and must understand computers NOW.” He predicted new applications for a wider variety of purposes and asked, “Can the public learn, in time, what good and beautiful things are possible” from computer systems? Computer games figured in Nelson's manifesto... Nelson was the voice of those who proposed to move advanced text, graphics, networking and other computer technologies out of academic laboratories and make them available to everyone. Bushnell took the engineer's route to this goal by building a machine, a version of Spacewar! he could bring to the people. (2007: 8-9)

But the idea of adapting computer technologies as such to a mass medium was still not practicable. During the process of making a prototype adaptation of Computer space, Bushnell realised that even the much cheaper minicomputers that had arisen since the 1960s were too cumbersome and expensive for his project, and that the special raster monitors that had been used in the universities were also too costly (Lowood, 2007; Burnham, 2001). The prototype and the eventual manufactured version of Computer Space eschewed the model of programming using one of the newly available and relatively inexpensive minicomputers with software, and instead used dedicated circuits for each aspect of the game, so that physical modules replaced programs and executed
game logic in hardware' (Lowood, 2007: 13). Specialised CRTs were avoided by using 'off-the-shelf television sets using raster, not vector, graphics' (Ibid.: 10). It is worth noting that the absence of computers from Computer Space as well as Pong leads Lowood to suggest that they be called 'TV games'. In any case, Bushnell sold the prototype design to Nutting Associates, an arcade game manufacturer and distributor, and joined them as an engineer in order to oversee the construction of units for use in arcades (Burnham, 2001; Lowood, 2007).

The port of Spacewar! was simplified not only in technological terms, but in its gameplay. For example, there were no gravity effects as there were in some iterations of the mainframe version (Burnham, 2001) -- but still it was perhaps not straightforward enough to make it the popular success that Pong would be. Whereas the latter game would simply require players to move their avatar on a single axis of movement in order to meet the oncoming 'ball', the description of Computer Space's gameplay on Killer List of Videogames gives some indication as to what the first players were faced with:

The rocket ship controlled by the player can be maneuvered through space using rotational buttons and a thrust button. The fire button is used to make the rocket ship fire missiles. When the two enemy flying saucers attack, they will fire missiles at the rocket ship. The player must have the rocket ship fire missiles at the flying saucers to destroy them. The object of the game is for the player to have the rocket ship to destroy the flying saucers more times than the flying saucers can destroy the rocket ship, the player must also try to have the rocket ship outscore the flying saucers in order to get extended play in hyperspace. If the player attains hyperspace the playfield will turn from black to white and feature a vision of daylight in outer space. The game will end if the flying saucers outscore the player's rocket ship and time has expired. (2006)

A mastery of a number of rules, various functionalities and behaviours of on-screen objects, and a range of narrative events were all part and parcel of playing this game. The
game demanded that the players learn to use different kinds of controllers, both for ‘move-acts’ (which ‘change the position or orientation of the game environment’) (Galloway, 2006: 22) and ‘expressive acts’ (which ‘exert an expressive desire outward from the player to objects in the world’) (Ibid.: 23). To move in Computer Space, the player must understand the interplay of directional and thrust controllers, and the relationship between their actions and an unfamiliar on-screen object. Expressively, the player must understand and enact the requirement to target and fire at other objects. Added to this was a mise-en-scene which was arguably richer than any other videogame released between it and Space Invaders (Taito, 1978); it featured a background of stars and several differently-shaped objects (the rocket ship, the flying saucer, and the projectiles).

In retrospect, Bushnell recalled the problems with Computer Space: ‘You had to read the instructions before you could play, people didn’t want to read instructions. To be successful, I had to come up with a game people already knew how to play; something so simple that any drunk in any bar could play’ (Winter, 1999-2006). We can put Bushnell’s articulation of the problem he faced alongside Paik’s or Baer’s: he sees the use of television as the basis of a new form of play as more of an engineering problem than critical project, but there is also an explicitly entrepreneurial, commercial edge to his ambitions. Nevertheless, he found his way through some aesthetic problems, namely those to do with visualisation and the range of information behaviours required of players. Beyond Bushnell’s own retrospective assessment, Lowood remarks that the idea that Computer Space was too complex for its players is a consensus judgement in
videogame history (2007: 11). However, this needs to be qualified by the technical and
design achievements that Computer Space did embody, and which were carried forward
into the later success of Pong and arcade gameplay.

These assessments of Computer Space as a failure miss its significance for the videogame as a technological artifact. It provided more than a learning experience. Computer Space established a design philosophy and general technical configuration for arcade consoles and reduced the laboratory-based computer game to the stable format that would launch the videogame as a consumer product. When Bushnell noted years later that his ‘engineering friends loved’ Computer Space, even if ‘the typical guy in the bar’ was completely baffled, it is easy to hear echoes of this appreciation in assessments of his technical achievement from engineers, designers and operators. (2007: 11)

This ‘technical configuration’ included the placement of a television screen at the heart of a commercial coin-op videogame system – within a cabinet – and the grasping of the possible analogies between computer games and older coin-op amusements. Lowood offers an example of the technical achievements in Computer Space that would continue to inform subsequent videogame design. Bushnell’s technical solution to the problem of overburdening a CPU with refreshing an entire screen every time a single on-screen object moved was to control each individual game element with a dedicated transistor:

Bushnell’s rockets were essentially hardwired bit-maps that could be moved around the screen independently of the background, a crucial innovation that made it possible to produce screen images efficiently...The design concept would become part of Atari’s shared knowledge...Bushnell’s patch solution later became a staple of game machines and home computers in the form of ‘sprites’. (Lowood: 13)

In this sense, part of Bushnell’s achievement lies precisely in avoiding the need for programming and computers in making a Spacewar!-like game that was viable for
amusement arcades. As Lowood comments, *Computer Space* played an important part in
‘constructing the videogame as a stable technological artefact’ (ibid.: 1).

Notwithstanding its achievements in arriving at a basic format for arcade play, and in
making crucial technical gains which would be taken forward into the design of *Pong*, as
a game, *Computer Space* undoubtedly deterred player engagement because of its
complexity. At a time when ‘computer-literacy’ was the preserve of engineering
faculties, it asked players to learn and understand a large range of information and
information behaviour. It presented at once a new kind of image and a complex way of
enacting relationships with images. The problem of how to attract players beyond the
engineering community to engage with this new medium was only solved with the much
simpler *Pong*.

Perhaps Bushnell’s inspiration for the solution to his central problem did come from his
visit to Magnavox’s ‘profit caravan’ where he saw a demonstration of the Odyssey;
Bushnell admits attending the show but claims to have been unimpressed by Baer’s
efforts. *Pong* was released in November 1972, following the Odyssey’s release in March
of the same year. Certainly, Bushnell settled out of court when Magnavox pursued legal
action, paying them royalties from *Pong*’s sales during 1974 (Winter, 1999-2006). But
given that *Pong* also resembles Willy Higinbotham's oscilloscope tennis, designed for an
open day at the Bell National laboratories in 1958, (Winter, 1999-2006, Herman, 1997)
we can think about the approximation to ‘tennis’ in the information design of all these
games as a simple, easily executed way to generate competitive interaction.
Al Alcorn, the engineer who Bushnell charged with designing a simpler game for arcade use, has always maintained that the tennis game was his own idea that arose from trying to think of the simplest possible game he could design (Kent, 2001; Lowood, 2007; Winter 1999-2006). The ‘simplicity’ of Pong, as Lowood points out, is embodied in its technical aspects as well as its gameplay: ‘Alcorn was...able to build Pong optimally from a modest number of integrated circuits, and he was even more obsessed than Bushnell with reducing the parts count’ (2007: 17). Alcorn produced the prototype from ‘a store-bought television set, a home-made cabinet, a few circuits and several tricks from his bag of analogue and television engineering’ (Ibid.: 16). It is possible to think of designers converging on a simple system of interaction, rather than simply accepting the legal verdict that favoured Magnavox.

But there is simplicity in the relationship between information design and information behaviour, too. By contrast with Computer Space, Pong's instructions were almost absurdly simple: 'Avoid missing ball for high score'. Given that there is no 'ball' but only a blocky sprite rebounding around the screen, we could see these instructions as being as much a fictional framing device as an outline of imperatives.\(^{25}\) The physical interface was equally uncomplicated; a continuous dial controlled movement of the player's block avatar on a single vertical axis. Unlike Computer Space, there were no expressive actions such as firing, and the player was only required to engage in movement-actions. A two-player game – with no computer-controlled avatars – allowed

\(^{25}\) The way in which non-diegetic framing materials can assist in building fictional worlds is explored further later in this thesis.
players to participate in a very straightforward contest in on-screen space, and the adversarial nature of the contest was reflected in the neat, symmetrical composition of the screen. Squire and Jenkins’ (2002) doctrine of videogames as the art of contested space is spelled out very clearly by the game to players: the game’s written instructions and the visual composition of the game’s world allow the ‘rules’ to emerge easily to the extent that we might see those rules as being realised representationally. The audiovisual design of the space that the game represents clearly reveals the imperatives that condition players’ information behaviour. The contextual nature of the game is clearly legible, in a way that (using the vocabulary of Fluxus) we might call exemplative. Whereas Computer Space ‘required instructions’, Pong visualised its rules.

In other ways, Pong has a more popular orientation than Computer Space. The location of the first Pong cabinet in a bar (Winter, 1999-2006, Herman, 1997; Cohen, 1984), the reference in the on-screen images and the title to table tennis, and the allusion to televised sport, perhaps show an intuition that a breakthrough game would need a broad popular currency rather than just appealing to Bushnell’s technophilic engineering and programming colleagues. Beyond a ‘reduced instruction set for bar patrons’, the inclusion of sport as the subject of simulation has important ramifications (discussed later in this chapter). Alcorn also included refinements in the game’s physics, such as a segmented ‘paddle’ that produced varying angles of reflection for the ‘ball’ and were reminiscent of the form that Pong would be competing with in arcades – pinball (Kent, 2001: 41). An omen of Pong’s ability to appeal to a wide audience was a prototype’s immediate success in 1972 at a bar near Atari’s first production plant in Sunnyvale, California. After only
two weeks of residence there, the machine, overstuffed with coins, stopped working (Kent, 2001).

The ease with which players were able to understand the required information behaviours in relation to the game was shown when a prototype was installed in Andy Capp’s tavern:

One of [them] inserted a quarter. There was a beep. The game had begun. They watched dumbfoundedly as the ball appeared alternately on one side of the screen and then disappeared on the other. Each time it did the score changed. The score was tied at 3-3 when one player tried the knob controlling the paddle at his end of the screen. The score was 5-4, his favor, when his paddle made contact with the ball. There was a beautifully resonant 'pong' sound, and the ball bounced back to the other side of the screen. 6-4. At 8-4 the second player figured out how to use his paddle. They had their first brief volley just before the score was 11-5 and the game was over. Seven quarters later they were having extended volleys, and the constant pong noise was attracting the curiosity of others at the bar. Before closing, everybody in the bar had played the game. (Cohen, 1984: 29)

Where Computer Space’s complex structure resisted the player’s entrance by requiring a range of imperatives to be understood, Pong presented a system where the relationship between the playing body and screen images, mediated by the simple dial interface, was such that players were quickly able to attend to it and derive pleasure from competitive play. And already, in Cohen’s description, it is interesting to note that just as Paik’s works implied a bifurcated audience, on Pong’s first night the audience is divided between players and spectators (as in Newman’s [2002] analysis of the complex videogame audience). In this case, viewers are not attracted by the kind of rich technological spectacle that characterises contemporary games, and the audiovisual style of Pong is a long way from the mimetic audiovisuality of television. The spectacle here, though, is involved with spectating a new form of agonistic play and witnessing a new form of technological representation and spectacle. In this sense, Pong shares at least one
aspect of the ‘aesthetic of attractions’ that Gunning insists underpins early cinema: ‘its ability to show something new’ (1990: 52) – electronically generated images – but in this case its ability to show something as manipulable and subject to agonistic play.

Although the imagery in Pong is simpler than Computer Space’s, it is nevertheless presented as a representation of Ping Pong. Though by no means naturalistic by comparison with the games of today, the imagery in Computer Space registered a more thorough attempt at depiction than Pong. The game’s mise-en-scene included two picture planes – the plane of action and a starry background. Combined with the instructions and interface, this complexity of imagery represented another potential barrier to entrance into the world of play. By comparison with Computer Space, it is striking that Pong adds very little to the image than Zen for TV. Pong’s abstraction of tennis is of such rigour to be the zero degree of representation. It seems to confirm Wolf’s (2003) argument that the abstraction of early videogames is a means by which players are ‘taught’ about the nature of the new medium. But it is representation nevertheless, and, taking Jarvinen’s (2002) framework for analysing audiovisual style in early videogames, it is less ‘abstract’ than ‘caricatural’ – it is an extremely schematic representational audiovisual environment rather than one, like Paik’s (or that of Qix [Taito, 1981] or Tetris [AcademySoft, 1986]) that eschews representation. Perhaps it is Pong’s balance between representational ambitions and the necessity to initiate players into new kinds of information behaviour that is a part of its success as videogames’ first ‘killer app’.
Archaeology and Pong as Killer App

As already outlined in this chapter, there are significant similarities and analogies to be found across the work of Nam June Paik, Ralph Baer’s work (which led to the Magnavox Odyssey home console), and Pong, the videogame which is often seen as having ‘launched’ the videogame industry. It is worthwhile to examine what they have in common before considering the differences that archaeological scrutiny has unearthed, and also the significant differences and contextual factors that lead to a designation of Pong as videogames first ‘killer app’.

One of the valuable things about videogames archaeology’s potential for expanding the framework within which we understand gameplay is that it can enrich our understanding of the successes and achievements of game designers, and consequent transformations of media technologies and institutions. That Paik never really achieved his goal of a critical renovation of television, and yet he and Baer contributed to a new industry that transformed our relationship with television as a technology, can be understood in terms of the similarities and differences that this study has brought to light.

What they have in common is the embodiment of certain characteristics and principles that we can see as elements of a changing conception of art in the 1960s and 1970s, and a shared re-imagining of television as a technology. They all offer television up as a surface upon which their audiences are invited to manipulate images. For Flew (2005), the manipulability of signs and images by users is one of the defining characteristics of
new media, and in this sense, all three can be seen as early iterations of the affordance of manipulability in their varying contexts. *Participation TV*, the Odyssey’s games, and *Pong* all use television in ways that bypass the nexus between television and broadcasting that had framed its dominant uses -- using it instead to facilitate more local, decentred practices. All three see television as ‘a malleable medium’ (Goodman, 1997). All three put television *qua* technology at the service of systemic creations, where unfinished works are offered that invite the viewer to manipulate works without a ‘fixed shape’ where the system’s ‘behaviour [is] determined both by external conditions and mechanisms of control’ (Burnham, 1978: 165). In Paik’s, Baer’s, and Atari’s outputs, the pleasure of audiences derives in part ‘not from *things*, but from the *way things are done*’ (Friedman, 2002), and from the capacity they offer audiences to engage in systemic manipulation. All can be seen to embody Fluxus principles which informed the production of other post-objective works in the 1960s and 1970s, and in particular, the principle of playfulness. They can be seen to facilitate a process where ‘...art becomes a social act, because of its participatory nature, and transformative as well, because of this very same inclusionary stance’ (Ibid.). This is to say that in each case, rather than accepting television’s role as a channel for mass broadcasting where finished programmes could be received, interpreted but never altered by the audience, Paik, Baer and Atari all return the technology to local social contexts, local participation, which includes the audience in the production of their aesthetic experiences. In this sense, all three are kinds of ‘participation TV’. 
Paik, Baer, and Bushnell, in varying ways, are imbued with the technological utopianism that was so prominent in 1960s culture. Paik's work is explicitly crafted with the idea of changing the information behaviours around television and setting up 'two way communications' in place of what he saw as the unanswered and unanswerable mass address of broadcasting. Because broadcasting is also seen as being bound up with a prevailing social order, Paik sees technological change as linked with the possibility of social change, and in this respect he has shared ground with other artists and communication theorists like McLuhan. Baer is far less socially and culturally critical, but he conceives of widespread domestic television ownership as presenting an infrastructure and potentiality for the broad-scale dissemination of new kinds of information design and behaviour. In his case, the engineering challenge of transforming everyday media experience is a key motivation. Bushnell's initial project -- exporting computer use and computer play from computer labs out into public space -- although entrepreneurially-inflected, was informed by Nelson's programme for 'computer liberation', involving bringing computers to a wider audience. Though he did not produce a computerised version of Spacewar! or Pong, the nature of his project envisioned (and in an important way helped bring about) a popular enjoyment and mass distribution of computer technologies. Fundamentally, in different ways, Paik, Baer and Bushnell all express a faith in the desirability, even the necessity, of delivering new interactive technologies to a wider audience.

Just as important as these similarities, though, are the differences that archaeological work uncovers, and which we can employ in coming to a more nuanced understanding of
videogame history. Key differences in the aesthetics of the different forms of participation TV have been discussed throughout this chapter. Paik’s TV works mobilize visual abstraction in their information design, and Participation TV invites players into open-ended non-competitive paidea behaviours, with alecatic dimensions. Both examples of early videogame design forward competitive or agonistic imperatives for information behaviour and evince a representational urge and ambition in their information design, imposing more structure both on the composition of their screen images and on player behaviours in relation to these images. Paik simply invites the audience to step up to the microphone and guarantees that interactions will be made visible; Baer’s and Bushnell’s games make more demands – avoid missing ball, contest this space, achieve a high score. The aesthetic commonalities between the different forms of participation TV and their various embodiments of 1960s technological utopianism could be balanced by the observation that where Paik deterritorialises the screen for the abstract visualisation of pure participation, in the videogames, the screen is reterritorialised for agonistic, abstract participation.

Importantly, there is an appeal to the televisual in the aesthetic strategies of Baer and Atari’s (table) tennis games. However caricatural and schematic, it is possible to see the Odyssey’s tennis game and Pong as remediations of a perennially popular form of television programming. To repeat: these are not visually abstract, but representational games that ask to be taken as approximations of tennis and table tennis. But their presence on television screens, and the character of non-diegetic scoring in Pong.26

26 Caldwell’s (1995) analysis of television shows how in television, too, from the 1960s and 1970s, ‘intermedia’ and the use of text in television broadcasting is increasingly important.
means that the television screen is not incidental, and it is legitimate to think of these as mobilizing a fantasy of televisual participation. That Pong, at least, is not a pure ‘game’ that happens to be realized on a television screen is evidenced by Bushnell urging Alcorn to include cheers and other crowd noises in the sound design for the game (which Alcorn judged to be a technical impossibility) (Kent, 2001). Bushnell signals an urge for a participatory variant of sports broadcasting and a desire for a kind of televisual realism that exceeds the requirements of play. Jarvinen (2002) points out that the ‘televisuality’ of sports games is an ongoing tradition, with action replays, commentary, and remediations of television camera work being features of contemporary ‘triple A’ sports games. Arguably, that starts here, and shows a significant difference between the work of Paik and the game designers. In a sense, in constructing their forms of ‘participation TV’, the designers let in some more ‘TV’ in order to construct a form of participation with a familiar, popular reference.

There are more differences, as has been shown, in the motivations, contexts of production and reception for these works, and in their consequences and their fulfillment of the aims of their various creators. Participation TV is a gallery-based artwork, and however clear and serious Paik’s desire to change the uses of television with his work, it was produced artisanally, and without any reference to or interface with the mechanisms of mass production and distribution that might have carried it to a wider audience let alone into the living rooms whose patterns of television use Paik claimed to so want to change. However, as Popper (2007) points out, it has had a lasting influence in the field of new media or ‘virtual’ art, although initially its audience was entirely confined to the galleries
where Paik showed the work. Though both videogames were initially produced in collaborative engineering projects, Baer worked in the context of a large electronics and engineering firm, and Alcorn worked with Bushnell in the context of a prototypical, entrepreneurial technology 'start up', speculatively producing technology in the hope of making a 'hit' and attracting investors. Baer's technology was squarely aimed at domestic consumption, whereas Bushnell wanted to take the pleasures of technological play into public space in the form of the arcades whose needs he knew from experience. In terms of his ambition to change television use, Paik's work was a failure, although it did contribute to securing his influence on concurrent 'postobjective' art, as well as nascent forms of what would come to variously be called 'new media art', 'technological art' (Popper, 2007), and 'virtual art' (Grau, 2003; Popper, 2007). Baer's work is often seen as a relative failure and Bushnell's as the first landmark success in videogame design, such that Baer's assertion of the 'paternity' of his prior efforts has sometimes proved difficult (Burnham, 2001; Kent, 2001). But the nature of 'success' and 'failure' here bears some examination, and a brief discussion of it can contribute to our understanding of the landscape of early videogames.

The 'success' of Pong and the 'failure' of the Odyssey need to be very carefully put into perspective. Magnavox sold 200,000 consoles and 25,000 add-on 'shooting gallery' units before production was discontinued by Magnavox in 1975 (Burnham, 2001: 82). Nevertheless, it is widely considered to have 'more or less failed' (Ibid.: 112) in relation to Magnavox's and Baer's expectations for it and the enormous size of its potential market. This market dwarfed the sales Magnavox managed: by 1972, over ninety-five
percent of homes in the United States had at least one television set, making for a total of over 62 million television-equipped households (Media Info Center, 2006). On the other hand, 8000 arcade *Pong* units were made by the end of 1974. But this was in a totally different context: successful coin-operated pinball machines in the early 1970s were expected to sell around 3000 units. *Pong* machines often brought in US$200 a week, whereas other coin-operated machines were expected to earn US$40-$50 (Kent, 2001: 52). So, although the Odyssey sold over twenty times more units than *Pong*, in relation to its market, the latter was far more successful and far more influential. Kent (2000) details the degree to which *Pong* was copied by other arcade manufacturers through 1973 and 1974. There were also significant non-*Pong* related arcade games developed globally in this period, whereas the next home console released was Atari’s own home version of *Pong*, which they had some trouble bringing to market because of perceptions among investors that the Odyssey had failed (Kent, 2001). Arcade videogames ‘caught on’ almost immediately, but domestic play took much longer to become popular, let alone to make significant penetration into its potential market.

As mentioned in the introduction to this thesis, the Odyssey’s lack of success in relation to this large potential domestic console market was not unique. According to Williams (2006) the market penetration of game consoles as a percentage of households who owned one in the USA was one percent in 1977, did not climb over ten percent until 1982, did not reach twenty percent until 1989, and it was not until 1996 that more than half of US households owned a home game console for the first time, twenty-four years after the release of the Odyssey (Williams, 2006). Those who were trying to sell home
game consoles adjusted the parameters of success somewhat: Atari’s home *Pong* console was considered successful on the basis of having sold 150,000 units to the retailer Sears Roebuck (Kent, 2001; Burnham 2001), and even iconic, runaway successes like the much later Atari VCS/2600 did not make home videogaming a mass market activity (at least by comparison with the near-universal habits of television viewing). It is significant, also, that one of the factors that ‘broke’ Atari’s later console, whose sales were initially poor, was Atari’s success in securing the right to offer ‘ports’ of successful arcade titles such as *Space Invaders* (Herman, 1997; Kent, 2001).

The slow pace at which home videogaming achieved its market penetration (seventy percent of households had a console by 2000) has parallels with the fate of other technologies that were premised on the use of television for purposes other than mass broadcasting. In the case of videogames, cable television, and VCRs, it is not until the 1990s that significant levels of market penetration are achieved. Cable television penetrates more than half of US households in 1990, and in the same year VCR ownership reaches sixty-seven percent. The comparative history of the adoption of media technologies is a large specialised subject that this thesis does not need to linger on, but a hypothesis might be forwarded from the discipline of media history that explains the slow take-up of post-broadcast technologies, including domestic technologies of play of the kind envisioned by Baer in relation to the link between television and broadcasting.

As discussed earlier, given that broadcasting and its institutions were firmly entrenched as the hegemonic uses of television by the early 1970s, we can think about the very slow
adoption of home videogaming in terms of Winston's (1999) model of the adoption of technologies in modernity. Winston offers an 'evolutionary' rather than a 'revolutionary' history of media and technological change. Societies, he proposes, tend to be extremely conservative when it comes to technological change. Technologies go through several stages before they arrive in usable mass media forms.

These stages, argues Winston (1999), recur with regularity ahead of the introduction of technologies. First, the scientific competencies that underwrite a technology must be in place. Second, a process of 'ideation' occurs, whereby thinkers apply scientific concepts in the creation of 'technological hypotheses'. The process of ideation transforms scientific ideas into technological performances and objects, which Winston calls 'prototypes' (Ibid.). Prototypes are technological objects that may or may not translate into a mass market technology, and there are four kinds – rejected prototypes, which find no social use; parallel prototypes, which are technologies in use that are applied to a new situation or need; and partial prototypes, which involve a technology with a social use that is a technical failure. In all of these cases, demonstrable technological efficacy is not the only factor determining whether a technology is taken up. This is evident in the case of the fourth kind of prototype, the accepted prototype, which are those that are taken up because a 'supervening social need' creates a need for a particular technological object.

When prototypes are taken up, and move from the various kinds of laboratory into the mass market, they achieve the status of 'inventions'. But even here, new technologies can

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27 In no small part, Winston was responding to the hype then surrounding Internet technologies and the World Wide Web, which may have returned in the discourse of 'Web 2.0'
be scuppered by a kind of social brake, which Winston dubs ‘the law of suppression of radical potential’. Through intellectual property regimes, or inertia, or active suppression on the part of existing institutions for example, the dissemination of a new invention can be slowed or stopped altogether. Interestingly, Winston sees desires for ‘realism’ and ‘narrative’ as persistent overarching social needs that of themselves are often enough to bring forth a mass market communications technology.

Using Winston’s structural account of cycles of media change, a hypothesis can be offered for the reasons that Pong became videogames’ first ‘killer app’. We can see the scientific competencies that underwrote experimentation with the various kinds of participation TV in the disseminating knowledges of electronic engineering, television and/or computer programming that Paik, Baer, and Bushnell all had in varying degrees. We could perhaps expand Winston’s analysis slightly, and think about the melange of communications theory, ideas about systemic and real-time art, technological utopianism, and Paik’s and Baer’s dissatisfactions with television-in-broadcasting as other non-scientific but nevertheless enabling ideas and theories.

On this view, we could see Participation TV as a kind of failed prototype for participatory uses of the medium. Although, as discussed above, it has lasting aesthetic interest and importance, its critical stance in relation to broadcasting and its wholly abstract visualisation of non-competitive play meant that it failed to answer any need in terms of a mass market. Baer’s work reaches the status of an invention with the release of the Odyssey. It is offered as a mass-market communications technology, but the Odyssey
and its immediate successors failed to penetrate their potential market to any significant extent for another decade or more. Baer complains in retrospect about Magnavox’s mishandling of the technology and the confusion that surrounded the marketing and selling of the console (Baer, 2004). It could be argued that the institutions of electronics manufacturing, distribution, and retailing took time to absorb a technology with such radical potential in relation to the practices of domestic media consumption. Given the relative smallness and instability of the home console market until relatively recently, it could be argued that audiences, too, took time to accept home consoles as a part of their everyday media consumption. The fact that a range of ‘post-broadcast’ media technologies achieved significant market penetration at around the same time in the early 1990s is suggestive of a certain durability in the nexus of television technology and broadcasting that Paik and Baer noticed and wanted to alter in different ways.

To take this further, we could see Pong’s success as proceeding from its relative lack of radical potential in relation to an institution and a market that was much smaller and far less important in social terms than broadcasting – arcade amusements. Huhtamo’s (2005) archaeology of coin-op videogames suggests that a model of business and a pattern of consumption were in place for them in the amusement arcades. Computer Space represented a sudden and drastic departure from pinball, whereas Pong returned to the physics of bouncing balls as the basis for competitive play. The arcade industry was attuned to and dependent on rapid cycles of technological novelty – the social need that Pong fulfilled is connected with the economic needs of an industry already premised on playful technological spectacles. Huhtamo’s (2005) point that early videogames often sat
'side-by-side' with pinball machines is telling; Pong could 'fit in' to the arcades in a way that videogames struggled to in a significant number of homes for some time, which is not to deny the point, made by Kent (2000), Burnham (2001) and others that videogames utterly transformed the arcade industry within a few years of their arrival. The kinds of 'human-machine relationships' (Huhtamo, 2005), or information behaviours that Pong demanded were not entirely alien to pinball players, and were in fact analogous thanks to Alcorn's attention to representations of in-game physics. Also, unlike the family living room, which had such symbolic resonance for the institution of the nuclear family as well as broadcasting, pinball arcades were already disreputable, liminal spaces. In The System of Objects (2001), Baudrillard argues that liminal spaces are useful and usually marked as places for the retention of things whose status is unsettled or undecided, until such time as they can be admitted into more central places. More simply, there was far less at stake in the new invention occupying a space associated with public youth leisure than there was in the fragmentation of habits of domestic television viewing. To finish the hypothesis, Bushnell's orientation towards the arcade industry allowed Pong to short-circuit the law of suppression of radical potential in a way that domestic videogame technologies could not for some time to come. Marshall's (1997) notion that the most intense moral panics (which phenomena Lumby [1997], Drotner [1992] and others see as symptomatic of the social and cultural struggle around new media forms) began in the late 1980s and early 1990s when domestic videogames were gaining purchase, seems to underline this.
In other words, it seems that the new kind of technological spectacle that is offered by the earliest videogames is far more easily accommodated in the context of the arcade than in the living room, where television historians from Williams (1974) to Spigel (1992) tell us that the mimetic, simultaneous spectacle of broadcast television had a particular social role. Filling out this hypothesis with empirical study is a possibility for future research, and the promotion, reception, and adoption of early videogames by audiences, the introduction of electronic games into early arcades, and the relationships between the institutions of broadcasting and the new participatory technologies are all areas where research could facilitate a greater understanding of the cultural landscape in which early videogames took their place.

This chapter has offered an archaeological investigation of the earliest videogames. It has shown significant common ground and important differences between Ralph Baer’s games for the Magnavox Odyssey, *Pong*, and the television works of Nam June Paik. It has related all of them to discourses of postobjective and systemic art, 1960s technological utopianism, and shifting views of television as a technology, which it has explored in some detail. By putting games and Paik’s artworks together in this context, is has been able to generate some claims about their history. It has suggested that the ambitions of Paik and Baer to change television viewing practices were significantly constrained in the impact they could have, an observation which was made in relation to the work of Brian Winston on media history. Atari’s game was more easily able to answer a social need – the arcade industry’s insatiable appetite for technological novelty
— and thus it was the first game to be successful in the most important venue for early videogames: the arcade.

This chapter has made observations about the aesthetics of all three examples of 'participation TV'. It has shown that all of these works are motivated by the goal of achieving a changed relationship between the technology of television and the spectator, the inclusion of television in systemic works, and the aesthetics of play. However, while Paik’s works are abstract works allowing open-ended play which are produced as artworks rather than mass cultural commodities, the videogames are agonistic and are squarely aimed at a mass market, evincing a representational ambition: they caricature competitive sport and offer this as a framework for competition. In this way, videogames offer, in the broadest sense, a fictional experience. The games’ centring of competitive imperatives, their closer structuring of interaction, was matched by their more formally-structured images. The relationships between fiction, audiovisual aspects of design, and fictional worlds in early videogames will be investigated in depth in the following chapter.
CHAPTER THREE

Narrative, Fictional Worlds and Visualised Imperatives

This chapter considers the nature of the fictional worlds projected in early videogames. It suggests that rather than being inessential or epiphenomenal to the fundamental 'gameness' and 'underlying' rule structures of games, the fictional worlds of gameplay are often the primary locus of engagement for players, and imperatives are often visualized as parts of the fictional worlds of gameplay. The presentation of gamic imperatives to the player as elements of the fictional worlds of videogames means that these are surface experiences for the player rather than submerged structures in which the player must peel away the audiovisual elements of the game to understand it. By deploying the framework of comparative analysis, an understanding of players' information behaviour as channeled by imperatives embedded in design can be gained. Analyses of the gamic mise-en-scene and later analyses of early videogames show how the requirements made of players in videogames as fictional 'spatial stories' (Fuller & Jenkins, 1996) are clearly visible in the information design of games as evocative, enacted works of narrative architecture. In this way, a range of successful early videogames (in terms of the periodisation used by this thesis), continue the focus on representation that differentiated Baer and Bushnell's work from Paik's, as explored in the preceding chapter.
The chapter begins by considering the checkered history of conceptions of narrative in the study of videogames, which has been seen by many scholars as a concept that embodies everything that videogames are not, and all that they are essentially distinct from. It has been associated with attempts to ‘colonise’ videogame studies from without, and associated with the misapplication of methods derived from cinema studies, media studies, and other disciplines that treat of ‘narrative’ or ‘digital’ media to games. Recently though, one of the most outspoken ‘ludologists’, Jesper Juul, has made attempts to accommodate the presence of narrative material in videogames with a doctrine of ‘fictional worlds’. This doctrine is shown, through an excursus into developments in film theory, to stop short of a full account of the import and primacy of fictional worlds in gameplay. Juul’s notions about fictional worlds are further developed by the incorporation of important theory from Jenkins, Manovich, and Newman. It is suggested that separating the fictional worlds of videogames from underlying game and rule structures belies the operations of designers as narrative architects who integrate imperatives, audiovisual design, and the haptic means of carrying out player imperatives in videogames.

Following this, two games – Night driver (Atari, 1976) and Missile command (Atari, 1980) are closely analysed in order to demonstrate how spatiality, imperatives, fictional elements, and audiovisual pleasures tend to be integrated in games, but in significantly different ways, and for significantly different effects. This is done in a way that suggests that no a priori approach that fixes principles rather than questions in advance of critical engagement will be likely to fully apprehend. As well as deepening our understanding of
early videogames, and making a theoretical intervention in the area of fictional worlds, the chapter also demonstrates the resonance of the questions that animate this thesis. Can early videogames be usefully compared with other media? Can a criticism premised on the experience of play (and ‘textual analysis’) usefully speak to broader experiences of play? Does a primary attentiveness to audiovisual aspects of videogames help us understand their pleasures better?

_Narrative in Videogame Studies_

The question as to whether or not videogames were a narrative form was the one that generated the most heated debates in the early history of a self-conscious academic study of the medium. The dispute, beginning in the late 1990s between a self-identified coterie of ‘ludologists’ and on the one hand, and a less formed category of ‘narratologists’ on the other, was serious enough for Henry Jenkins to characterize it in 2002 as a ‘blood feud’. Following this dispute, some of the main actors in these debates have moved to mend fences, and to accommodate the insights of both sides in the dispute: that videogames demand something different of their player than a novel does of a reader or a film of a spectator, and videogames manifestly include forms of storytelling and fiction, though perhaps they produce fiction in distinctive ways.

This summary and evaluation of the debate focuses on the period from 1997 (when Espen Aarseth first enunciated his doctrine of the ‘ergodic text’) to 2005 (when Jesper Juul attempted to introduce a recognition of narrative into the ‘ludologist’ position which he
had been so instrumental in staking out). It shows that prominent ‘ludologists’ like Juul have been converging with the thinking of others formerly identified as ‘narratologists’, such as Henry Jenkins, in seeing videogames as fictional worlds in which players are invited to action. It is suggested that analysis can take the concept of fictional worlds even further than Juul does, and show that it is the fictional world as a component of videogame design that players primarily engage with, and which seduces them into the intimacy required for taking ‘action’ (Galloway, 2006) within the systems of gameplay.

*Games Without Narratives?: Ludology in Game Studies*

The early years of videogame studies were marked by a number of theorists insisting that videogames were not a narrative medium, and that bringing concepts and theories developed in relation to cinema, television, or literature to videogame studies risked, at best, misunderstanding them, or at worst, complicity in a kind of ‘theoretical imperialism’ (See, for example, Juul, 2000; Juul, 2001; Aarseth, 2001). This general position will be defined as ‘ludology’ in this thesis, largely because this is the self-description that many of these theorists offer. Even though Gonzalo Frasca (2003) has argued for ludology as a general description for videogame studies, for most scholars in the field, ludology resonates as a term associated with this early ‘school’ in videogame studies.\(^28\)

\(^28\) See, for example, Dovey and Kennedy’s (2006) review of the field and use of the term ‘ludology’ in a book intended as a teaching aid in videogame studies.
Those making ‘ludologist’ arguments – most prominently Aarseth, Juul, Eskelinen, and Frasca – hold in common the idea that ‘game’ and ‘narrative’ are categorically, even ontologically, different things which are mutually exclusive in that it is impossible for one cultural artifact to embody both. In fairness, all of these writers have pursued considerably different interests beyond this shared belief that something like an essential ‘gameness’ underlies videogames, and all have responded differently to the debates that have arisen from this central claim. Jesper Juul (2005), as is shown further on in this chapter, has made a sincere attempt to accommodate an idea of videogames as fictional forms, while continuing to pursue the project of defining videogames in an overarching ludologist framework. Gonzalo Frasca has attempted to calm the ‘blood feud’ (Jenkins, 2002) that erupted between ludologists and those using other approaches to videogame studies (Frasca, 2003) by reviewing the terms of what he thinks is a ‘debate that never happened’, while making increasingly interesting proposals about the political potential of videogame design (See, for example, Frasca, 2001). Espen Aarseth has ventured into genre studies and other areas, arguably leaving Eskelinen to attempt to rigorously defend a fairly unreconstructed ludologist position (See, for example, Eskelinen, 2004). Nevertheless, the shared core claim that specific cultural objects cannot embody narrative and ‘gameness’ or ‘ergodicity’ will be explored here.

This school of ludology’s point of origin was Espen Aarseth’s book, *Cybertext* (1997), though ludologists came to reach back beyond this book for further sources in the study of games more broadly, such as Huzinga and Caillois (1979). Aarseth’s argument in *Cybertext* was fundamentally a rejection of the possibility that a transmedial category of
‘narrative’ – transmedial in the sense of being a single critical category applied to a range of texts irrespective of their medium – was adequate to (in the mid-1990s) emerging forms like hypertext writing, cyber poety, and especially computer games. Concerned about the misapplication to such texts of theories of the reader and the text developed in relation to literary forms like the novel, Aarseth insisted that some texts set up a wholly different relationship between author, text, and reader than books did. Some texts, Aarseth argued, required a ‘nontrivial’ effort from the reader in order to traverse them. These were, in his influential neologism, ergodic:

The performance of [a book’s] reader takes place all in his head, while the user of cybertext also performs in an extranoeumatic sense. During the cybertextual process, the user will have effectuated a semiotic sequence, and this selective movement is a work of physical construction that the various concepts of "reading" do not account for. This phenomenon I call ergodic, using a term appropriated from physics that derives from the Greek words, ergon and hodas, meaning "work" and "path". In ergodic literature, nontrivial effort is required to allow the reader to traverse the text. If ergodic literature is to make sense as a concept, there must also be nonergodic literature, where the effort to traverse the text is trivial, with no extranoeumatic responsibilities placed on the reader except (for example) eye movement and the periodic or arbitrary turning of pages. (1997: 1-5)

Aarseth’s concept of the ergodic speaks to a widely-shared sense that the activity of the audience in relation to cultural forms like games goes beyond even notions of the active audience in reader response theory or in poststructuralist cultural studies. The key difference is the embodied acts of the user of cybertexts, which Aarseth distinguishes from the ‘trivial’ extranoeumatic requirements placed on the reader of books or the spectator of screen works. If narrative is a description for the operations of storytelling forms where ‘semiotic sequences’ are effected by authors, and which require only trivial effort from readers, then these ergodic works are essentially different, and attempts to view them as narrative are bound to misconstrue them.
Although Frasca (2003) concedes that the ‘narratologists’ that Aarseth and later ludologists criticise are difficult to isolate as a coherent ‘school’, and somewhat difficult to find at all, there are authors such as Murray (1997) who are criticised by authors like Eskelinen who do try to think about videogames as embodying narrative elements. Murray’s interest in thinking about the possibilities of narrative in virtual worlds; she defines a game as:

A kind of abstract storytelling that resembles the world of common experience but compresses it in order to heighten interest. Every game, electronic or otherwise, can be experienced as a kind of symbolic drama. Whatever the content of the game itself, whatever our role within it, we are always the protagonist of the action. (1997: 142)

From this point, where she conceives of the player of games as a kind of actor in an interactive drama (in a way that parallels Laurel’s notion of ‘computers as theatre’ [1991]), Laurel moves to apply narrative concepts from literary studies to interactive forms. An aspect of her argument that draws particular ire from, for example, Eskelinen (2001) is her analysis of Tetris (AcademySoft, 1986):

Even a game with no verbal content, like Tetris, the wildly popular and powerfully absorbing computer game of the early 1990s, has clear dramatic content... Every time a complete row forms, it disappears. Instead of keeping what you build, as you would in a conventional jigsaw puzzle, in Tetris everything you bring to a shapely conclusion is swept away from you. Success means just being able to keep up with the flow. This game is the perfect enactment of the overtasked lives of Americans in the 1990s – of the constant bombardment of tasks that demand our attention and that we must somehow fit into our overcrowded schedules and clear off our desks in order to make room for the next onslaught. (1997: 143-144)

Murray does not suggest that Tetris tells a story, but that it has an allegorical relationship with aspects of contemporary life; that the themes it asks players to enact resonate with
certain contemporary concerns. This kind of allegorical reading of videogames has, more recently, been a feature of productive critical work such as Galloway’s (2006) and Wark’s (2006), and it is a feature of this thesis’s account of the space shooter, but Murray’s readings provoked trenchant criticism from scholars who identified as ludologists. Eskelinen (2001) wrote of her interpretation of Tetris:

> It would be equally far beside the point if someone interpreted chess as a perfect American game because there's a constant struggle between hierarchically organized white and black communities, genders are not equal, and there's no health care for the stricken pieces. Of course, there's one crucial difference: after this kind of analysis you'd have no intellectual future in the chess-playing community. Instead of studying the actual game Murray tries to interpret its supposed content, or better yet, project her favourite content on it; consequently we don't learn anything of the features that make Tetris a game. The explanation for this interpretative violence seems to be equally horrid: the determination to find or forge a story at any cost, as games can't be games because if they were, they apparently couldn't be studied at all.

For Eskelinen, Murray’s interpretation fails primarily because it suggests that videogames have narrative or fictional content. Any suggestion that videogames might contain narrative material is a ‘projection’ and ‘interpretative violence’. The savagery of the response to Murray’s interpretation can be seen as continuous with the problematic, established in Aarseth’s work, of radically distinguishing games from narrative media.

Aarseth’s work established the problematic of formally distinguishing games and narrative that runs through an influential school of games scholarship from the publication of *Cybertext* in 1997. Those taking Aarseth’s lead were a number of writers who saw the mechanics of gameplay’s configurative activity as definitive of games — and they lined up against those who they called narratologists or narrativists, who use
“narrative and literary theory as the foundation upon which to build a theory of interactive media.” (Mateas, 2002: 14). Titles of the essays of major ludologists, such as ‘A Clash Between Games and Narrative’ (Juul, 1998), ‘Ludology Meets Narratology’ (Frasca, 1999), ‘Games Telling Stories?’ (Juul, 2001), ‘Ludology vs. Narratology?’ (2002) show the importance of this problematic, where established disciplines devoted to the study of narrative media like literature, film, and television are seen as threatening a kind of ‘theoretical imperialism’. Aarseth writes in 2001 that:

The greatest challenge to computer game studies will no doubt come from within the academic world. Making room for a new field usually means reducing the resources of the existing ones, and the existing fields will also often respond by trying to contain the new area as a subfield. Games are not a kind of cinema, or literature, but colonising attempts from both these fields have already happened, and no doubt will happen again. And again, until computer game studies emerges as a clearly self-sustained academic field.

This is a view of the relationship between scholarly fields that resembles Age of Empires (Microsoft, 1997): a finite range of phenomena is necessarily contested by a given range of scholarly approaches, and each field must first and foremost defend its territorial sphere. Fields will necessarily try to incorporate new areas of study in order that their own resources will not be ‘diminished’. It is a view of scholarship (as Winthrop-Young puts it in an account of the development of German media theory), as a ‘patchwork of jealously-guarded fiefdoms’ (2006: 89).

This view of the establishment of fields of study as necessarily confrontational is shared by other ludologists. In the introduction to his witty Java game, Game Liberation (Juul, 2000), Juul nomiunates a range of threats other than narratology alone:
As I see it, we need to acknowledge games as something unique. They may in some situations and in certain ways relate to well-described pastimes and forms of expression, but it is time to take them seriously on their own. This game is all about that. You are a games theorist. Your object is to defend games (and yourself) from the imperialism of a thousand theories. Navigate the four levels of narratology, psychology, film theory, and pathology. (Juul, 2000)

Though ironic, Juul’s account of the beginnings of videogame studies puts it on a confrontational footing vis-à-vis other forms of scholarship. With the term pathology, Juul refers to the large range of work, mainly in the behavioural sciences, that seeks to confirm links between videogames and violence, and perhaps also policy (such as that reviewed in the last chapter of this thesis), that seeks to cure the ‘social ills’ that videogames bring about. Note the importance in Juul’s work of defining games as ‘something unique’ or a phenomenon apart from other media, which animates his arguments down to 2005. In both of these authors’ work, approaches to games from established academic disciplines are all seen as a threat to the proper analysis of games, and to the nascent field devoted to them.

Ludologists see the construction of a transmedial concept of what it is to be a game – the state Juul defines as ‘gameness’ (2003; 2005) and what Aarseth calls the ‘ergodic text’ – as the best response to the colonising tendencies of disciplines premised on a transmedial concept of narrative. Juul, Frasca, and Eskelinen’s work from 1998 to 2003, carries an emphasis on ‘game mechanics’ as definitive of videogames, with story, cutscenes, and even visuals sometimes seen as inessential to players’ experiences, and perhaps even as pollutions of ‘pure’ gameplay (this is particularly the case in Eskelinen’s work). Important in this work is building a connection between digital games and
traditional games – such as sports and board games – and the study of these pre-digital games, so that rather than cultural theory developed in relation to narrative media, ludologists draw on theorists of games and play such as Caillois (1979), Huizinga (1950) and Suits (1978). Beyond the work of these ‘pure’ ludologists, the need to at least acknowledge these theorists of play in considering videogame aesthetics has resonated in the work of a number of authors including Salen and Zimmerman (2003), Newman (2004) and Galloway (2006). As well as bringing new sources into cultural theory in a way that was productive, as we will see, this has been criticized as a strategic move carried out in order to deny access to videogames using theory developed in relation to other media forms.

We can see the desire to protect games from narratological incursion, and to construct a transmedial idea of what games are, in the work of individual ludologists. Gonzalo Frasca writes in 1999 that:

We will propose the term ludology (from ludus, the Latin word for "game"), to refer to the yet non-existent "discipline that studies game and play activities". Just like narratology, ludology should also be independent from the medium that supports the activity. (1999)

This clearly implies a discipline that studies games irrespective of the contexts in which they arise, and the nature of their mediation: games themselves are proposed as the primary, transmedial object of analysis. The remainder of Frasca’s article develops notions of ludus (game) and paideia (play), derived from Caillois’s (1979) work, in relation to videogames. These kinds of distinctions have been useful and important, and the distinction between ludus and paideia play is, as well as being developed and carried forward in work such as Newman’s (2004) and Galloway’s (2006), important to certain
arguments in this thesis, as for example in the preceding chapter’s use of the distinction between *ludus* and *paideia* play in considering early videogames alongside early new media art.

Jesper Juul’s ‘Games telling stories? A brief note on games and narrative’ (2001) is unambiguous in forwarding three propositions that distinguish games and narrative on the grounds of untranslatability, differences in tense, and the differing textual involvements of readers and players:

1) Games and stories actually do not translate to each other in the way that novels and movies do. 2) There is an inherent conflict between the *now* of the interaction and the *past* or "*prior*" of the narrative. You can't have narration and interactivity at the same time; there is no such thing as a continuously interactive story. 3) The relations between reader/story and player/game are completely different - the player inhabits a twilight zone where he/she is both an empirical subject outside the game and undertakes a role inside the game.

It may be that Juul here overestimates the ease of transition between novels and films as ‘narrative media’ since the way in which films and novels ‘tell stories’ are radically different, and the work of ‘adapting’ novels for cinema is a specialized and difficult process. Wilson (1988) offers an account of the different experiences of different kinds of narrative media, and the way in which our experiences affect our understanding of narrative materials, or ‘the different ways in which a form of narration can systematically structure an audience’s epistemic access to narrative.’ (18) The entire tradition of mise-en-scene criticism is similarly concerned with the way that films, unlike the scripts they are derived from, use on-screen images and spaces to produce meaning and narrative events. (See Gibbs, 2001 for an account of this tradition.) On the other hand, this thesis relies on the idea that comparisons between media are legitimate, and indeed it is striking
that both videogames and cinema employ moving images, screens, and sounds. In any case, easy stories about the comparability of ‘narrative media’ and the utter distinctiveness of games can be questioned. Also, Juul’s account of the tense of games – the ‘now’ of interaction – are complicated in the light of Atkins’ (2006) work on the ‘future orientation’ of the game gaze. The interactive ‘now’, for Atkins, is constantly experienced in relation to the future, and what might happen next. Beyond these observations, we can ask whether the past is irrelevant in gameplay, and whether or not Juul is right to think that we do not experience cinematic narrative, for example, in the present tense. (Certainly philosophers of film like Cavell [1971] are preoccupied with the issue of the seeming presentness of film narrative as we experience it.) This preliminary excursus into a critique of Juul’s position is included here in order to show that the distinctions ludologists forward about the separateness of games are often premised on a simplistic account of the operations of other media forms.

For the Juul of 2001, though, a focus on narrative can only be at the expense of a formal analysis of what makes games distinctive and unique, namely ‘rules, goals, player activity, the projection of the player’s actions into the game world, [and] the way the game defines the possible actions of the player’. Two years later, in 2003, in ‘The Game, the Player and the World: Looking for a Heart of Gameness’, Juul offers a definition of ‘gameness’ – an essential set of similarities shared by all games throughout human history – that he carries forward into his later book, *Half-real*:

A game is a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally
attached to the outcome, and the consequences of the activity are negotiable. (Juul, 2005: 36)

This framework, Juul thinks (2003; 2005), has only been marginally altered by the advent of digital games, in the sense that videogames offer what he calls ‘progressive narratives’, a concept that will be explored further on in this chapter.

Despite the clear objections Frasca and Juul have to thinking about games as a narrative medium, it is perhaps in Markku Eskelinen’s work that we find the most trenchant rejection of the idea that are in any sense a narrative medium. He opens with the remark that:

Outside academic theory people are usually excellent at making distinctions between narrative, drama and games. If I throw a ball at you I don’t expect you to drop it and wait until it starts telling stories. On the other hand, if and when games and especially computer games are studied and theorized they are almost without exception colonised from the fields of literary, theatre, drama and film studies. (2001)

Along with drawing an essential distinction between ‘games’ and ‘stories’, where videogames are seen exclusively in terms of the former category rather than the latter, Eskelinen raises the familiar spectre of colonization from other fields. He constructs a formal analysis of games from this point and concludes:

The old and new game components, their dynamic combination and distribution, the registers, the necessary manipulation of temporal, causal, spatial and functional relations and properties not to mention the rules and the goals and the lack of audience should suffice to set games and the gaming situation apart from narrative and drama, and to annihilate for good the discussion of games as stories, narratives or cinema. In this scenario stories are just uninteresting ornaments or gift-wrappings to games, and laying any emphasis on studying these kinds of marketing tools is just a waste of time and energy. It’s no wonder gaming mechanisms are suffering from slow or even lethargic states of development, as they are constantly and intentionally confused with narrative or dramatic or cinematic mechanisms. (2001)
Here, any analysis of the ways in which games resemble other media, whether in their visual aspects, their construction of characters, or their stories, runs the risk of actively retarding the development of games as a distinctive medium, and it is worth noting that there is an imputation that this is a deliberate obfuscation. For Eskelinen, games are radically distinct from any narrative media, and the inclusion of purely narrative or expository interludes such as cutscenes actually diminishes the purity of games and threatens their development as a creative medium. Analysis in this mode, as well as constituting critical violence, is also construed as a threat to the establishment of videogame studies as a scholarly practice or discipline.

The great strength of the ludologists’ work from 1997 to 2003 was in establishing that games were worthy of attention in their own right, and that there are sharp distinctions in the relationship between games and players, and those between more familiar narrative media and their audiences. Aarseth’s insistence on the acts of ‘physical construction’ that characterize gameplay, and the particular kinds of effort involved in traversing the spaces of games, draws attention to the peculiarly active position of the player in games. Similarly, Juul and Eskelinen point to the different subject-position that games offer the player: whereas the reader or viewer of a film remains ‘outside’ the pre-constituted narrative, at least in a very basic physical sense, the player’s ‘constitutive acts’ (Eskelinen, 2001) are a necessary condition for a game’s unfolding. Comparisons such as Frasca’s with pre-digital games remind analysts that games do not necessarily proceed inevitably through pre-written narratives, as other audiovisual media do, and that the dynamics of competition as well as the differences between free and unstructured play,
and rule-bound play, need to be considered in thinking about how games unfold. Juul and Eskelinen’s work convincingly gestures towards the need to think through what we might call the ‘tense’ of games compared with narrative media and directs us to thinking about how the player of games is enmeshed in the ‘here and now’ of the game’s progress. Nevertheless, the totality of the ludologists’ arguments seemed to many authors to be unacceptably reductive, particularly given the sense that many had that games do tell stories, however much they may offer the player a participatory place within them.

Criticisms of Ludology

Some criticisms of the arguments of ludologists, as outlined above, came from the sense that the ludologists were primarily engaged in trying to construct and police the boundaries of a discipline, rather than come to an understanding of videogames as a family of texts, and that their idea of games as empty of narrative was simply aimed at deterring anyone from making comparisons between games and other media. Writing about Juul’s game, *Game Liberation*, Marinka Copier notes that that though its intentions are partly ironic, the game visualizes rhetorical construction of videogame studies as a ‘field’ which is ‘owned’ by certain critical approaches, within which certain differing approaches must be ‘othered’, and within which the ‘boundary work’ of inclusion and exclusion must be performed (Copier, 2003). This impression of ludology is not diminished by the kind of model Aarseth offers of academic discipline-formation, which he thinks can only be done at the expense of existing fields on a finite field of contest, where at any time disciplines may have to repel ‘colonising’ moves from other
disciplines (Aarseth, 2001). Whalen, calling the history outlined above a ‘turf war’, writes that:

...[T]he question of whose “turf” video games fall under is at the root of the most divisive controversies in the fledgling discipline of game studies...ludology is sufficiently robust as a hypothetical academic discipline to offer the kind of diverse and valuable criticism that seems to be coming from a variety of existing disciplines. The answer, currently, seems to be “no,” and it may be that game studies is better off as a melting pot of diverse academic backgrounds, each contributing to the general knowledge and understanding of the problematic and compelling phenomenon of video games. (2004)

Whalen’s argument for a more interdisciplinary approach also offers a pragmatic assessment of the likelihood of game studies achieving a separate institutional identity, at least in his own American context:

Game studies seems much more plausible as a field in academics if it is attached to an existing department because universities with tight and shrinking budgets are less likely to support a field with such a short history without a pressing demand for basic instruction in the area. (2004)

The suspicion that ludologists are engaged in defining and defending disciplinary ‘turf’ at the expense of the new understandings that interdisciplinary approaches might bring is here wedded to an institutional pragmatism which suggests that the ludologists’ work might actually be counter-productive in denying game studies a context. Other authors are more ready to criticize ludologists for the considerations of narrative that their work explicitly excludes, however, and make interesting connections between ludologists’ approaches and the nature of early videogames.
Klevjer, whose interest in exploring the way games did create narratives led him to author a paper called ‘In Defence of Cutscenes’, claims that the ludologists’ approach amounts to an ideology, which:

...prescribes an ideal receptional mode of games, a strictly no-nonsense, gameplay-oriented attitude typical among the real (or ‘hard-core’) gamers – the ‘cineastes’ of the game world. This counter-establishment ideology of gaming, partly rooted in the dark arcades of the late 70’s and early 80’s, partly rooted in hacker culture, is instinctively sanctioned by a new breed of oppositional scholars, vaguely identifying mainstream players and mainstream commercial games with established theory...Originally suggested as tools for the study of computer game aesthetics, the concepts of ergodies and ludology turns into self-contained arguments for advocating the purity of games, targeting a broad category of games (story-based, single player action games) as unworthy of serious attention. (2002)

Klevjer’s explanation of the formative motivations for the ludologists’ arguments resembles Newman’s (2004) account of the migration of the preferences of ‘hardcore gamers’ from the cutting edge of gaming technologies to ‘retrogaming’, the playing of early games, or games that retain the early sensibility, as explored in the introduction to this thesis. Klevjer effectively argues of game theorists what Newman says of the audience: that the preference for ‘pure’ gameplay, free of story material, is a form of resistance to what is perceived as the aesthetic of ‘mainstream’ gaming. He also thinks that ludologists concerns about stories are based on a category error, which translates into the mistaken assumption that:

...two distinct discursive modes – of which the basic theoretical principles have been soundly established – cannot be mixed into new, stable, meaningful and enjoyable cultural practices. Consequently, a game (read: the cultural product) should stick to being a game (read: the discursive mode), in order to avoid being a confusing half-game. Therefore, we should not even bother to understand story-based action games as a phenomenon, as they are, and probably will always be, an artistic failure (even if consumers continue to enjoy ‘modal crossovers’ like Metal Gear Solid, for empirical reasons we do not know). (Klevjer, 2002)
The mistake, for Klevjer, is to confuse the ideal discursive mode – something akin to Juul’s ‘gameness’ – with the individual games that players engage with, which mix gameplay and narrative material in ‘new, stable, meaningful and enjoyable cultural practices.’ However, he suggests that these rather need to be seen as something like compositional elements in the hybrid forms of actual videogames, where they are integrated in the pleasures and practices of what he intriguingly calls ‘make believe’:

The conflict between narration and play is not a question of discursive levels – as if the first can only be about the other – but a conflict of agency. There is a balancing, and a struggle, between the agency of the story-game and the agency of the player. The mutual project of make-believe binds the two movements together. This project is a very persistent paradox, insisting on the combined pleasures of ergodic operation and symbolical seduction. (Ibid.)

This view of ‘contending agencies’ of player and gameplay, which are bound together in a project of ‘make-believe’ or fictional construction, is related to this thesis’s analysis – furthered later in this chapter – of the embeddedness of fictional worlds in the relationship between information design and information behaviour. Klevjer, in this piece and elsewhere (Klevjer, 2001), insists on the continuing utility of the tools of media studies for understanding games ‘symbolical seductions’, the relationships of spectatorship they are part of, and their relationships with other audiovisual media and other kinds of computer software, of which they are a class.

Klevjer’s connection of ludology with a ‘hacker’ ideology, and his own doctrine of videogame visuals as combining representation with the interface, is suggestive of a connection between their inclination to see a ‘fundamental’ gameness or ergodicity as
somehow more fundamental than visual aspects of games with the ‘romance of code’ that has been recently critiqued as an element of hacker politics. Bassett (2006) describes:

...[The] traditional hacker values, which are predicated on a modernist kind of cybernetics, and which therefore also valorize form over content. The desire to ‘get close to the metal’, a paradoxical way of expressing the wish to find the ‘truth in code’, is recognized as characteristic of a particular era of hacking. It amounts in the end to a ‘romance of information’...The interface is intrinsically dishonest, denying access to the system, the latter being understood only as code. (232, emphasis in original)

This traditional hacker ethic sees the interface that normal users engage with as restrictive and duplicitous, and defines itself against the acts of mainstream users (Ibid.). In its ‘essentially structural’ rather than ‘processual’ view of information technology, traditional hacker ethics risk disconnecting from everyday software use and becoming the elite discourse of a self-nominated cognoscenti. (Ibid.) If we do accept Klevjer’s point that the interface and representation are united in the visual aspects of videogames, it is striking that the ludologists desire to reach beneath this interface/visuality – with its ‘dishonesty’ in relation to what games are – in search of an essential, formal, structural essence of gameness that resembles the hacker ‘romance of information’.

Newman’s piece – ‘The Myth of the Ergodic Videogame’ (2002) – problematises some of the assumptions that ludologists make about the way that the audience interact with videogames. Newman observes fact that videogames are not only experienced by the ‘player’, but are often observed by a non-playing audience whose relationship to the game in progress is more tied into the visual spectacles on offer. Consequently, he suggests that a more nuanced account of the videogame audience, and engagement with videogames, is required. If the range of those involved with play extends beyond the
primary player, ‘ergodicity’ alone is not enough to the audience’s engagement with and enjoyment of worlds of play.

A more oblique form of criticism for the idea that videogames should be understood as continuous with a longer history of games comes in Galloway’s *Gaming* (2006). Galloway deftly avoids a direct engagement with the debates I have outlined, but revealingly, he writes:

> Video games are games, yes, but more importantly they are software systems; this must always remain at the forefront of one’s analysis. In blunt terms, the video game *Dope Wars* has more in common with the finance software *Quicken* than it does with traditional games like chess, roulette or billiards. (6)

This claim is built on the idea that videogames are inescapably embedded in a technological context that includes information and communication technologies, a broader range of technologies based on real-time interaction, and that all of these are based on programming in software code. Galloway’s claim is due to his conviction, derived from the work of Friedrich Kittler, that:

> Code is the only language that does what it says...At runtime, code moves. Code effects physical change in a very literal sense...Electrons flow. Display devices illuminate. (Ibid.: 5)

This might seem like another iteration of the romance of code, but one of the things code ‘does’, in the context of gaming, is to create a ‘...diegetic space...the game’s total world of narrative action...the portion of the apparatus that constitutes a pretend world of character and story’ (Ibid.: 6-8). In seeing such a diegetic space in games (and Galloway adapts the term from ‘from literary and film theory’ [Ibid.: 7]) which demands more than a simple equation of games with pre-digital games, Galloway concurs with work like
Henry Jenkins', and the more recent Juul, who try to arrive at a conception of videogames production of fictional worlds.

In the light of criticisms like these, some ludologists moved to modify their accounts of videogames to include some acknowledgement of the narrative content that videogames contain. The most intriguing of these may be Juul's recent account of the relationship between underlying game structures and what he calls the 'fictional worlds' that videogame design creates. Juul's book's development of the idea that videogames project fictional worlds is crucial to the arguments developed in this thesis, so it will be considered at some length.

Jesper Juul's Half-real and Fictional Worlds

Jesper Juul's book, *Half-real* (2005) is an ambitious attempt define videogames and the nature of the fictional worlds they present. For Juul, 'To play a videogame is...to interact with real rules while imagining a fictional world, and a videogame is a set of rules as well as a fictional world' (2005:1). This book attempts to accommodate criticisms made of ludologists' arguments within a broad framework that still privileges what Juul describes as the essential 'gameness' of videogames, and in particular, to reconcile videogames status as games with what Juul has by this time come to recognize as their storytelling capacities. The book's extended treatment of videogames' fictional worlds is a step forward for videogame studies but its treatment of 'imaginary' fictional worlds as epiphenomenal of 'real' rules, as will be shown, is finally unsatisfactory.
Juul’s account of what he calls ‘gameness’ in the book is a development of earlier work (see, for example, Juul, 2003). He claims that, throughout human history, games have shared a common structure, until videogames allowed the addition of fictional worlds. Drawing on a range of theorists of games and videogames,\textsuperscript{29} Juul formulates this structure as follows:

A game is a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are negotiable. (Juul, 2005: 36)

On this basis, activities like soccer, checkers/draughts, and Battlefield 1942 (Digital Illusions, 2002) are included as games, whereas Sim City (Maxis, 1989) and The Sims (Maxis, 2000) are conceived of as ‘borderline cases’ (due to their failure to valorize outcomes), and activities like ring-a-rosies are counted out altogether. This roughly corresponds with the distinction between ‘ludus’ – rule-governed play – and ‘paideia’ – open-ended play, as proposed by Cailliois (1979).

This structure, which Juul says has underpinned all games since 3000 BC, is seen as real in a strong sense – just as Platonic ideas are the real underlying substrate that find expression in specific sensual objects. Juul says that the classic game model is:

\ldots the basis upon which games are constructed: ‘It corresponds to the celluloid of movies; it is like the canvas of painting or the words of the novel. Additionally the model does not tie games to any specific medium, and games are therefore transmedial in the same way that storytelling is transmedial.’ (2005:7; emphasis in original)

This claim seems immediately to mix different categories of thing: the ‘classic game model’ cannot be said to be a sensible material object like a canvas, and nor would it seem to be immediately comparable to the words of a novel, and at best might be equivalent to ideas about the formal structure of novels or paintings described by concepts such as plot, characters, dramatic curve, composition, framing and so on. The eccentricity of this ontological move should be noted. Nevertheless, Juul means to argue that ‘gameness’ is not tied down to a particular medium of expression, and that it is the real underlying substrate upon which all games are constructed.

So, if ‘gameness’ resembles a Platonic idea that undergoes varied instantiation, videogames are simply one among many media in which gameness is expressed. This is the persistence of the notion that ludology, like narratology, needs a transmedial object. It keeps faith with the idea that ludology’s objects are different from those of the branches of media studies. It is consistent with Gonzalo Frasca’s claim that, ‘Just like narratology, ludology [the discipline] should also be independent from the medium that supports the activity’ (1999). It also resonates with Markku Eskelinen’s reassertion of the idea: ‘Stories and games are equally media-independent modes. They have also co-existed for millennia without being reduced to each other’ (Klevjer, 2002). A transmedial discipline – one which deals with all the media in which a particular kind of ‘discourse’ (Klevjer, 2002) is embedded, must necessarily take a transmedial object, hence the imperative to define games as a transmedial phenomenon, and their underlying structure as objectively real. This is precisely the moment at which aesthetics and ontology blur.
As outlined by Juul in his definition of the videogame, rules (part of the structure of ‘gameness’), are real, in distinction with the fictional worlds offered in gameplay, which are imagined. Rules are a structure of ‘limitations and affordances’ (Juul, 2005: 58) that constitute (and here Juul draws on the vocabulary of computer science) a ‘…state machine…that has an initial state, accepts a certain amount of input events, changes state in relation to inputs using a state transition function (i.e. rules), and produces specific outputs using an output function’ (2005: 60; emphasis in original). This state machine lies essentially within the game, and fictional content for Juul is an epiphenomena of this substrate, as will be shown below. This state machine is what the player primarily engages with, and the interaction between players’ strategies and this state machine is constitutive of gameplay. The rules of videogames are algorithmic, an outcome of design within the structure of ‘gameness’ and are designed to be ‘above discussion’ (2005, passim). It should be noted here that Juul nominates as primary and ‘real’ a structure that is invisible and not directly accessible to players, given his succeeding remarks that the fictional projections of games are not real in this sense, and that they are separate from rules.

There are two main kinds of rule structures in games, which Juul calls ‘games of emergence’ and ‘games of progression’, with the latter kind only really becoming possible with the inception of computer-mediated games. Emergence games have relatively few rules but a large ‘possibility space’ within which play can take place; progression games have many rules but relatively tight spaces of possibility for play. He suggests a rule of thumb for distinguishing the different kinds of games:
Search for a guide to the game on the Internet. If the game guide is a walkthrough (describing step by step what to do), it is a game of progression. If the game guide is a strategy guide (describing rules of thumb for how to play), it is a game of emergence. (2005:71)

The paradigm cases Juul offers, which Juul also sees as embodying the 'dual origins of the video game' (2005: 71) are *Pong* (Atari, 1972), which has an emergence structure (few rules but a practically limitless number of combinatorial possibilities in gameplay) and *The Hobbit* (Melbourne House, 1984) (a large number of rules, but a limited space of successful action). In some ways the distinction boils down to one between videogames with a large amount of story content and games that do not offer very much story. Apart from games embodying the 'pure' structures, there are games between emergence and progression – emergent games with elements of progression (such as massively multiplayer online games) and progression games with emergent elements (most contemporary single-player action games).

In contrast to real rules, Juul argues that videogames incorporate fictional worlds, and usefully raises the question of 'what kinds of worlds we find in games and how games cue players into imagining worlds' (2005: 121; emphasis in original). These worlds compete with rules for the player's attention in Juul’s model, but ultimately rules are fundamental in the construction of videogames: ‘though rules can function independent of fiction, fiction depends on rules’ (Ibid.) This feeling is shared and reflected by other theorists like Newman, in claims that playing videogames involves reaching beyond their representational level to the gameplay mechanisms beneath. Newman considers Friedman’s claim (reconsidered later in this thesis) that videogames demand that the
player 'thinks like a computer', and that this '[captures] the sense in which the player is encouraged to consider the 'heart' of the game, looking beyond or behind the audiovisual presentation of the gameworld' (2004: 25). It should be noted that Juul's case, at least, is in contrast to theorists of games such as Caillois (1979) and Huizinga (1950), who rather consider that games in general always have a 'fictive' element.

Again, we can return to the hacker's 'romance of code' as an informing discourse for ludology. The idea that fictional projections – including the representational aspects of videogames – are inessential, or that they lie between the player and the heart of gameplay, can also be related to the idea that the audiovisual aspects of games, which in part comprised the interface, are in some way untrustworthy in deciding what games are. In relation to Juul's claim that rules can operate independently of the fictional projection of videogames' fictional worlds, we can legitimately wonder what such an experience would be like. Could the rules of, say, PAC-MAN be said to apply to anything, or be meaningful, in the absence of its graphics and sounds? What would the rules be like if they were functioning independently of this? The question is hard even to frame since it seems to have no sense (i.e. application). Even when experiments, such as the University of Singapore Media Lab's 'Human PAC-MAN' mixed reality game (See Knight, 2004), appear to adapt the rules of videogames, they actually add a range of rules in terms of initial states (the game takes place on a city street with a number of human players, all using specially-designed interfaces) and input functions (there is a wider range of human players offering inputs). It cannot be said that the abstracted rules of PAC-MAN are
simply 'ported' to real life in this case, because they only have a sense in relation to visible objects and events.

Nevertheless, Juul does offer an account of the fictional worlds that are, for him, dependent on rule structures. For Juul, games project fictional worlds in a number of ways — through graphics, sound, text, cut-scenes, game ephemera, haptics, rules and their construction of time. Graphics, sound, and text have been discussed in this thesis already in forwarding the notion of a gamic mise-en-scene. Cut-scenes, for Juul, provide backstory but he still argues that they might be seen as a 'non-game element in a game' (2005: 135). Interestingly, he argues that other 'non-game' elements like manuals, boxes, and titles help to project fictional worlds (this idea will be explored in depth in this thesis in Chapter Four's consideration of genre). Juul's discussion of 'haptics' as a means of fictional projection is limited to force feedback vibrations (later in this thesis, the shape of controllers and their relationship with the fictional worlds of play is also considered).

Juul's descriptive work on the bases of fictional projection is valuable, and as mentioned, elements of his account of the 'projection' of fictional worlds will be referred to throughout this chapter and at other points in the thesis. It should be remarked, though, that here Juul reaches into the assortment of ways in which videogames project fiction — their textuality — all of which he sees as contributing to the fictional experiences that go along with play, and is nevertheless driven to distinguish between 'game' and 'non-game' elements. It is possible to question most of this. If games do project fictional worlds, then why not include all of the means by which this is achieved in our analysis of
games? The 'non-game' elements here are those which most heavily rely on visual or audiovisual representational strategies – cut-scenes and ephemera – but the question as to why they should not be counted as part of the game is not resolved either by Juul’s insistence on the primacy of rules (since graphics and sound are not reducible to the 'state-machines' of rules) or their relationship with one another. As both Klevjer (2002) and Newman (2002b) point out in different ways, cutscenes are important to gameplay (even though they are arguably not to the videogames in the period that this thesis concentrates on) and to players’ enjoyment, so that our idea of what the game is might be complicated by recognising this avenue of audiovisual pleasure.

Although not a primary focus of the arguments in this thesis, Juul’s discussion of time in gameplay is another interesting part of his analysis. He draws important distinctions between ‘play time’, the time that pertains to players’ real-time interactions, and ‘fictional time’: for example, two minutes of the player’s time can equate to a year in the fictional timescale of Sim City 4. He argues that cutscenes are effectively interruptions of play time, even though they happen in real-time. He also claims that level breaks represent incoherence in game worlds, and that they break the timeline of both play time and fictional time:

In the classic arcade game, the changing of levels has no logic in the game world: arcade games tend to present ontologically distinct worlds that simply replace one another without indicating any connection...Pengo is an incoherent world game, but the individual levels are coherent. Similarly, in newer games like Battlefield 1942 or Counter-strike, the jump between the different rounds is not explained. (Juul, 150-151)

Here, Juul points to the seeming arbitrariness of jumps between levels or stages in classic arcade games – a category that overlaps extensively with the games analysed in this
thesis. This noting of differences in the presentation of time is important, but in
developing Juul’s ideas around fictional worlds, this chapter complicates Juul’s accounts,
here and elsewhere, of what counts as coherence in the fictional worlds of gameplay.
Coherence for Juul seems to equate to the ‘holodeck’-like seamlessness of continuous,
mimetic virtual landscapes, and any kind of discontinuity is seen as a diminishment to
this coherence. Here, it might be enough to ask whether the presentation of cinematic
narrative through editing (creating jumps between times and places) is also similarly
productive of incoherent worlds. The reason for claiming that they are incoherent, as has
been discussed, is related to the nomination of a substrate of rules connected with
gameness, as the aesthetic principles that do lend games coherence and intelligibility. But
Juul perhaps underestimates the resourcefulness of information designers in lending
coherence to fictive creations, and overestimates the coherence of any fiction, gamic or
otherwise. If spatiotemporally seamless, continuous presentations of a mimetic landscape
is the necessary requirement of coherence, it is difficult to see how any cinematic work
that uses editing, say, could be seen as coherent. But his arguments about coherence are
taken further by means of some discussion about the status of fictional worlds in
philosophy.

In his account of fictional worlds, Juul refers to aesthetic debates within analytical
philosophy around the relationship between the possible worlds of modal logic and
fictional semantics.30 His presentation of the literature in this area suggests that there is a
disjunction between the description of fictional worlds and how they are imagined, that

30 Though Juul only really engages with Thomas Pavel’s (1986) Fictional Worlds, the broader progress of
this debate is fascinating for anyone interested in the relationship between fiction and the real: c.f. for
fictional worlds are presumed by the audience to be as large and detailed as the real world, even though direct descriptions in fiction are quite limited, and that therefore fictional worlds are radically incomplete: 'no fiction exists that completely specifies all aspects of a fictional world' (2005: 122). We use our knowledge of the real world and our awareness of genre conventions to 'fill in the blanks' in fictional world through imagining it in its details. He takes this incompleteness as further underpinning the distinction between 'real' rules and fictional worlds: rule-sets are complete and part of the real world.

In addition to being incomplete, some videogames are incoherent in the sense that they prevent the player carrying out the imagining of a complete fictional world beyond their limited depictions. His example is Mario's possession of three lives in Donkey Kong (Nintendo, 1981):

The fictional world of Donkey Kong is only very superficially described, but it is possible to imagine a world in which Mario's girlfriend is kidnapped by an evil gorilla and has to be rescued...It is harder to understand why Mario has three lives: Being hit by a barrel, by a fireball or by an anvil should be reasonably fatal...This is not a question of Donkey Kong being incomplete, but of the fictional world being incoherent or unimaginable. While, technically, any world could be imagined...nothing in Donkey Kong suggests a world where people magically come back to life after dying. In an informal survey...players explained three lives by appealing to the rules...This means that when we find it too hard to imagine a video game fiction, we can resort to explaining events in the world by appealing to the rules. (Juul, 2005: 129-130)

Restated, this is a claim that, where the features of a videogame's fictional world are not explicable by reference to some obvious cause internal to the world, or by direct analogy with the real world, those features are only explicable in terms of the game's real rules, and the game's fictional world is therefore incoherent. It might also be noted at this point
that a large proportion of videogames in the period that thesis focuses on would be incoherent according to this definition, since many offer the player more than one life.

A discussion below will dispute this claim of ‘incoherence’ on the basis of these features of fictional worlds on the basis of more open-ended views of the way in which fictional worlds function. But at this stage it can be shown that Juul appears to have confused the distinction (made in the study of fictional semantics and the possible worlds of modal logic) between what it is possible to imagine and what it is not. In work such as Pavel’s that draws on modal logic, the branch of philosophical analysis which ponders the meaning of claims about possible worlds (which derives ultimately from the work of Leibniz (1992) on modality), this distinction boils down to one – what is logically possible and what is not. No fictional world would be able to present us with a universe where bachelors are married, or where two people are taller than one another at the same time: these are ‘impossible propositions’ that are true in no possible worlds. But even though it may be unusual to think about a world in which a character has three lives, there is nothing in the definition of the concept of ‘life’ that restricts individuals to having only one. We are able, for example, to understand religious doctrines and myths involving reincarnation or the Gospel stories, which make unusual propositions about life after death in a way that we could not understand a proposition that John and Mary are both taller than one another. Nothing in the Gospel stories, or Road Runner, which also features a character who endures a number of seemingly fatal accidents, is unimaginable, at least not in the sense that a claim that John and Mary were both taller than one another would be. The idea that being hit by an anvil should be fatal is a contingent claim about
the actual world; it is imaginable that in some possible world, being hit by an anvil would not be fatal. Like the claim that humans only have one life, the claim that anvil blows are fatal is a ‘contingent proposition’ which is true in some possible worlds but not in all of them. The contingency of such propositions is what makes fiction possible: Road Runner and Donkey Kong alike present worlds where anvil blows represent a minor setback, rather than a fatal occurrence. Juul’s confusion about the nature of fictional semantics means that his claims that the possibility of multiple lives in videogames involves a necessary incoherence are poorly-premised.31

Juul’s focus on rules and formal structures allows him to make some valuable critical insights. As numerous other scholars have noted, ludologists’ focus on games and play in the context of videogame studies has opened up research questions and problems around the relationship between player and game, the nature of time in games, and the productivity of considering digital games alongside predigital games. (See for example, Klevjer, 2002 and Newman, 2004 for discussions of these contributions.) Here, Juul’s distinction between rules of emergence and rules of progression underlines the point that videogames have differing amounts of predefined story content. His engagement with fictional worlds, when it comes, yields a fruitful account of temporal structures in videogames. By his treatment of videogames’ presentation of fictional worlds, Juul moves debate in videogame studies towards a new emphasis. But Juul’s formalism and his commitment to a structural essence of ‘gameness’ mean that he underestimates the

31 See Armstrong (1998), Divers (2002) or Herrick (1999) for extended accounts of the basic, foundational issues in modal logic that underpin this brief discussion.
importance of fictional world-building in videogame design, and is unable to capture the variety of videogame experiences.

Juul’s lingering ludologist impulse to assert basic continuities between predigital games and videogames leads to his view of videogames’ fictional worlds as inessential and interchangeable. In Half-real, the fictional worlds that videogames present are variously described as imagined, incomplete (by comparison with the real world in which the state machines of rules exist), and often incoherent — except where they are supplanted by rules. However, the very writer Juul draws on most extensively in his account of fictional rules, Thomas Pavel, argues explicitly against the notion that fictional worlds can be so neatly sealed off from the real, however the real might be conceived:

Far from being well-defined and sealed off, fictional borders appear to be variously accessible, sometimes easy to trespass, obeying different sorts of constraints in different contexts. What is called for is a more flexible attitude about the limits of fictionality, which could not be but a refinement of our...perception. (1983: 88)

I would argue that Juul radically overestimates the certainties about the differences between ‘real’ and ‘fictional’ that have been generated by this debate in modal logic and fictional semantics. His extensive use of Pavel (who he removes from the context of the broader debate in this area) suggests that Pavel is comfortable with solid distinctions between the real and the fictive, and Juul’s distinctions between ‘real’ rules and ‘fictional’ projections are in part based on his reading of Pavel. But as the quote above shows, Pavel comes to no such conclusion about the distinctions between real and fictional experiences, and his work is characterised by a wonder about the way in which
experiences of fiction can come to seem so psychologically and even ontologically real to us.

Moreover, Juul's contrast between the incompleteness of fiction beside the completeness of rules can be seen in the light of objections both from philosophy and videogame studies. To be clear: as argued in the previous chapter, this thesis shows how imperatives embedded by information design strongly condition players' information behaviour, but at the same time, this need not be identified with a complete rule set, at least in the sense in which it is forwarded by Juul (who for example suggests that the laws of gravity should be considered a part of the rules of soccer). Despite the presence of these imperatives, which critical analysis in this thesis identifies, approaching games as fundamentally constituted by rules risks missing the fact that rules cannot account for all the ways in which a game is played, or for everything that can happen in a game. Wittgenstein (2001), talking about rules, points out that a game:

...is not everywhere circumscribed by rules; but no more are there any rules for how high one throws the ball in tennis, or how hard; yet tennis is a game for all that and has rules too. (2001: 28c)

Description of a game of tennis would, for this reason, need to exceed a description of the rules, and rules are incomplete in relation to what happens in particular games of tennis, or more generally as a model of what tennis is. A similar hunch is pursued, as explored in Chapter One, by Frasca (2003) and Newman (2004) in arguing that ultimately, what is decisive is players' use of games, rather than the rules embedded by designers. Like Wittgenstein, their claims that players can pursue forms of play not anticipated by
designers is premised on the idea that that games are not everywhere circumscribed by rules.

More crucially, though, Pavel’s claim that the boundaries between fictional worlds and the real world are often and easily trespassed matches my own experiences of videogames, and many other accounts of videogame play. For example, a description of gameplay picked at random from the pages of Retrogamer (focussed on The Muncher [Gremlin Graphics, 1988]) employs a familiar discourse in game reviews:

Not dissimilar to Rampage in premise, the gameplay of The Muncher makes for quite a different game. There are several destructive forces at your beck and call, such as thrashing your mighty tail, cleaving in twain with the six-foot serrations that make up your face, eating/interfering with innocent passers-by and finally the prerequisite defence mechanism of all mythical monsters: fire-breathing. The fuel supply of the latter is quickly exhausted, but can be replenished by consuming petrol wagons. (Spanner, 2006: 22)

Another review from the latest Retrogamer released as this thesis was being written describes the gameplay in Jurassic Park (Sega, 1993):

Even if you played as Dr Grant in the [Megadrive version of the game] it was still more impressive than other versions. An interesting point to raise was that you could not kill the dinosaurs, only stun them temporarily. This added an extra layer of tension, since you had to keep moving if you wanted to make it off the island alive. It was a small feature, but one that worked incredibly well, Grant moved with a nimble agility, and rather than a pastel-like cartoon appearance, everything in the game had a realistic digitised quality to it. Witnessing the T-Rex’s giant head lunging out and chomping you down, for the first time, was unforgettable – a truly chilling sight. (Sczepeniak, 2006: 94)

This kind of discourse in reviews reflects videogames’ primary positioning of players as actors in a fictional world, and their blurring of the boundaries between players, their surrogates, imperatives and affordances of play and the properties of fictional worlds.
The repeated second-person address in explanations of what happens in *The Muncher* or *Jurassic Park* reflects the kind of occupation of their fictional worlds that videogames allow: absorbing, intimate, and temporarily subsuming the differences between players, fictional worlds, rules, and mediating technologies. It should be noted that the explanation of the rules in these cases is by reference to the contents of the fictional world, or rather the discourse reflects the difficulty of detaching discussions of rules from the properties of fictional worlds where players' experiences of videogames are concerned. This kind of critical discourse, which mixes avatar and player in its address, would be fairly mysterious unless players shared a sense of immersion in fictional worlds. Rather than being a set of constraints and affordances that are independent of and prior to a projected fictional world, these are experienced as affordances and constraints that obtain within, and only within a work comprising a fictional world. It is within the fictional world created by game designers — by means including audiovisual design, haptics, and narrative exposition — that the player’s rule-based actions have meaning. An acceptance of this revision of Juul’s notion of fictional worlds would imply a critical approach to games which did not emphasise their formal rule structures and their resemblance to a model of transmedial ‘gameness’, but which rather sought to understand their particular constructions of fictional worlds which imperatives of play are related to. It would, importantly, imply a model of criticism that resembled the procedures of game journalism, and which was focussed more on piecemeal analysis of particular games rather than on formal definitions of an eternal gameness prior to critical contact with any games.
Ironically perhaps, given the hostility ludologists sometimes evince towards film theory, Juul’s introduction of the topic or concept of fictional worlds into videogame studies may lead into a fruitful interaction with interesting new directions in cinema studies and what Carroll calls the aesthetics of the ‘moving image’ (2003). An important recent discussion of fictional worlds, developed in relation to film, reminds us that all fictional worlds have affordances and constraints, that mismatches between the rules of fictional worlds and those in our own world does not necessarily imply the incoherence of the fictional, and that a failure to reveal every detail of the fictional world does not mean that they are unsatisfactory or incomplete. Or rather, the necessary incompleteness of fictional worlds does not make them seem any less ‘real’ when we are in contact with them. In ‘Where is the World? The Horizon of Events in Movie Fiction’, Perkins argues:

*The Wizard of Oz* makes us witnesses to a world of the fantastic with many special rules and properties. Some of them are explained to Dorothy and to us. We have to be told or shown the meaning of a pair of red shoes, and instructed to see them as ‘ruby slippers’. We are surprised to discover that a bucket of water can dissolve a witch. On the other hand a film can leave us to assume most of what matters. If this were not so, fiction would be impossible. It could not get started if it needed to itemise all the factors of relevance to the actions of its creatures, particularly since these would have to include considerations of the possible as well as the actual. (2005: 27)

Here, fictional worlds have properties and rules that are *part of those worlds*. These rules can be different to the rules that obtain in our world, and in the case of *The Wizard of Oz*, the fact that a bucket of water can dissolve a witch is simply an irreducible feature of that world, and one that admits of no further explanation. There is no discernible causal relationship with any further feature of the world, and if pressed we could only explain it by saying that this is the way that particular world is – these are its *rules*. However, the rules referred to in such explanations are not features apart from the world, but are
aspects of it. Perkins is correct on some basic issues around modal logic and fictional semantics – we accept all of this because, however unusual, these are events that could take place in some possible world, and the filmmaker’s skill is in realising those possibilities in a compelling fashion. Nevertheless, as Pavel is driven to remark, we do not feel the world of the *Wizard of Oz* as radically distinct from our own as ‘half-real’ when we are engaged with it, but in important ways, as an aesthetic experience, it interpenetrates with the real.

This is not an isolated case – many fictional worlds have properties that have no immediate explanation either in terms of our own world or of other properties of the fictional world itself. The narrative events where such properties emerge count as a discovery of that rule. In the case of *Donkey Kong* (Nintendo, 1981), which Juul examines, we can think about Mario having three lives as part of the world; the strangeness of this feature does not on its own make that world incoherent, any more than Wile E. Coyote’s endless capacity to absorb pain and injury make the world of *Road Runner* animated cartoons incoherent. The question of coherence in fictional worlds is far broader, having to do with consistency and contradictions within the world. As to incompleteness, Perkins’ suggestion is that no fictional world is amenable to presentation in every relevant detail – fiction relies on strategies of presupposition, revelation, and discovery. It is unsurprising that our engagements with fictional worlds are able to proceed on this basis; although our knowledge of the real world is necessarily incomplete, we are still able to act within it, and our efforts to discover its properties are a regularised aspect of our inhabitation of it.
So, while Juul correctly acknowledges that videogames embody fictional worlds, his desire to maintain conceptions of ‘gameness’, and to maintain the privileged ‘realness’ of rules at the expense of ‘imaginary’ fictions at the heart of videogame studies means that he is unable to pursue the nuanced constructions of worlds in various instances of videogame design, and is instead concerned to assert structural similarity in the face of difference and variety. All fictional worlds have rules. But Juul does not consider that the rules of videogames only have sense and meaning in the context of the fictional worlds they present. Videogames do not have narratives that unfold in the same way as those of cinema or television, but they use, among other things, audiovisual design to project fictional worlds. As Rune Klevjer argued in 2001:

The narrative appeal [of videogames] is not so much about unfolding events (although it does that too, most often not very successfully), as about giving meaning and sensation to the actions when they are performed by the computer and the player. Through narrative representation, procedures and actions become simulated events. I do not shoot 'objects' in the FPS-game Perfect Dark (2000), I shoot enemies. And when I aim and hit, I do not hit them in 'zone 5' (out of maybe 11) in order to trigger a specific animation. I shoot them in the head, and they sink to the floor with blood on the white wall behind them. This basic textuality in which the action takes place is not a complete narrative, in the sense that an integrated chain of events is conveyed... it] is rather a fictional framework.

Like much of the work of those ludologists for whom game mechanics are definitive of the medium, Juul’s work here has the benefit of reminding the reader of the need to account for the peculiar forms of engagement that videogames elicit from players. This is vividly described by Ted Friedman in a discussion of Sim City (Maxis, 1995) as involving an:
Easy slide into a routine with absolutely no down-time, no interruptions from complete communion with the computer. The game can grow so absorbing, in fact, your subjective sense of time is distorted...You look up, and all of a sudden it's morning. It's very hard to describe what it feels like when you're "lost" inside a computer game, precisely because at that moment your sense of self has been fundamentally transformed. (Friedman, 1995)

This 'being lost' is to be lost in a fictional world – bodily, cognitively, and affectively. There is no competition here between fictional worlds and rules for the player's attention, and they are subsumed in the same experience of extended intimacy with the game's world. It is this 'stickiness' of videogame play in relation to players that Chris Chesher (2003) christens the glaze – punning on notions of the 'gaze' of the cinematic audience derived from the work of Laura Mulvey (1975) and the 'glance' of the television viewer (from Ellis, 1992). He claims: 'Just as the glaze on a cake is sticky, the video game glaze holds players to the game. This hold is dynamic, and heterogeneous' (Chesher, 2003). In both cases, what the writers are wondering at is not videogames' underlying structural similarity with predigital forms of play, but their peculiar and uncanny way of drawing players' into a prolonged intimacy with their worlds; producing forms of life with their own systems of images, imperatives, and temporalities; encouraging forms of engagement that begin to look like inhabitations of the artwork.

*Henry Jenkins and Lev Manovich: Fictional Worlds and 'Environmental Storytelling'*

One account of fictional worldhood in videogames which we can place alongside Juul's, is the one in Henry Jenkins' 'Game Design as Narrative Architecture' (Jenkins, 2004). Jenkins explicitly couches his piece as a response to the first wave of polemical debate in
videogame studies, offering '...a middle-ground position between the ludologists and the narratologists, one that respects the particularity of this emerging medium – examining games less as stories than as spaces ripe with narrative possibility' (Jenkins, 2004).

Ahead of an outline of the different ways in which videogames can be construed as a particular kind of narrative media, Jenkins offers a number of points intended to accommodate the ludologists' objections, including one which insists on videogames' particularity:

If some games tell stories, they are unlikely to tell them in the same ways that other media tell stories. Stories are not empty content that can be ported from one media pipeline to another. One would be hard-pressed, for example, to translate the internal dialogue of Proust's Remembrance of Things Past into a compelling cinematic experience, and the tight control over viewer experience that Hitchcock achieves in his suspense films would be directly antithetical to the aesthetics of good game design. We must, therefore, be attentive to the particularity of games as a medium, specifically what distinguishes them from other narrative traditions. Yet, in order to do so requires precise comparisons -- not the mapping of old models onto games but a testing of those models against existing games to determine what features they share with other media and how they differ. (2004; emphasis mine)

Videogames have particular ways of encompassing and presenting fictional worlds, and though there is no such thing as a portable, essential story, there will inevitably be territory in common with other storytelling media. From the beginning, Jenkins' combines this acknowledgement of the specificity of videogames with an awareness that they remediate existing media forms, as Bolter & Gruisin (1999) suggest that all new media do. Thus videogames bear comparison with 'old media', and criticism of videogames will have something to gain from adapting the tools of analysis developed in relation to these media.
Adapting De Certeau (1984), and developing consistent arguments in his own work, Jenkins suggests that videogame design is a kind of spatial practice: ‘Game designers don't simply tell stories; they design worlds and sculpt spaces’ (Jenkins, 2004). But designing worlds and sculpting spaces – what Jenkins christens ‘environmental storytelling’ is precisely a way of creating narrative experiences or environments in which stories can be enacted:

Environmental storytelling creates the preconditions for an immersive narrative experience in at least one of four ways: spatial stories can evoke pre-existing narrative associations; they can provide a staging ground where narrative events are enacted; they may embed narrative information within their mise-en-scene; or they provide resources for emergent narratives. (Jenkins, 2004)

The first way of constructing spatial stories, the construction of ‘evocative spaces’, relies on players’ knowledge of pre-existing stories or genre traditions to lend spaces a narrative weight and importance. Second, narrative in games also proceeds from players’ ability to enact stories, ‘...in terms of broadly defined goals or conflicts and on the level of localized incidents.’ These enacted stories are the kind that correspond most clearly with Juul’s progressive narratives, where players must progress through a relatively tight narrative pathway defined by design. Third, Jenkins suggests that some videogames embrace a kind of ‘embedded narrative’, where narrative is conceived of as a ‘body of information’ distributed throughout the game-space. He draws on literary formalist distinctions between plot (or syuzhet) and story (or fabula) to make the case that:

...narrative comprehension is an active process by which viewers assemble and make hypotheses about likely narrative developments on the basis of information drawn from textual cues and clues. As they move through the film, spectators test and reformulate their mental maps of the narrative action and the story space. In games, players are forced to act upon those mental maps, to literally test them against the game world itself. (Jenkins, 2004)
This analysis suggests that players have an ongoing, active engagement with a world with affordances and constraints, rather than engaging with a rule-set whose fictional aspects are incidental. Videogame designers embed the 'cues and clues' and the affordances and constraints -- the imperatives -- through and against which players must test their narrative comprehension. Fourth, Jenkins suggests a category of emergent narratives, which '...are not prestructured or preprogrammed, taking shape through the game play, yet they are not as unstructured, chaotic, and frustrating as life itself.' His paradigm-case for this category of narrative is *The Sims* (Maxis, 2000), which, along with other 'sandbox games', is:

...a kind of authoring environment within which players can define their own goals and write their own stories. Yet, unlike Microsoft Word, the game doesn't open on a blank screen. Most players come away from spending time with *The Sims* with some degree of narrative satisfaction. (Jenkins, 2004)

This is close to Juul's notion of games with 'emergent rules' yet it acknowledges that it is not simply a relatively open 'state machine' that undergirds this kind of play, but, as in the case of *The Sims*, it is an effective design that creates worlds '...ripe with narrative possibilities, where each design decision has been made with an eye towards increasing the prospects of interpersonal romance or conflict' (Jenkins, 2004). This last kind of narrative is usefully explored, for example, by Newman (2004), but it is not a form that is especially relevant to a consideration of early arcade videogames.

Proceeding from this perspective, Jenkins recognizes videogames as fictional worlds that are the consequence of a series of specific choices and decisions:

In the case of evoked narratives, spatial design can either enhance our sense of immersion within a familiar world or communicate a fresh perspective on that story through the altering of established details. In the
case of enacted narratives, the story itself may be structured around the character's movement through space and the features of the environment may retard or accelerate that plot trajectory. In the case of embedded narratives, the game space becomes a memory palace whose contents must be deciphered as the player tries to reconstruct the plot. And in the case of emergent narratives, game spaces are designed to be rich with narrative potential, enabling the story-constructing activity of players. In each case, it makes sense to think of game designers less as storytellers than as narrative architects. (Jenkins, 2004)

This way of understanding videogames suggests the continuing usefulness of certain kinds of analysis developed in relation to moving image texts and visual art, as in this thesis’s synthesis of the work of several authors into an approach towards gamic mise-en-scene. The presentation of environments, 'cues and clues', and the character of the worlds that players become involved in are, to a large extent, questions of audiovisual design: visual representation, visual style, mise-en-scene, composition, point of view, and other concepts and methods from 'moving image' scholarship (Carroll, 2003) are appropriate to understanding how worlds of play are constructed. In the case of 'evocative spaces' that draw on our knowledge of existing texts and genres, an awareness of moving image texts and genres, and the ways in which characteristic images are deployed, are important. In the case of 'emergent narratives', understanding the relationship between the audiovisual worlds presented and players' investment and pleasures in creating narratives within that world is crucial, so that an understanding of visual pleasure and creative practice in a broader visual culture are imperative.

Jenkins’ architectural metaphors, and his view of game design as a spatial practice, connect with Lev Manovich’s work on what he calls a ‘new form which may be unique to new media’, navigable space (1998). Using Doom (id Software, 1998) and Myst (Cyan,
1993) as exemplars of this development where ‘space becomes a media type’, he writes that:

...[They] are spatial journeys...[which] present the user with a space to be traversed, to be mapped by moving through it. Both begin by dropping the player somewhere in this space. Before reaching the end of the game narrative, the player must visit most of it, uncovering its geometry and topology, learning its logic and its secrets. In *Doom* and *Myst* – and in a great many other computer games – narrative and time itself are equated with the movement through 3D space, the progression through rooms, levels or worlds. (Manovich, 1998)

Manovich thinks that these navigable spaces do give rise to narratives, but is careful to distinguish them from more recent varieties of literary narrative:

These computer games return us to the ancient forms of narrative where the plot is driven by the spatial movement of the main hero...Stripping away the representation of inner life, psychology and other modernist nineteenth century inventions, these are the narratives in the original Ancient Greek sense, for as Michel de Certeau reminds us, “In Greek, narration is called ‘diegesis’: it establishes an itinerary (it ‘guides’) and it passes through (it ‘transgresses’).” (Ibid.)

Still narratives *per se*, videogames are driven by movement rather than the interiority and motivations of author-defined characters; they are narrative environments defined and structured by players’ navigation through space. The narrative commonalities between videogames and genres of antiquity are matched by their treatment and representation of space: for Manovich, their presentation of discrete objects in discontinuous space is closer to antiquity’s ‘aggregate’ spaces than to the abstract, universal ‘systematic’ spaces of post-Renaissance thought, which are ontologically prior to the objects that fill them.

As well as agreeing with Jenkins in a view of videogames as spatialised narratives, where the visual presentation of space is important in fictional evocations, or the production of the fictional dramas players enact, Manovich builds much of his landmark work, *The
Language of New Media (2001b), on the continuing relationship between cinema and new media, and suggesting the continuing relevance of understandings of cinematic vision in the analysis of new media. At one point he writes:

Cinema, the major cultural form of the twentieth century, has found a new form as the toolbox of the computer user. Cinematic means of perception, of connecting space and time, of representing human memory, thinking and emotion have become a way of work and a way of life for millions in the computer age. Cinema's aesthetic strategies have become basic organizational principles of computer software. The window into a fictional world of a cinematic narrative has become a window into a datascape. In short, what was cinema is now the human-computer interface. (2001b: 86)

Like Jenkins' concept of 'narrative architecture' or 'environmental storytelling', Manovich's theories of 'navigable spaces' and the persistence of cinematic perception and representation, point the way to a criticism of videogames that attends to the qualities of particular videogame spaces and the ways in which narrative spaces are visually presented. Therefore, such a criticism could usefully draw on the insights of moving image research, art history, and new media studies. This criticism would in part be descriptive of the visual qualities of the worlds that players move through – and Manovich himself talks about the varying visual environments in Myst in accounting for its aesthetic achievements.

This view of videogames as constructing narrative spaces is not unique to Jenkins and Manovich, with Flynn (2003), Newman (2004) and even Aarseth (1998) writing about the primacy of spatiality in videogames. But for the purposes of this thesis, with its concern to develop further understandings of the audiovisual aspects of videogames, Jenkins' and Manovich's visions of in-game spatiality as being importantly constituted
by image-making techniques, and treatments of spatiality and the audiovisual that owe something to cinema and other audiovisual media are important. The following analysis of the fictional worlds of key early videogames shows how gamic mise-en-scene is the locus not only for fictional projection, but where the ‘cues and clues’ and imperatives that drive players’ information behaviour are primarily to be found. In this sense, it takes Juul’s vision of fictional worlds forward, using the work of Jenkins and Manovich, in a way that reverses his claims about the primacy of rules, and shows how rules and fiction are inseparably linked in the audiovisual environments of games.

Before this, though, one unique aspect of videogames’ fictional worlds, their construction of space, and their direction of players through audiovisual environments, needs to be considered: their use of levels or stages. There has been little specific theorization of stages, a part of videogames grammar which is considered below, except in the work of Newman (2004). His account of levels in games is mostly developed in relation to aspects of contemporary videogames – like cutscenes – that do not have extensive relevance to early videogames. Newman offers a number of important ways in which levels can function in videogames. His account of ‘boss’ stages shows how they can function in a spiral of increasing difficulty – a ‘difficulty ramp’ – in videogames, where bosses are ‘the controlled climax to a particular sequence of gameplay’ (2004: 78). He shows how levels function in gameplay’s perhaps contradictory desires to bring the game to an end and prolong it through playful ‘detours’ (Ibid.: 81). And he suggests that level breaks have a number of functions – they solve issues around limited processing and storage power, they offer a ‘save point’ (a factor that is not so relevant to the
consideration of early arcade games), they offer respite from gameplay, they offer a chance for players to measure their progress and receive feedback in the form of scores etc., they offer a reward for progress achieved, and they aid in story development and exposition (here again, Newman has cutscenes and similar devices in mind).

Although Juul thinks that the stage progressions characteristic of early videogames actually produce incoherence in their narrative worlds, building on Newman’s work, it will be suggested below that they allow variety in mise-en-scene and imperatives to be introduced. This has the effect of prolonging players’ presence and investment in their worlds – they function as a spectacular reward in play, and, importantly, they lend breadth and depth to the fictional worlds created in information design. The ‘next stage’ is, as Atkins (2006) work suggests, a primary locus of desire for players as they hew to the imperatives of play. Increasingly, even over the period of early videogames, the stage is transformed from an informatic constraint into a positive, structuring element of videogames fictional worlds.

The Minimal Fictional Worlds of Early Videogames

The ‘environmental storytelling’ of early videogames can be observed in several ways. First, the audiovisual design of early games – including avatars, spatial design, some physical controllers, and the relationship between what Galloway calls diegetic and non-diegetic information – works to ‘... evoke pre-existing narrative associations...[to] provide a staging ground where narrative events are enacted [to] embed narrative
information within [the] mise-en-scene... [and] provide resources for emergent narratives' (Jenkins, 2002). As chapter Two shows, the audiovisual design of early videogames tends towards abstraction, but this facilitates players' ability to position themselves in relation to the fictional worlds of play, and there are nevertheless always attempts at depiction that draw on cinema, comics, and other areas of visual culture. Second, early games provide imperatives of survival within worlds of perpetual crisis. The 'ambient' worlds of more recent games, which persist and go on changing with or without player action (Galloway, 2006), and the 'machinima' and cutscenes with which players are rewarded or with which rhythms are rewarded, are not characteristic of games designed and released between 1972 and 1985, or of later games which embrace the early sensibility. Instead, players must be constantly, frenetically engaged in fulfilling the games' imperatives in order to maintain a presence in the games' fictional worlds. Early games' worlds of perpetual crisis do come to incorporate spatial, rhythmic, and other complexities, but in any case their relative simplicity, and their requirement for constant configurative acts from the player, is a characteristic of early games' information design that is effective in bringing about the intimacy with fictional worlds that early games require. Third, the affordances and constraints operational in early games, though unelaborate, are presented in design as features of the games' fictional worlds, rather than as abstract rules.

The remainder of the chapter develops these claims through close analyses of two early games: Night Driver (Atari, 1976) and Missile Command (Atari, 1980). The chosen games are representative of a range of genres, and a range of moments in the history of
early games. As in the remainder of this thesis, my comments will be addressed to their arcade versions, but all of them were ported for home systems. Making the case for fictional worlds in videogames by scrutinizing coin-op arcade versions is not only consistent with the remainder of the thesis. As mentioned in the Introduction to this thesis, Klevjer (2002) argues that the perception that they embody 'pure gameplay' and are non-narrative is in fact a motivation for some of the excesses of ludologist arguments. Below it is shown that even here, designers work very hard to produce fictional worlds.

Night Driver

_Night Driver_ is not the very first perspectival driving game, but it is one that had a wider distribution to arcades than its few predecessors (Cohen, 1984; Burnham, 2001), and which is a key formative influence on a style of play that persisted in games like _Pole Position_ (Namco, 1982), _Out Run_ (Sega, 1986), _Daytona_ (Sega, 1994), and _Ridge Racer V_ (Namco, 2001). The following analysis shows that the game constructs a fictional world that is _evocative_ of both cinematic representations of driving and real-life experiences of car travel, which is at the same time an _enacted_ narrative in that ‘...the story itself [is] structured around the character's movement through space and the features of the environment... [which] retard or accelerate that plot trajectory,’ and it _embeds_ the imperatives that guide enacted play in its audiovisual design. Although the world of the game is minimally drawn, and the game’s imperatives primarily revolve around movement-acts, these are presented in terms of the fictional elements of the world, rather than as abstract rules. We can see the game as an attempt to represent the experience of
driving, and to thus offer players a simulation of driving. Beyond this concern for simulation, though, the game offers a distinctive fictional world which we can also understand partly in terms of its audiovisual environment. The game’s simplicity in terms of representation and imperatives must be understood to some extent as a function of technological constraints, while not being identical with these constraints. Subsequent games that share its point-of-view and its basic imperatives can be seen as elaborations on Night Driver’s information design.

Night Driver was programmed by Atari employee Dave Shepperd: continuing Atari’s early practice of borrowing from the work of other designers (as discussed in Chapter One of this thesis on Pong [Atari, 1972]), it was made on the basis of a flyer for a game, Night Racer (Micronetics, 1976) designed by German company, Micronetics, in 1976. Shepperd says that:

This was the second game I programmed while at Atari. I was given a piece of paper with a picture of a game cabinet that had a small portion of the screen visible. I don’t recall if it was an actual flyer for the game or simply a Xerox of the front page of the flyer. I recall it being German or maybe I was just told it was a German game. I never saw the game play nor did I know what scoring was used on that game, only that there were a few little white squares showing. With that germ of an idea, out popped Nite Driver [sic.]. I have fond memories of spending time watching the white lines in the street and fence posts whiz by my ear as I drove to and from work trying to work out in my mind’s eye what kind of math I can use to make little squares on a TV kind of do the same thing. (in Bousiges, 2003-2006)

What is striking about the designer's comments here is the desire to use 'math' to represent experience and to have a videogame’s on-screen world ‘do the same thing’ as real-world objects. Shepperd’s description of his intentions suggests his inspiration was
not the creation of abstract state machines or rule systems, but to put the ‘state machine’
of arcade hardware at the service of a fictional projection or simulation.

In one indication of the convoluted history of early games, it appears that Night Racer
itself was a result of an American designer, Ted Michon, happening upon a similar,
wholly analogue driving game while working in Germany. According to Bousiges,

The idea for the game came to designer Ted Michon while he was in
Germany working for Digital Games investigating problems with their Air
Combat game. In a bowling alley, he saw a game called Nurburgring
(after the German racetrack) that was the first he ever saw that attempted a
3-D effect. The game was a one-of-a-kind piece and Michon eventually
met the designer and found that the entire game had been designed with
analog components. Michon urged the designer to create a digital version
but was ignored so he decided to design his own version. Before the game
was released, Digital Games was sold and reopened as Micronetics. Night
Racer was the only game they produced (released just before Midway’s
"Midnite Driver"/"280 Zzzap"). (Ibid.)

Even here, though, it is worth noting the precedence of a range of mechanical sports
simulations from the late nineteenth century, as described by Huhtamo:

There were many machines that simulated sports, such as boxing, bowling,
football and horse racing. The player either participated in the sport
simulation as him/herself or transferred his/her actions to miniature players
(kind of “proto-avatars”) operating within the realm of the game. By being
mutated to this new mechanical “arena” the actual sport genres were
transformed. (2005)

As Huhtamo’s ‘archaeology’ of arcade play points out, electromechanical games persist
into the videogame era with examples like F1 (Namco, 1976), which offers a similar
cabinet, fiction, and gameplay to Night Driver, but a much richer, rear-projected mise-en-
scene. Rather than using full-colour projection for its visual world, Night Driver employs
Atari’s 6502 black and white raster board, also the basis of a diverse family of games
including Avalanche (Atari, 1978), Boxer (Atari, 1977), and Breakout Deluxe (Atari,
1976). Though some of these games are more visually elaborate than *Night Driver*, whether due to more naturalist graphics or the use of coloured screens, *Night Driver* constructs a fictional world of rare power and lasting influence.

In its audiovisual design, *Night Driver* is nothing if not minimal. Like *Pong* (Atari, 1972), there is nothing rendered on screen in the game which is not either directly a diegetic play element, or non-diegetic score and time information. Rendering any kind of perspectival landscape with the given hardware was, as Shepperd indicates, difficult enough. There was no processing capacity for 'surplus' representation – for any visual material which might enhance the naturalism or spectacle offered by the diegetic mise-en-scene. The rendered diegetic elements of the mise-en-scene are largely restricted to the perspectively receding 'reflective' road markers. So, *Night Driver* does not, and cannot offer the player such features as: the spectacle of additional scenery (as in later games like *Pole Position*, *Outrun* or *Daytona*), the pleasures and dangers of other human players or computer-controlled avatars competing within its diegetic space (as even concurrent racing games like *Le Mans* [Atari, 1976] did), or the bittersweet pleasure of watching a digitally-rendered player avatar crash and burn at the moment of failure. The player's presence in the game's world is marked by the front half of a car, which is not produced electronically but is instead a sticker affixed to the surface the screen. Whereas games based on the hardware used for *Night Driver*, like *Boxer* (Atari, 1977) or *Breakout Deluxe* (1976) did contain electronically-rendered player avatars, the car in *Night Driver* is a halfway point between these and the 'proto-avatars' that Huhtamo (2005) sees as a feature of mechanical arcade sports games. The game's on-screen, diegetic, visual
landscape is composed of no more than this insert and the game sprites – a series of white rectangles on a black background, arranged and scaled so that they appear to recede into the distance away from the player.

Non-diegetic information on in-game screens is arranged at the top and bottom of the screen, a convention that becomes apparent very early in arcade games. Many early shooters, maze games, and sports simulations put scores, times, and other non-diegetic information towards the edges of the screen’s frame, such that they offer a kind of ‘caption’ that indicates the game state. Quantitative indicators of a players’ progress are therefore literally marginalised in the overall visual spectacle that the games offer. In-game ‘game state’ information in Night Driver is concentrated at the top of the screen. On the top left are the player’s score; the top right corner contains the player’s top speed for the current game and their time remaining. The bottom left-hand corner of the screen tells the player which gear they are in, and the bottom right hand corner indicates whether the player has chosen a ‘novice’, ‘pro’, or ‘expert’ track. When players start the game and make selections, previous top scores and times are displayed along with the legend ‘Atari’. This non-diegetic stream of information indicates the basic parameters within which play occurs, with players attempting to cover tracks in the least possible time with the best possible score. Night Driver is a simple effort to achieve the highest score and the fastest time on a particular track, and unlike later driving games, time extensions were not available. Greater informatic capacities in later games made the extension of time an additional layered imperative in play.
The only variation to the game’s basic visual prospect is the full-screen strobe effect that occurs when players crash by straying beyond the side of the road, at which point they must come to a halt and begin accelerating again. Modifying the entire mise-en-scene is a ‘blacklight’ ultraviolet light that changes the character of the reflective whites that the game employs in constructing its audiovisual environment, and also reflects off the players clothing and body. As for sound, there is a constant rumbling hum representing engine noise, which varies with speed and which reflects gear changes, and occasional squeals representing either sudden acceleration or the critical moments of failure where the player crashes.

Framing all of this is the cabinet and control system for the game. The controllers are a real, physical steering wheel with which the player controls side-to-side movement on the road, an accelerator which activates movement, and a gearstick which increases and decreases speed. The cabinet for the game had two initial variants. One was a familiar stand-up arcade cabinet with the car-type controllers affixed to the front. The second, though, was constructed to resemble the cockpit of a race car, and had the player sit down, with the controllers arranged as in the console of a real vehicle. This variant was decorated with racing stripes and decals.

In its mise-en-scene and the nature of its controllers and cabinet, Night Driver certainly succeeds as one of Jenkins’ narratives of ‘evocation’, managing to evoke both real-world experiences and other media representations of driving. Night Driver works on the player’s familiarity with the use of perspective in presentations of driving in other visual
media, in order to 'enhance the player's sense of immersion' (Jenkins, 2002) deploying and arranging its scaled sprites to create a fictional world that is evocative of the experience of driving. In particular, the combination of perspective, point-of-view with driving, skill, and danger is evocative of the concurrently popular use of car chases as set pieces in action cinema in films such as *Bullitt* (Yates, USA, 1968), *The French Connection* (Friedkin, USA, 1971), and *Pas de problème*! (Lautner, France, 1975). Sequences from *Bullitt* and *The French Connection* show a point of view similar to *Night Driver's* in the midst of car chases, where viewers are afforded glimpses of a pursued vehicle from the perspective of the following vehicle. Together with the evocative visual and spatial design are the title, and the reference to players' experiences of having driven or been a passenger in a car, which Shepperd cites as an inspiration in his recollections of the design process. Both of these evoke the experience of driving at night, which also serves to excuse or explain the game's spare mise-en-scène. The sound design is simple, but embellishes the overarching fiction by offering diegetic engine and tyre noise, and together with the visuals and the pressing imperatives of the game, this noise serves to connect the player further with the fictional world and its imperatives. The controllers and cabinet further underline the nature or subject of *Night Driver's* simulation, and enact what might be called a 'haptic realism' where the physical part of the interface has a form that is consistent with the game's diegetic world. The fictional world building of game design here extends beyond the rendering of a particular mise-en-scène and encompasses the construction of an interface that evokes the subject of simulation. While many games before and since used joystick, paddle, or trackball interfaces, *Night Driver* employs one that is consistent with the nature of the experience it is attempting to evoke.
Night Driver also creates an ‘enacted narrative’ in Jenkins terms (2002); in Manovich’s parallel conception, it works to ‘present the user with a space to be traversed, to be mapped by moving through it’ (1998); in Galloway’s (2006) terms it constructs a diegetic space in which diegetic operator acts can take place. This enacted narrative (the space to be traversed) is defined by the minimally drawn boundaries of the roadside and their perspectival recession into the distance in front of the car, and by the player’s perspective on the action, and the physical interface that the game presents to the player. The use of perspective constructs this as a space in depth: it is three-dimensional, unlike earlier or concurrent games from Atari such as Gran Trak 10 (Atari, 1974), Indy 4 (Atari, 1976), or Le Mans (Atari, 1976), or the multiplayer games from the following year Sprint 4 (Atari, 1977) and Sprint 8 (Atari, 1977), all of which offered a bird’s-eye view on a racetrack, so that players viewed the landscape wholly from above in an unmixed third-person perspective. Whereas in the bird’s eye perspective of these games an entire landscape is revealed at once within the bounds of a single screen, the player needs to understand Night Driver’s space as unfolding along their line of sight, and only knowable and visually accessible through and in the player’s traversing it. Perspectival rendering of a space in depth changes the player’s relationship with that space, and the way in which they must attempt to traverse it. Night Driver offers some variety in its enacted narrative in that the player can select one of three tracks (graded ‘novice’, ‘pro’, and ‘expert’), and arcade owners were also able to switch the game to feature a different set of three tracks (Atari, 1976).
Point-of-view is crucially important in the game’s construction both of ‘evoked’ and ‘enacted’ narrative. The ‘third-person trailing’ point-of-view, finds an early, if not its first, iteration here. Though *Night Driver* is sometimes described as using a first-person perspective, the position of the car avatar within the screen composition – the point-of-view we are offered on the avatar itself – and its position in relation to the roadside, makes no sense as an attempt to match the point-of-view of someone in the driver’s seat of a car. Indeed, this point-of-view is much closer to later driving games that clearly employ the third-person trailing perspective, such as *Pole Position* (Namco, 1982) or *Daytona*.

The third-person point-of-view, for Lauric Taylor (2002), is most immersive, and she credits it with a kind of ‘paradoxical’ realism by comparison with purer first-person perspectives. Some writers (Taylor mentions Steven Poole [2000] and Richard Rouse [1999]) argue that third-person perspective is ‘disembodied’ because players see it differently to the way that they would see a ‘nongame space’ (or ‘real’ space) – as against ‘first-person’ perspective as the ‘natural’ point of view in videogames. Järvinen summarises this view pointing out that it supposes that ‘...the function of the subjective viewpoint.... is its immediacy, i.e. the disappearance of the interface and the computer as medium’ (2001: 70). This supposition, Taylor argues, depends on the fact that third-person perspectives are:

...richer because the player is allowed a sense of the space. In third-person point-of-view games, the player is given an embodied representation in the space with all that an embodied representation entails, including the physical relationship of the character to the space and objects around the character and a contextualized presence in the game space so that the player can experience the space through the player-character as other than
simply a geometric construction. Ironically, then, third-person point-of-view affords the player an experience of embodied space that is more complex and closer to the corresponding encounter with the extra-gaming world than does first-person point-of-view. (2002)

Elsewhere, Taylor argues that the first-person perspective removes both the player and their avatar from the 'game space' and allows 'the player to function on the space, but not within the space' (Ibid.). For Taylor, the capacity for third-person perspective to convey information about the avatar's relationship with surrounding diegetic space means that it offers experiences that are more faithful to our embodied presence in 'nongame' spaces, whereas a first-person perspective is no more than a 'geometric construction'.

Taylor's critique of the character of the immersion offered by the first-person point-of-view aside might be arguable.\(^{32}\) But her arguments about its richness of third-person perspective, its value in helping players understand the nature of their presence and the physical relationship of their avatar to surrounding space, are valuable. In *Night Driver*, the evocation of cinematic representations of driving – where viewers enjoy a point-of-view on spectacular action which is other than that of the participants in the action – and the evocation of the experience of driving – through audiovisual design of the three-dimensional environment and the haptic realism of the controllers – are equally served by the third-person trailing point-of-view. This point-of-view neatly visualises both the whole of the contents of the fictional world and the nature of *Night Driver*’s simulation.

In terms of enacted narrative, this point of view makes *Night Driver*’s information design and the information behaviour inscribed in this design, clear and visible. Players can see

\(^{32}\) Alexander Galloway, for example, argues that first-person perspective in games is 'used to achieve an intuitive sense of affective motion' which is 'active, mobile' (2006: 69).
their avatar, the space they must negotiate, and the relationship between avatar and space at a glance. A pure or ‘geometrical’ first-person perspective in this case may, as Taylor argues, have obscured the relationship between the player’s presence and the nature of the game’s spatial design, since the relationship between the car avatar and the landscape may have been less clear to players encountering this kind of visualisation of spatial depth in a game for the first time. Instead, Night Driver elegantly offers a point-of-view which more immediately conveys the nature of the enacted narrative the game offers, and which is ‘closer to the corresponding encounter with the extra-gaming world’ (Taylor, 2002). Additionally, this point-of-view condenses the pleasures of seeing the car (which is exploited in later games such as Out Run with its travelling companion, and the Ridge Racer series’ fetishisation of the technological aesthetics of a range of vehicles), and the bare pleasure of an impossible perspective, one which could, at the time, only be offered in the context of fictional worlds such as this. This ‘impossible’ point-of-view soon had an analogue in the ‘race-cam’ following cameras introduced to motor racing television coverage in 1979 by the Australian broadcaster ATN 7, later adopted worldwide as a standard aspect of such broadcasting. (Whannel, 1992)

Importantly, Night Driver also embeds its imperatives for interaction in the fictional world created in the game, and in the relationship between a realistic mise-en-scène and an equally realistic haptic interface. The imperatives presented to the player, as a condition of maintaining their presence in Night Driver’s world, and therefore extending the enacted narrative, are simple but unrelenting. Of the expressive acts and move acts demanded in videogames (Galloway, 2006), Night Driver only offers and requires the
latter: its diegetic imperatives all centre on movement. First and foremost, players must stay on the road by keeping their avatar within the limits inscribed by the road markers. These road markers are, therefore, at once an element of a realistic mise-en-scene, definitive of the space of enacted narrative, and a means by which the imperatives for move acts are embedded in the game. Players must try to anticipate movement and change in the road, at the same time as they enact the discovery of game space, and enjoy the audiovisual spectacle that the game offers. Sound design similarly functions as an enhancement of the game’s realism by offering at once an enhancement of the realism of the game’s simulation of driving and an additional layer of game state information (speed and gears are indicated by the whine of the engine) and the player’s success in fulfilling imperatives (in the form of tyre squeals and impact noises when the player hits the guide posts). Players achieve imperatives by means of close observation of changes in the mise-en-scene and ‘move acts’ with a combination of adjustments to the realistic steering wheel, accelerator, and gear stick. The means by which imperatives are fulfilled, and space explored, is therefore also crafted as an enhancement to the realism of the overall simulation.

In its gamic mise-en-scene and haptic interface, then, *Night Driver integrates* an attempt to provide a realistic audiovisual spectacle, the creation of a space which players narratively enact by means of their movement through it, and a presentation of the rules and imperatives that guide interaction. Rather than being essentially distinct from one another, rules and the fictional world of *Night Driver* are presented together to players, and considering rules apart from visual representation in this case would appear to
abstract elements that are united in players' experiences. *Night Driver's* imperatives are susceptible to being understood by means of audiovisual analysis. It is worth noting, however, that notwithstanding the simplicity and clarity of *Night Driver's* imperatives, there is no respite from them in the gameplay that arises in the interaction between information design and information behaviour. There are no opportunities here for the kind of audience counterplay that Frasca (2003) or Newman (2004) and see as characteristic of the videogame audience's relationship with games. This is a world of permanent crisis.

Missile Command

*Missile Command*, another Atari game, also presents a distinctive fictional world, where imperatives are embedded in the mise-en-scene, spatial stories are enacted by the player, and audiovisual design is used to create a spectacle with some affective force, and a relationship with broader social and political anxieties. *Missile Command* was the result of Atari's then-president, Ray Kassar, clipping a story concerning developments in missile defence systems by the United States military (Bousiges, 2003-2006). It is sometimes mentioned in connection with the so-called 'Star Wars' Strategic Defense Initiative (SDI) initiated by the Reagan government in the 1980s, but since SDI was not announced until 1983, this is anachronistic. (See Durick [2003] and Reiss [1992] for details of this history.) The US and the Soviet Union alike had ground-based ballistic missile defence systems in place from the 1960s; SDI's potentially destabilising novelty was in employing satellite-based missile defences. *Missile Command's* representation of ground-based missile defences reflects its origins in the 1970s, but its appearance in the
early 1980s meant that it spoke to anxieties arising from the heightening of Cold War tensions during the Reagan administration.

Kassar asked Lyle Rains, the head designer in Atari coin-op, to produce a game based on the idea; he then selected David Theurer for the project, who later went on to produce the influential perspectival space shooter, *Tempest* (Atari, 1982), and then the image-processing software, DeBabeliser (Burnham, 2001: 224). Theurer’s initial internal proposal document for the game (Theurer and Adam, 1979), which attempted to live up to the ambitions Kassar had expressed, shows that alongside considerations like interfaces and display monitors, he clearly frames the game as presenting a particular kind of fictional environment, and imagines players as interacting with that fictional environment:

The color monitor will display a radar screen view of the coast and the offensive and defensive missile action. The coast will be displayed along the bottom of the screen. Cities and missile bases will be identified on the coast. Color coding will be used to indicate their status...and importance...The appearance of the coast will be customisable to the area in which it is played to give it a local appeal. Coastlines for California, the U.S. East Coast. Western Europe and Mediterranean would be available, possibly as a monitor overlay. (Theurer and Adam, 1979: 1-3)

There is a specific plan to create an audiovisual environment that remediates the technologised visuality of radar, connecting the game with the ‘Cold War realities’ (Burnham, 2001: 224) of massive nuclear attack and mediated warfare, and also with a broader technological context. This imagined remediated representation would rely on an awareness of the conjunction of particular kinds of visual technologies, warning systems, and technologies of ‘mass destruction’, as well as an awareness of the strategic scale upon which nuclear war would be fought. (The task of defending, say, the California
coast can be compared with other combat-based games like *Tank* or most space shooters, whose action took place on a tactical rather than strategic level.) Theurer imagines the game as *representing* specific coastlines under threat, and offers the possibility of customising content for particular markets, presumably in the belief that a fiction embodying a threat to a local, familiar landscape would be more emotionally involving for players, and would raise the stakes in the simulated attack.

Much of what was proposed in this initial document did not come to pass. Theurer explains this in terms of a desire that the mise-en-scene should not become too crowded, and that the fiction the game created should not be too unnerving:

> Part of creating a great game is knowing what to strip away. Some of the first baggage the developers dropped was geographic identifications because of the frightful scenario of the game. And then they stripped away more.... "The original suggestion was for there to be a scanning radar, but I immediately said, no way! It would be just too hard for the player because he wouldn't be able to see what was going on. We chucked that idea. And when we first developed the game, we added railroads to transport missiles from the cities to the missile bases. That got to be too complicated and people got confused...if you get too complicated, people won't play. We also had submarines for a while but that didn't work out so we ripped them out, too." (Bousiges, 2003-2006)

The desire to remove visual complications shows that the lessons Bushnell learned in relation to *Computer Space* were now embedded in a range of design decisions, but the idea that players may be too frightened by the game was perhaps a result of the designers’ experiences while working on it:

> The horrifying subject matter of *Missile Command* had an impact on the developers. Dave Theurer: "It was pretty scary. During the project and for six months after the project, I'd wake up in a cold sweat because I'd have these dreams where I'd see the missile streak coming in and I'd see the impact. I would be up on top of a mountain and I'd see the missiles coming in, and I'd know it would be about 30 seconds until the blast hit and fried
me to a crisp." Steve Calfee: "Everybody I know who really got into the game had nightmares about nuclear war." (Ibid.)

It is worth considering here what Theurer's and other developers' nightmares might have been about, and why the specific presentation of the game's material was altered. Although there is no great wealth of story material in Missile Command, the character of the fictional world it builds, and the basic fictional environment it constructs is such that asking players to enact narratives on this basis was seen as something that was potentially disturbing and which ought to be handled carefully. In any case, the disturbing aspects of the game, which are seen in developers' and other accounts as being part of what makes the game distinctive and memorable, would seem to have little to do with an abstract 'state machine' of its rule set. Rather, from this initial design document, the aim is to produce a fictional world, partly defined in terms of the visual prospect offered to the player that has resonances with dreadful aspects of contemporary life. As will be considered further later, Missile Command can be seen as offering a fictional world of technologised horror.

In any case, the game as it went to market did not represent identifiable coastlines or specific geographical locales, but instead offered a third-person point of perspective, two-dimensional, side elevation of a schematic landscape. The lower part of the screen, which was closest to the player whether the game was played in a stand-up cabinet, cocktail cabinet, or one of the special 'cockpit'-style cabinets produced for the game, contained the players' cities and missile bases. The rasterised, hilly landscape atop which the players' cities and missile bases were perched was presented in a single fill colour which
changed with each stage. The cities were identical in appearance, simply represented as a small cluster of buildings, and missile bases were identifiable by a small cluster of minimally-drawn rockets. However, the landscape the player attacked from, and which they were defending, was dwarfed by the sky from which missiles fell and into which players launched their own defensive fire. This sky was a void – there was no additional diegetic scenery – but it was constantly lit by the tracings of falling nuclear warheads, the presence of bombers and smart bombs, and the slow-blooming explosions of the player’s own ordnance.

In terms of avatars, *Missile Command* was very unusual in the context of concurrent arcade games, but foreshadowed the more systematic and managerial strategy of games of a much later era when home computers became an important vector for home based play. This is true in the sense that, first, although the cities that needed to be defended ‘belonged’ to the player, and the missile bases were the places from which their fire originated, neither of these elements were directly under the player’s control. There was no vehicle or identifiable diegetic surrogate for the player in the game. Instead, the player’s presence in the game was marked by a cursor in the form of cross-hairs. In a similar way, although there were bombers (schematically drawn aircraft) and smart bombs (small, diamond-shaped projectiles that moved unpredictably and avoided players fire) in various stages of the game, the main concern for the player most of the time was the rain of Intercontinental Ballistic Missiles that simply appeared at the top of the screen as bright, tiny pixels, and whose trajectories were marked by extended trailing lines. In comparison to the space shooters considered in Chapter Four, for example, the
threatening presence in the game was not presented as individual contending avatars with specific capacities and the semblance of agency, but rather as an unalterable condition of war that held the game's fictional world in a state of perpetual crisis. Instead of destroying specific entities that threatened them, in Missile Command the player had to contend with things that were launched by an enemy they never saw, nor were able to attack.

The non-diegetic game-state information in the game is presented in a fairly standard way, with the player's score and top score arranged at the top of the screen. Missile Command also has interstitial screens between stages (or waves as they are in this case, as is discussed below) where bonuses are awarded according to remaining cities and missiles at the end of the stage. What is perhaps most striking about the game, though, is the screen that appears when the player eventually fails – a fiery, blooming, strobing explosion with the legend 'The End'. This screen's finality (and inevitability) can be seen in the light of the long-held desire by the designers to call the game 'Armageddon', which was overruled as being potentially confusing by Kassar (since many people would not know what the word meant) (Bousiges, 2003-2006). The superimposition of this message over a clear representation of nuclear conflagration is not necessary in terms of the play experience the game offers, it exceeds the 'Game Over' convention which was already in use in bringing games to a conclusion, and it seems to contravene Theurer's desire to 'strip out any unnecessary elements' from the game. It can, however, be seen as a particularly chilling finale to the ultimately unwinnable game, which underlines the theme of universal nuclear destruction.
Initially, it might seem that unlike *Night Driver*, the haptic interface is not crafted in order to specifically resemble something from within the game’s fictional world, though retrospectively it does have resonances with the project of control that the game seems to lay out for the player. The cursor, which can be moved anywhere within the game’s visual field, is controlled by means of a trackball, and missiles are fired with one of three buttons, each of which corresponds with one of the player’s missile bases. This resembles somewhat for the contemporary player, the mouse-pointer control system that is characteristic of a wide range of forms of computer-mediated work, and is the primary means by which computer users’ bodies are now ‘tied to the computer’ (Manovich, 2001: 110), and is even identified (in web graphics and visual rhetorics of the Internet and computer use) with the very hands of the user. (See White 2006 for extended discussion of the connections between mouse and body.) During the 1980s, trackball interfaces were already employed in a range of applications including CAD stations (special computer-aided design workstations).\(^{33}\) The combination of rolling cursor/trackball for move acts and buttons for expressive acts like selection or firing has become a central part of our everyday experience of informatics and computers. If, as Galloway (2006) argues, certain kinds of contemporary games offer ‘allegories of control’, then it may be that *Missile Command* does also. This will be explored further later in this analysis.

Although the game does not present all that Kassar or Theurer had, early on, imagined it might, it nevertheless succeeds as an evocation of mediated war, almost entirely on the basis of its mise-en-scene. Although no specific stretch of coast is presented, the

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\(^{33}\) See Boznick (1999-2003) and Manovich (2001b) for histories of computer-aided design technologies.
composition of the screen, with its large segments of blank space, and the very schematic qualities of its representation which might otherwise be seen as simply a function of informatic constraints, actually contribute to the game’s attempt to remediate the visuality of radar as an element of the apparatus of technologised war. As in vector graphics games such as *Star Wars* (Atari, 1984), which is discussed briefly in Chapter Four, the spare mise-en-scene is excused or is even continuous with the ways in which technologised vision was imagined in contemporary cinema or television. The much later film, *War Games*, which also connects games and nuclear war, imagines the graphical output of advanced technologies of warfare in a similarly schematic way, where, similarly, the very digitality of the image is foregrounded to underline its technological character. Rather than attempting to evoke a landscape under attack with realistic visuals, as in later games like those in the *Command and Conquer* series (1995-), *Missile Command* successfully evokes the visuality of a system of control with which that landscape might be defended. A similar representational strategy, which also nostalgically references *Wargames* (Badham, USA, 1983), is seen in the recent independent game *Defcon* (Introversion, 2006). A sizeable landscape and the highly technologised visuality and control systems of intercontinental warfare are successfully evoked through the game’s mise-en-scene.

As an enacted narrative, *Missile Command* may seem to have limited promise, since the same basic visual prospect is preserved throughout, and the player is not drawn to move through a changing landscape. *Missile Command*’s use of stages, though, makes it a special kind of enacted narrative, where players are driven to preserve a particular landscape through successive, progressively more aggressive and varied waves of attack.
That is to say that rather than enacting a story through the discovery or revelation that is gradually revealed through play, as for example in Night Driver, what is revealed to the player through persistence of contact with the fictional world is a steadily worsening, and more difficult set of conditions that apply to that landscape, and the inevitability, whatever their skill, of ‘The End’. The ‘story’ that is thus enacted is admittedly ‘nihilistic’ (Burnham, 2001: 224), but is nevertheless present. In this connection, it is important to mark the continuity between levels – a city destroyed in the first stage will remain destroyed; the landscape is not ‘refreshed’ between levels. Some of the aspects of level progression outlined by Newman (2004) can be seen at play here: interstitial level breaks are used to gauge progress and tally scores, they allow short respites from what is a fiendishly difficult game, they sometimes occasion the addition of a city (players receive one of these for every 10000 points), and they allow some variety, since the landscape changes colour in each stage and new kinds of enemies emerge over the opening levels.

As is often remarked (Bousiges, 2003-2006; Burnham 2001; Kent, 2001), the means by which players enact this narrative is innovative in terms of the kinds of Human-Computer Interaction that arcade games then offered, but it also meshes with the gradually escalating tension of the game’s narrative world, and interacts powerfully with its visual design. Missile Command demands move acts as the player directs the cursor around the screen, and expressive acts in the form of firing to that point from one of the players’ remaining missile bases. Unlike the simple, instantaneous expressivity of fire acts and destruction that characterised space shooters like Space Invaders, much of the tension
and difficulty in *Missile Command* arises from the introduction of a delay between the expressive acts of firing and the consequences of destruction of missiles or other kinds of contending elements in the game. Players are required to *anticipate* the path of missiles, judge how long their own ordnance will take to meet the oncoming missiles, decide which missile base is the best in each case, and fire at a point where missiles will be in the future. The characteristics of their defensive ordnance are such that its explosion at the point to which it is directed by the player’s cursor goes on for a second or so. The suspension of time between the moment at which defensive ordnance is fired and the point at which they destroy the oncoming missile adds small curves of anticipation and tension into virtually every expressive act in the game; definitively missing a missile and watching it streak towards a city or missile base repeats on a small scale the macroscopic inevitability of destruction in the game as a whole. In these ways, *Missile Command* cleverly layers its tensions: the ‘micronarrative’ that is each shot is in relation to the larger struggle to progress through each stage and to progress as far as possible through the game.

The way in which the game’s narrative is enacted is also related to the kind of spectacle the game offers. The linear paths of incoming missiles and the rippling, round explosions of players’ ordnance creates a pyrotechnically contrasting range of mobile images against the black background of the sky. This flickering spectacle is a large part of *Missile Command*’s visual appeal, and it is a spectacle the player must enact themselves in order to maintain contact with the game’s fictional world.
Like *Night Driver*, *Missile Command* very clearly embeds its imperatives of play in its mise-en-scene: players largely come to understand the rules by observation of this mise-en-scene, and in relation to the spatial relationships the game sets up so that we can see rules and fictional worlds as being largely intertwined, at least as far as player experience is concerned. The ‘vapour trails’ of the descending missiles also indicate the trajectory of their travel, which is crucial to the player’s anticipation of where they will be at the point at which their own defensive missiles reach them. The ‘rule’ that there is a delay between expressive acts of firing and their on-screen consequences is presented and understood entirely in terms of spaces, and the movement of objects through that space, which are constructed visually (again, it is difficult to imagine a description of the rules of *Missile Command* that did not mention the graphics that are part of its fictional projection). The blooming detonations of players’ missiles, as well as being an element of the game’s pleasurable spectacle, also indicate to the player the effective duration of each projectile’s destructive power, enabling them to make judgements about timing in the absence of an explicit rule set that might tell them this. Cities and missile bases, as well as indicating the fictional territory that the player must defend and the means by which it is defended, offer an indication of the player’s remaining purchase on that world, and remaining cities and missiles are convertible to points in interstitial level breaks. The composition of the game’s mise-en-scene also evinces the way in which imperatives are embedded in the game’s fictional and visual world: threatening elements emerge from the section of off-screen space furthest from the player (except for the infrequent bombers which enter horizontally from left or right); the player defends the segment of the screen closest to them; the order of fire buttons from left to right matches the ordering of the three missile
bases in on-screen space. The imperative to destroy the incoming waves of enemy fire without expending all of the given number of missiles is reflected in the mise-en-scene as well, with the player able to see the depletion of their stock of missiles as time goes on. The player’s inevitable failure, whether local (for example, the loss of a base or city) or global (the loss of the game) is spectacular, marked by explosions or the concluding screen.

In its dispensing with a player avatar in favour of a cursor, in its requirement that the player manage and defend a complex system of bases and cities, and in its imagination of an extensive landscape that is under player control, *Missile command* resembles later games of strategic management. Friedman’s (1995) canonical account of games such as *Sim City* points out that such games are less about identifying with any particular character or element in a game, and more about managing a fictive space and immersing oneself in a ‘cyborg circuit’ of play. In a similar way, *Missile Command* demands that players manage a system that is in perpetual crisis, and under constant attack. Perhaps unlike later games, though, the apocalypse that *Missile Command* presents is ultimately unmanageable. One thing that is disturbing about the game is that ‘the end’ is always coming, and can only be deferred. In similar ways to space shooters in next chapter, it has the player enact the failure of human beings to manage destructive technologies. The overwhelming of the human player and the human race by technology is presented by the game as a source of futility and horror. As is explored further in the next chapter, it is striking that many early arcade games reveal the weakness and unreliability of human beings as components in cybernetic circuits, and focus on the human player as the
weakest link in gameplay. The metaphor of human enfeeblement by technology is presented in *Missile Command*’s fictional world, but the fallibility of the player next to the relentless efficiency of the contending machine is also uncovered in play.

We can relate the fictional world presented by *Missile Command* to a broader genre – which extends to film and print fiction – that deals with the nature and consequences of nuclear war. Brains survey of that genre is unique as a full-length treatment. He differentiates fiction that deals with nuclear war from previous strands of war fiction, mostly in terms of its bleakness:

> Because nuclear war leaves no time for the traditional distinctions, many of the qualities central to other modes of war fiction are irrelevant. Courage is of little use, even for the preservation of one's own life. No amount of loyalty, determination, self-sacrifice or heroism will deflect an incoming intercontinental ballistic missile one jot from its programmed course. The hope of victory, which is all that makes war worthwhile for most, is absent. Mere retaliation can produce at best a pyrrhic victory, at worst, the end of life on Earth. And where traditional war fiction appeals to the notion that in combat human character is tested and the inner self revealed, nuclear war stories are dominated by machinery, not human beings. The rockets and bombs dwarf the officials who launch them, and the logic of battle is dictated by technological considerations as much as it is by the strategic decisions of such officials. (1987)

Brains’ account does not itself deal with videogames, but his claims about the futility of struggle in nuclear war, the dominance of machinery, the dwarfing of the human by technology are all apposite in terms of the fictional world of *Missile Command*, as shown above. The player will lose, and the end will come, whatever their levels of skill and endurance by comparison with other players. The human player is revealed as inadequate beside the relentlessness of the contending technology of play, and also the technologies of contemporary warfare represented in the game’s mise-en-scene. Machinery and
technology is dominant not only in the mechanics of the game’s enacted narrative, and in what is represented on-screen, but in the composition of the mise-en-scène – the pyrotechnical explosions and vapour trails take place in a sky that presses down on the cities. Perhaps the disturbing yet compelling nature of Missile Command comes from its requirement that the player enact the inevitable and futile process of nuclear war, whereas print fiction and films, however disturbing, only asked people to bear witness to such war and its consequences.

If Missile Command can be counted among other narratives of nuclear apocalypse, it is worth noting that it appears at a time when nuclear war fiction was undergoing a revival, and when such narratives in film and print had taken on a markedly bleak tone. Brains (1987) shows that while apocalyptic fictions of the 1950s and 1960s had often wavered between depictions of post-war barbarism and attempts to be optimistic about the consequences of nuclear war, and while during the early 1970s some feminist authors and others influenced by 1960s social movements had offered narratives inflected by protest, the genre fell away in the latter half of the 1970s. Around and following Missile Command’s release in 1980, though,

...protests in Europe and America over the deployment of new missiles and agitation for a weapons freeze reawakened public concern with the issue [and] nuclear war fiction began to revive, with works like Yorick Blumenfeld’s Jenny, Raymond Briggs’s When the Wind Blows, and Whitley Strieber and James Kunetka’s Warday, its title suggestive of the controversial 1983 made-for-television movie The Day After. (Brains, 1987)

As Brains points out elsewhere, nuclear war fiction is inevitably political, and those examples that predict bleak consequences carry an implicit critique of nuclear armaments
and the military-industrial infrastructure. The bleak turn taken during the early 1980s was not only connected with developments such as new missile systems and protest movement, but for Brains it was a moment of realism about the consequences of nuclear war, which avoided the fantasies of ‘right-wing thrillers and science fictional treatments of the postholocaust world’ (Ibid.). *Missile Command*’s presentation of nuclear war as a terminal moment for human civilization, and the human itself, means that it should at least be considered in relation to this realist moment in nuclear war fiction. Frasca’s long advocacy of politically-engaged videogames could also be considered in the light of *Missile Command*’s display of the bleak outcomes of nuclear war. Its unanswerable imperative – to defend against a nuclear attack that has already been launched, for human reflexes and cognition to match a relentless machinic war apparatus – means that players enact the bleak prognostications of concurrent nuclear fictions.

This chapter has developed the concept of fictional worlds in relation to videogames, and has shown through close analyses of specific early arcade games how the fictional worlds of videogames are evocative, how they provide spaces in which players enact fictions with a particular character, and how rather than being separate from, and inessential beside the abstract ‘state-machines’ of rule-sets, such games often embedded player imperatives as features of their fictional worlds. It also showed how the fictional worlds of early videogames can be seen as having a resonance beyond the arcade, and how they connect with broader visual rhetorics and cultural discourses.
It started by surveying the history of the idea that videogames might be narrative-free, in order to see how the ‘ludologist’ impulse to deny the narrativity of games had fed into the work of Juul and its proposal of the concept of fictional worlds. This was consistent with the remainder of the thesis: the chapter developed its account of fictional worlds in dialogue with those approaches likely to be most hostile to the arguments it has made, and in so doing made a contribution to the intellectual history of videogame studies. It brought the most trenchant arguments as to the non-narrativity of games into dialogue with other parts of the literature in videogame studies, and also with debates from aesthetics, new media studies, and other branches of cultural analysis. This was consistent with the thesis’s aim to put videogame studies in a broader context.

It closely considered Juul’s account of fictional worlds in videogames, and showed that while Juul’s work contains many useful proposals, it is still marked by a ludologist impulse to define what is essential and characteristic about videogames apart from their presentation of fiction or narrative. It argued that Juul’s claims that an essential ‘gameness’ underlies all games, and that games are assembled from ‘real’ rules and ‘imagined’ fictional worlds, was premised on idiosyncratic ontological claims, misunderstandings about the nature of modal logic and fictional semantics, and flew in the face of accounts of gameplay developed in games journalism.

Seeking a different basis for the exploration of fictional worlds in gameplay, the chapter explored the work of Jenkins and Manovich on the ‘narrative architectures’ that are present in games. Drawing particularly on Jenkins, it derived the ideas that game
designers create evocative spaces, call upon players to enact particular kinds of fiction in those spaces, and, crucially, embed cues and clues about how the player is supposed to relate to the environment ('imperatives' in the language of this thesis). Even though early games are often considered to be paradigmatic narrative-free experiences of 'pure gameplay', it undertook to show through close analyses how two early games projected fictional worlds in ways that resonated with Jenkins’ descriptions, and also with this thesis’s emphasis on the audiovisual aspects of videogames.

In respect of Night Driver, the chapter showed that its evocative visual spectacle, its presentation of a space for the player to enjoy and traverse, and its presentation of its spatial imperatives were all intertwined, and that the game also had important relationships with the representation of driving in other audiovisual media. Analysing Missile Command, the chapter showed that, once again, evocation, enactment, and embedded imperatives were all present in the mise-en-scene, and integrated with the game’s fictional world. Also, it showed that the game had a relationship with a broader, transmedial genre of fiction that considered the consequences of nuclear war. In revealing the limitations of a human operator – in its remediated representation of futile, technologised war, and in its bleak imperative to enact a nuclear conflict which is necessarily terminal in relation to the human – the game’s fictional world had a relationship with broader cultural discourses and developments that an account of its abstract rule-set would be necessarily unable to account for.
A necessarily selective textual analyses has been used to develop this chapter's claim that rules and imperatives are often embedded and interconnected with fictional aspects of videogames, which are the focus of players' engagement. It might be argued that close encounters with just two videogames cannot tell us very much about early games, let alone the aesthetics of videogames in general. But in each case, part of what is being advanced is the argument that general claims, such as the idea that fictional worlds are less than essential to what videogames do, are being contested. This thesis's commitment to the idea that piecemeal critical description—a necessarily open-ended and incomplete method—can tell us more than general claims made in advance of critical encounters implies selectivity. The critical analyses here tested the idea that games' narrative architectures also inform and integrate players' experiences of games rules, and its refusal of the 'romance of code' that would see rules as a buried essence that are revealed to the cognoscenti. They have also tried to show how sophisticated the fictional worlds of even early arcade videogames are. Having said this, the ideas that underpin this thesis mean that it is necessarily open to the disputation of these claims through further close analyses. Given this thesis's concern to prioritise close textual analyses at the expense of universal claims about games, its concern to historicise analysis of games, its desire to connect early games to a broader media and cultural environment, and its concern to advance general critical claims about them from specific experiences of play, close analysis followed by a strategy of clearly relating games to their broader context is necessary. Nevertheless, any close analysis is necessarily provisional and open to modification in the light of further analysis—only generalised essential claims are definitively problematised. The idea that videogames construct narrative worlds that can
be meaningfully understood in relation to one another, and to a broader media environment, is developed further in the following chapter, which considers the genre of the space shooter in detail.
CHAPTER FOUR

Genre and the Space Shooter

At the root of all science fiction is the fantasy of the alien encounter.


The milieu of the science fiction is one of contested space, in which the generic oppositions are determined by some aspects of the [human] cultural community and the conflict itself.


Plainly, the writers and readers of science fiction share more than a deep interest in technology itself, in technology for its own sake. What they share is a probing, exploratory interest in human-machine relationships, for underlying these one-dimensional stories is a many-sided interest of what Australians might call the ‘mateship’ of man and technology...It is the only genre we think of when the matter of humanity and the machine comes up...For all their ingenuity, theatricality and wit, none of the hundreds of science fiction stories about aliens invading Earth matches in queerness that other invasion of Earth...[which is] the flooding of machines out onto the surface of our planet, machines not coming from Mars but from inside our own brains. Nothing in fiction matches this real-life invasion, we recognise, but only when we are inside science fiction do we see the invasion clearly.


There is an emerging discussion in videogame aesthetics concerning genre. Genre study in relation to other media forms is a common and well-established scholarly method, though wherever such study takes place, there is still significant debate about the nature of genre such as what it inheres in and how it can best be analysed. Because videogames require the configurative activity of players, as in the already-discussed debates about
narrative, there are special problems and special claims made for them in terms of genre. Some scholars attempt to think through videogame genre in terms of interactivity and others give various reasons for resisting a 'text-centred' account of genre which might take representational aspects of videogame design into account. In line with the established emphases of this thesis, I offer here an approach to videogame genre that takes account of representational aspects of videogames and comparative relationships with other media, and which importantly, fleshes out the picture of early videogames as a distinctive period in media history by constructing a genre analysis of 'the space shooter'.

The first part of the chapter offers a critical survey of prior approaches to genre in videogames. The very real problems facing both genre scholarship and the achievements of videogame scholars are unpacked by reference to a range of authors, but particularly the work of Newman (2004) and Wolf (2002). In response to the divergence of these accounts of genre from the way in which fans, journalists and the industry yend to talk about videogame genres, I suggest a framework that sees genres as multidimensional and based on family resemblance between members rather than strict identity or formula. Referencing precedents from genre theory in film, literature, and other areas, I suggest an approach that begins with genre classifications worked out by fans, journalists, and the industry which can be deepened through scholarly analysis. In such an analysis, genre is not a strict formula but a set of relevant resemblances that, when grasped, can illuminate our understanding of individual games within genres, the genre as a whole, and comparative relationships with other media.
The second part of the chapter applies this to a crucial genre in early videogames which still persists in non-mainstream areas of the games industry and game culture – the space shooter. I suggest that this genre participates in a broader ‘kind’ of science fiction texts. This is reflected in its foregrounding of certain types of image and its use of science fiction’s thematic preoccupations – particularly technology, the alien Other, and space (in the sense of both outer space and space as an ontological or phenomenological category). I suggest that the arcade-based space shooter, like much science fiction, concerns itself with technological change and that further, the technology it is most concerned with is videogames technology itself, and the relationships it proposes with, and role it prepares for the human. Video games reconstructed the screen as a place for spatial contest, their apparent offering of a contending intelligence to the player, and their ‘cyborg’ complication of identification and identity made them a new and distinctive form of technology. The ‘queerness’ of videogames in a context where they were a new and very public medium gave rise to anxieties and ambivalences that could be ‘played out’ in space shooters. In this sense, space shooters represent a reconstruction, reconfiguration, and unique embodiment of the broader ‘kind’ of science fiction.

Needless to say, this chapter will not exhaust the possibilities for the emerging debate around genre in videogame studies but it will contribute to it by making suggestions about how considerations of representation and the broader media context that videogames take their place in might be incorporated in these debates. It is also important to show how early videogames can be seen to shape and be shaped by genres that are partly audiovisual in their character and which borrow from existing media traditions.
What this chapter will not do is offer a developmental history of the space shooter; instead its consideration of these games is organised thematically. The method for showing that space shooters have certain material in common and further that they draw on science fiction as an established tradition is comparative across a range of texts. Unlike previous chapters, then, this one does not rely on in-depth analysis of one or two games, but rather on grasping what is shared across several, related examples.

‘Genre Trouble’? An Emerging Debate

The question of genre in relation to videogames is one that, at the time of writing this thesis, is only beginning to receive comparable attention to other topics in aesthetics, such as questions of narrative or efforts to formally define games. Jarvinen was able to write in 2002 that:

...[T]he whole question of genre is largely unexplored in game studies. Generally it is accepted that computer and video games constitute a cultural genre as such, but the distinctions, continuums and variations within that cultural genre remain uncharted. (2002b)

Jarvinen’s claim was fair at the time: only isolated examples of genre study such as Myers’ (1990) sophisticated ‘hierarchy’ of genres had been published. Fields dealing with other media such as cinema, television, or literature have included systematic genre study as a long-standing feature of scholarly debate, and in those fields, genre analysis has come to assume the scope of a subdiscipline. Of course, videogame studies is a relatively new field of inquiry, but from 2006, some authors have called for more genre studies as a way of bridging the gap between broad accounts of videogames in general and highly specific readings of particular videogames:
There is a strong tendency in game research to describe the gaming situation in the most general and the most specific terms only. We are eager to connect the local principle to the big system, or the fleeting moment to the grand historical formation. Technologies, conventions, institutions and identities that fall in-between those two poles are too often left unexplored. The advantage of the concept of genre is that it allows us to highlight specific contexts (reducing diversity and generality) without restricting our focus to the singular occurrence. (Klevjer, 2006)

Klevjer sees genre studies as a way of offering more texture and a greater sense of systematic diversity to accounts of videogames and game culture. Between the abstractions of theoretical models intended to capture the essence of all videogames and studies of single videogames from which it is difficult or illegitimate to generalise further, the intuitive appeal of genre studies is that they might offer a more localised understanding of videogame texts, contexts, and play. More simply, Carr et al. argue that ‘the idea of genre is very much an everyday part of gaming. It is key to how games are produced and marketed, and central to their evaluation by critics and players’ (2006: 18).

Similarly, Jesper Juul claims that:

Genres do play a large role in the production and consumption of all types of cultural products. Filmmakers consciously make an action movie, and the movie audience consciously watches an action movie with certain conventions and formula. Therefore, genres are not just cold abstractions that a theorist enforces upon the world, but actual parts of culture that should not be ignored. No genre division is “perfect”, but neither can genre be ignored when discussing cultural products or user experiences and practices. (2006)

For Carr et al. and Juul alike, calls for genre studies are motivated by a sense that genres are real in the sense that they frame production, promotion, and consumption of videogames. For these writers, theorising the way that genre systems and conventions are played out and evolve in videogames is essential to understanding what designers,
players, and industries do. There is a sense in both Carr et al.’s and Juul’s arguments that genres also inflect representational features of videogames.

Despite this growing enthusiasm for genre study of videogames, there are specific problems with developing an account of videogame genre, particularly one that is consistent with this thesis’s focus on the importance of representational aspects of videogame design and early videogames. Some of these problems arise from the obvious and necessary contribution of the player in making interactive or ergodic experiences happen, some from doubts around the use of industry or journalism derived genres in a scholarly context, and some from the concern that genre study might collude in presentations of videogames as formulaic or might taint them with the ‘mark of marginality’ (Whalen, 2004) that genred cultural products carry.

Newman and Genre

James Newman (2004) provides a useful map of these concerns in recommending context of play and player experience as better ways of classifying videogames than text-centred analysis. Reviewing Berens and Howard’s (2001) recommendation that industry-derived genres be used as a starting point, he argues that their deployment in scholarship is likely to be problematic. This is because they are ‘nebulous’ and vague, and because genre analysis on this basis is likely to focus on ‘text-centred’ analysis with the result that they might obscure ‘...the location of play and players within specific socio-cultural, historical and even interactional or ‘ludic’ contexts’ (Newman, 2004: 12). Rather than seeking what
he calls 'in-the-text' meanings, Newman forwards the location of play (for example, home vs. coin-op play) and the 'type of experience' that particular videogames offer as more salient criteria than 'content-derived classifications' for distinguishing types of videogames. Newman connects these worries to poststructuralist, Bakhtinian and cultural studies-derived emphases on the role of the audience/reader/player and the context of consumption in inflecting and even creating meaning. Newman also has concerns that the concept of genre still carries unfortunate connotations of the formulaic and frankly commercial, and these are precisely the associations that many videogame scholars are trying to go beyond in analysis: he claims genres ‘...betray a desire to decry the videogame as formulaic and the player as an unsophisticated dupe,’ (2004: 12) and unsurprisingly, given the relatively recent emergence of genre as a topic in videogame studies, he associates their use in videogames research largely with so-called 'media effects' research.

Newman's claim that the context of play and the experience of players are more important than 'in-the-text' meanings reflects his recognition of, and his own answer to, the problem mentioned in Chapter One of this thesis – the one that Carr et al., in *Computer games* (2006) call the 'dilemma' that media studies faces in choosing between the audience or the text as a focus of analysis. As Carr et al. indicate, this dilemma is particularly pressing in videogame studies. Visibly, in an interactive/ergodic medium, videogame players are involved in shaping their own experiences, and the way in which players address themselves to games varies with context (between, for example, arcade-
based and home console play). On the other hand, representational aspects of
videogames seem to demand some place in accounts of genre. As Carr et al. put it:

When it comes to genre designation, gameplay is of crucial import, but it
is still only part of the story. Our research with players indicates that,
while expertise in and loyalty to particular kinds of gaming does matter,
players also select and value particular games for their representational
aspects. (2006: 17)

For Newman, though, in genre studies the danger of underestimating the specifics of
players’ experience in videogame play outweighs the risk that the specific qualities of
videogames as texts might be overlooked. Although Newman works productively with
the representational aspects of videogames at other points in his book, concerns arise
about the problematic status of importing vernacular genres to scholarship, the vagueness
of existing genres, and the possible collusion of genre studies in the construction of
videogames as a formulaically produced cultural form. Perhaps most crucially, though,
Newman is concerned that attention to the text might obscure what players do and the
context in which they do it.

Genre, Interactivity, and Wolf’s Typology

Other authors try to find different ways of striking a balance between considerations of
player activity and features of the videogame text in producing accounts of genre. Some
writers in this area have followed the widespread feeling that ‘ergodicity’ interaction, the
player’s configurative role, is essentially definitive of videogames as a medium and have
carried this definition into the construction of theories of genre. The necessary corollary
to this view is that the genre classifications for videogames will be on a different footing
to genre studies of other media. Greg Costikyan has argued that:

..."genre" has quite a different meaning for games than it does for fiction,
or film; it is not based on theme (science fiction, noir, musical comedy),
but on a gameplay dynamic, and in this regard, is closer to the use of
"genre" for music, where it refers to a particular sound. (2005)

The idea that a 'gameplay dynamic' or 'pattern of interaction' would be crucial in genre
studies of videogames is present in Bjork, Lundgren and Holopainen's paper, 'Game
Design Patterns', wherein they:

...present a model to support the design, analysis, and comparison of
games through the use of game design patterns, descriptions of
reoccurring interaction relevant to game play. The model consists of a
structural framework to describe the components of games, and patterns of
interaction that describes how components are used by players (or a
computer) to affect various aspects of the game play. (2003)

The work of the latter authors is broadly in the 'ludologist' tradition in that it seeks deep
continuities between videogames and pre-digital or traditional games. Unsurprisingly
then, they focus on recurring 'patterns of interaction' rather than the visual environments
of videogames, the themes they develop, or their participation in broader genres that
might be evident in narrative media, such as horror, science fiction, or westerns.

Of all previous efforts to understand videogame genre by means of 'patterns of
interaction', Mark J.P. Wolf's in The Medium of the Video Game (2002) stands out as the
most ambitiously exhaustive and the one that takes furthest the idea that the player's
'configurative practice' is determinative of the nature of gameplay. Wolf draws first on
Thomas Schatz's idea of genre as a communal and cooperative celebration of 'collective
values and ideals' (Qtd. In Wolf, 2002) emphasising the audience's role in confirming the
‘ritual’ of generic film narrative. In a way that goes beyond the film audience’s sharing of certain values with the filmmaker, Wolf proposes that the videogame audience must apply shared values to the activity of gameplay. For Wolf, thinking about iconography and theme as constitutive of film genre (as he claims Ed Buscombe does), lacks extensive application to videogames as many games are non-narrative and iconographic classification may lead us to group together games that are very different gameplay experiences (Wolf’s examples include Space Invaders [Taito, 1978] and Defender [Williams, 1980]), or to separate games that are similar in terms of ‘gameplay’ (his examples here are Chopper Command [Activision, 1982] and Defender.) For this reason, he proposes that styles of interactivity – and interactivity is here defined in terms of the objectives players work towards (in a sense that is close to this thesis’s conception of imperatives) – is a better mode of classification for games.

Wolf finds support for this in Andrew Tudor’s (1976) idea that in relying on textual themes as classificatory criteria, we rely on inaccessible authorial intention. Whereas, Wolf thinks, a designer’s intentions are hard for the critic to get at, the player’s objectives in the context of a game are perfectly clear, and thus this is a more reliable basis for the critic’s classificatory activities. This anxiety about ascribing a designed intentionality to videogames, and contending that what players are called upon to do in videogames is more legible, is shown by reference to Carr et al.’s (2006) ‘media studies dilemma’ in relation to genre studies. Wolf is inclined to see what players do rather than representational features as the crucial ordering and classifying criterion. This is
somewhat surprising given that a great deal of Wolf’s other work, as referred to earlier in this thesis, does extensively analyse representational aspects of videogames.

On the basis of his criterion, Wolf nominates 42 separate videogame genres that ‘...take into account the dominant characteristics of the interactive experience and the player’s goals as well as the nature of each game’s player-character and player controls’ (2002: 116, emphasis mine). Though Wolf concedes that genres may overlap and that particular games may have membership of more than one genre, the list is intended to be exhaustive at the time of writing (he acknowledges that new genres can and do arise all the time in videogames). The list is patterned after the Library of Congress Moving Image Genre Form Guide (Taves, Hoffman & Lund, 1998): it gives a genre’s name, definition and a short annotation with examples named, and no individual games are explored at length. This is a classificatory project of the broadest possible scope, and the most extensive possible taxonomy of videogame genre is Wolf’s stated goal, along with developing the principles by which the taxonomy is arrived at. In line with recent interdisciplinary study of classification and categorisation, we can call Wolf’s proposals about videogame genre ‘classical’ or ‘Aristotelian’ which holds that ‘...things are in the same category if and only if they have certain properties in common’ (Green, 2001). In this kind of classification, the binary establishment of classificatory categories is an end in itself, and description is limited to the extent required for classification. As will be seen further on though, there are other ways of classifying and illuminating genres.
Wolf’s reminder that iconography, theme, and other existing markers of audiovisual media genre are by themselves inadequate to the study of games is salient. To proceed solely on the basis of the markers of genre that have been used in some branches of film studies would do more than run the risk of misallocating genre classifications. It would be to ignore all that particular games or families of games provide in terms of ‘enacted narratives’. It would deny that players often understand the information behaviour inscribed in game’s information design by analogy with other games with similar imperatives for player action. It would mean misunderstanding the pleasures to be had within genres of gameplay and the nature of the creative practice that has given rise to the genres in question. It would not only mean misunderstanding games on their own terms, it would fail to adequately differentiate games from other kinds of audiovisual experience (such as film or television), and on the other hand we would be unable to understand affinities between games, or the relationship games bear to other new media forms, such as what Sean Cubitt calls ‘workplace media’ (2002). Clearly, recognising what particular games enable and require of players will form an important part of any account of videogame genre.

**Criticisms of Wolf’s Typology**

It must be said, though, that Wolf’s genre analysis, based on an emphasis on players’ goals, groups together some strange bedfellows. Wolf’s first example illustrating the distinction between primary and lesser objectives is *PAC-MAN*:

The main objective in *PAC-MAN*, and the one by which a player gains points and advances levels, for example, is the eating of yellow dots. In
order to do so successfully, the player-character must avoid pursuing ghosts as well as navigating a maze. Thus while \textit{PAC-MAN} may be primarily classified as a “Collecting” game, we may also classify it as an “Escape” or “Maze” game, albeit secondarily. By beginning with the interaction required by the game’s primary objective, we can start to divide the wide variety of video games into a series of interactive genres. (2001: 115)

On this basis of collection as a gameplay goal, Wolf groups (among others) \textit{PAC-MAN}, Namco’s aerial pedalling game \textit{Prop Cycle} (Namco, 1996) and abstract spatial game \textit{Qix} (Taito, 1981). All feature collection of some kind as a primary objective, and therefore constitute a genre according to the criterion of styles of interactivity.

One feels that grouping these games together is far more counterintuitive than grouping together \textit{Space Invaders} and \textit{Defender}, which Wolf separates due to their differing primary goals. There are qualities of \textit{PAC-MAN}’s world, beyond the frenzied collection of dots or even negotiating a maze or avoiding ghosts, which seem in an important way to further characterise it, constitute its world, and inspire an affective investment in remaining in it. This includes not only the aesthetics of the stage-by-stage mazes, the hypnotic repetition of the in-game music, and the digital sounds that pepper gameplay with emphasis, but the minimal yet affective anthropomorphism of the player avatar. All of this is integral to the richness of \textit{PAC-MAN}, and when we take account of this, it might seem that there is little to be gained by assimilating the game to the abstract spatial land-grab that is \textit{Qix}, or the first-person, three-dimensional, Pedal-Plane canyon ride of \textit{Prop Cycle}. A closer look makes Wolf’s question of the ‘dominant characteristics of the interactive experience’ more complex. It can be argued that \textit{PAC-MAN} has generic relationships with other games such as its own sequels, or \textit{Mouse Trap} (Exidy, 1981),
which shares it goals of collection but also representational similarities such as mazes and adversarial machinic avatars patrolling the maze.

More importantly, though, the idea that the criterion of goals are more objective or reliably legible than factors like iconography and theme — both tied more to representational aspects of videogames — is troublesome, if for no other reason that these things seem so closely bound together. The collection of things as a goal in *PAC-MAN* is, of course, defined by screen images; the player can only make sense of their goals when playing *PAC-MAN* by reference to on-screen images and spaces. The affordances and constraints offered to the player by the game (its imperatives) are all understood in relation to the capacities of an on-screen character, *PAC-MAN*, and the fictional environment in which the player finds him. In this sense, Wolf's idea that player's objectives and the designer's intentions (in terms of the visualisation of the environment) are any more or less accessible to critical analysis than one another seems problematic. In design they are bound up together, put into a relationship in the process of design, and if one is difficult to discern, understand or access, so is the other. And if the goal of collection did not become a feature of *PAC-MAN*, and indeed a legible feature, without the clear intention of its designers, how did it get there?

If we suppose, following Todorov and other genre theorists, that genres provide a 'horizon of expectation' for their audiences, or 'models of writing [or design]' for cultural producers (Todorov, 1990: 42), it is difficult to see how Wolf's genres provide resources for either. There are clear doubts that the texts he assembles in his genre
categories can be seen to relate to one another in this way. When it comes to playing *Mousetrap*, it seems very likely that the player who has played *PAC-MAN* will be able to make sense of their goals very quickly, whereas it is very unclear how well prior experience of playing *PAC-MAN* would help during one’s first game of *Prop Cycle*. Even if it is possible to understand the games as having a common goal of collection at a sufficient level of abstraction, there do not appear to be a large range of additional relevant similarities between *PAC-MAN* and *Prop Cycle*, and certainly too few to imagine that audiences would have similar expectations of each, or that one has closely informed the production of the other.

Järvinen’s critique of Wolf’s efforts is mainly concerned with the quantity of genres Wolf’s analysis produces, but it hints at the most fundamental difficulty:

Mark J.P. Wolf has come up with 42 different genres of games according to the kind of interactivity they offer. However, if we see genre-based categorizations as a means of making sense out of a larger whole, 42 genres ceases to be useful. Or, we have to accept that the diversity of games requires many more genres and subgenres than traditional media products which have benefited from genre studies. Or, that a game genre equals hybridity, because game genres are complex sums of interaction and rule mechanisms, audiovisual styles, and popular fiction genre conventions. (2002b)

There is no immediate reason to think that there ought to be an *a priori* upper limit on the number of genres, or that the identification of genres ought to be limited by ‘usefulness’, however this might be defined. More importantly, Järvinen’s last suggestion that genre is a complex category where a text’s membership of a generic family is by virtue of a range of attributes, identifies something Wolf has missed: that particular cultural products’ participation in genre is complex and multilayered. By classifying primarily according to
a criterion of goals which are largely abstracted from representational aspects of videogames, and by largely suspending considerations of relationships with a broader cultural field, Wolf is led to group videogames that do not on the face of it have a great deal in common.

Wolf’s account of genre does not, in other words, take account of what Neale calls the multidimensional character of genre. At the end of his survey of recent genre theory, including film theory and work derived from speech act theory, Neale writes:

There remains a degree of common ground...All agree that genre is a multidimensional phenomenon and that its dimensions certainly include systems of expectation, categories, discourses, texts and corpuses of texts, and the conventions that govern them all. Some stress the primacy of expectations, others the primacy of texts...What seems clear is that all these dimensions need to be taken into account. (2000: 28)

In short, genre is not the kind of thing that can be accounted for by differentiating texts by means of a single criterion. Genres are constituted by a variety of factors, and for this reason genre studies cannot be built on attention to a single aspect of texts.

Carroll, in the Philosophy of Horror (1990) suggests further that our understanding of different genres might be informed by different factors. Whereas one of the things that distinguish Westerns, for Carroll, is their use of and focus on a particular kind of landscape, horror - a transmedial genre in his view - is distinguished by its production of particular affects in the audience, involving the physical manifestations of fear. As a result, for Carroll, it should not be assumed that all genres can be identified in the same way.’ (14) What this suggests is that a single criterion for classification is likely to actually miss the most important aspects of a particular genre – the differentiation of
westerns and horror solely on the basis of, say, iconography would actually pass over the most crucial characteristic of horror texts.

What this further indicates is that genres cannot be imposed by a taxonomy using *a priori* categories but must be analysed as they are found – in use by audiences, producers, and through our sense that certain texts share relevant similarities. Whalen has criticised Wolf’s typology because:

...[it] reveals by exaggeration the typical problems of typology created ad hoc in the process [of] creating journalistic coverage of the game industry. [Wolf’s] focus on interactivity logically excludes genre-labels inherited from films like science fiction but apparently extends to include interaction with the hardware itself. In other words, Wolf’s isolation is too specific and yet too inclusive of disparate descriptors. (2004)

In other words, Wolf’s analysis, based on ‘interactivity’, necessarily excludes the possibility that game genre might be informed by a broader mediascape, but the idea of ‘interactivity’ is not specific enough to categorise games leading to a typology that is disfigured by category errors. For example, Wolf proposes ‘descriptors’ like ‘demo’ games alongside ‘driving’ and ‘collection’ games, and for Whalen such descriptions ‘answer different questions about games’ even though they might superficially seem to characterise what players do in these games.

These criticisms are apposite as far as they go. Wolf’s abstraction of interaction from videogame textuality and contexts of play means that his genre typology is separate from traditional generic categories, like science fiction, which seem to inform representational aspects of many videogames and can thus be seen as too specific in its selection of genre-
defining criteria. Wolf is, as has been shown, also inclined to assimilate videogames that have little in common.

But Whalen’s own solution to Wolf’s difficulties seems, in the end, to encounter similar problem. Whalen’s (2004) diagnosis of the problem with Wolf’s analysis, as well as other scholarly attempts at genre study such as Carr (2003), is that received methods or categories are imported to the consideration of games. Wolf, for Whalen, falls into the ‘ad-hocracy’ that characterises journalistic and fan-generated genre analysis (while Carr is criticised for unreflexively importing Janet Murray’s distinction between rhizomatic and labyrinthine texts to genre analysis of games). This leads to a ‘formalism’ that tends to ‘isolate games as a-historical formal objects’ in a way that is ‘not appropriate for a dynamic and technology dependent medium’ (Whalen, 2004). Whalen’s solution to this kind of ‘formalism’ resembles Newman’s: he proposes descriptors such as ‘massive’, ‘mobile’, and ‘real’ for genre analysis in videogames, which take into account hardware types and gameplay environments.

But the source of these difficulties is perhaps not the one Whalen nominates. Given that Wolf’s analysis tends to separate games that seem to have relevant things in common, or games that fans, journalists, and the industry would ordinarily put together (like Defender and Space Invaders), while also connecting seemingly disparate games, it is difficult to see how journalistic modes of classification are responsible for Wolf’s difficulties. I would argue that the problems with Wolf’s typology proceed precisely from his rejection of generic labels that are in common usage in fan communities and journalism.
At this point there is an opportunity to address both this difficulty in Wolf’s analysis, as well as the more general anxiety around using industry, journalism, or fan-derived genre categories. To throw the differences between this thesis and Newman’s, Wolf’s, or Whalen’s analyses into relief, it is considered here that generic labels that circulate in the industry or among fans are an essential starting point for scholarly analysis rather than something to be avoided or put aside. This approach to ‘folk taxonomies’ (Neale, 2000: 41) – the genre classifications that are used in everyday fan and industry discourses – has precedents. In his book on the Hollywood musical, Altman’s approach to genre employs culturally familiar or ‘native’ genre descriptions as a founding hypothesis for further scholarly work:

The fact that a genre has been previously posited, defined, and delimited by Hollywood is taken only as *prima facie* evidence that generic levels of meaning are operative within or across a group of texts roughly designated by the Hollywood term and its usage. The industrial/journalistic term thus founds a hypothesis about the presence of meaningful activity, but does not necessarily contribute a definition or delimitation of the genre in question. (1987: 13)

Neale notes that for Altman, the use of ‘...industrial and journalistic terms is...just the first step in a multi-stage process’ (2000: 41). In taking ‘folk taxonomies’ or popular categories of classification as a starting point for more considered scholarly analysis, it is similar to the method developed by anthropologists like Ryan in the analysis of folklore (Ibid.). The reason for Altman, and Neale too, that native descriptions need to be taken into account in genre analysis is that genres have a public, social dimension, and as well as being attributes of texts, they are recognised as such by a reading community, including fans, journalists and cultural producers. If genres seem insubstantial or
superficial at the beginning of this process, it is precisely the job of scholarly genre analysis to bring out their character more clearly, and to develop examples in a way that illuminates individual texts that are held to belong to genres in question. Taking this idea into the analysis of videogames, it is possible that scholarly analysis can profit by starting with genre classifications that have been nominated and defined by fans and the industry and from there attempting to articulate the characteristics of generic families in more reflexive, theoretically-informed ways. Certainly, the latter part of this chapter, which carries out a genre analysis of the category of the space shooter, so important in the period of early games, proceeds from the use of such categories by fan communities and sectors of the games industry.

It may be that, however much illumination is provided by such processes of scholarly analysis, genres still retain some vagueness in their relationships with specific texts because concepts of genre cannot be boiled down to an unvarying characteristic, or list of characteristics, that all members of a genre share. We can see this as a general epistemological problem of classification – the problem of universals and particulars – impacting on the project of genre analysis. The anxieties that lead to schemes of genre classification like Wolf’s that are, perhaps, too rigid and abstract could be reactions to this problem. Buscombe, commenting on Wellek and Warren’s classic enunciation of the problem, calls this:

...another aspect of the wider philosophical problem of universals. With regard to the cinema, we may state it thus: if we want to know what a western is, we must look at certain kinds of films. But how do we know what films to look at until we know what a western is? (1986: 13)
The desire to pin genres down with a strict criterion or criteria is an attempt to circumvent this problem, or overcome the anxiety that sometimes makes it difficult to make a start with genre. But there is philosophical work that, put together with a preparedness to learn from folk taxonomies, may help avoid this difficulty. After trying and failing to establish a definite set of criteria which will suit all cases for identifying Hollywood romantic comedies, Brian Henderson writes: ‘If we cannot define romantic comedy, can we talk about it at all? Aristotelian logic says no, Wittgensteinian logic says yes’ (1986: 314). Henderson then refers to the Wittgensteinian doctrine of family resemblance: in many cases where we are trying to justify the ways in which we classify things, although we often cannot provide an account of what is essentially shared by all members of a group (as in Aristotelian classification), this does not mean our classification lacks application, because the relationships between members of a group are often complex. As Wittgenstein famously puts this doctrine in relation to language:

Instead of producing something common to all that we call language, I am saying that these phenomena have no one thing in common which makes us use the same word for all, but that they are related to one another in many different ways...Consider for example the proceedings that we call “games”...What is common to them all? Don’t say, “There must be something, otherwise they would not be called games,” but look and see whether there is something common to all. For if you look at them you will not see something that is common to all, but similarities, relationships, and a whole series of them at that...we see a complex network of similarities overlapping and criss-crossing, sometimes overall similarities, sometimes similarities of detail...I can think of no better expression to characterise these similarities than family resemblances. (2001: 27)

Wittgensteinian considerations have informed the development of the ‘prototype theory’ of classification which has transformed work in areas of biology and the social sciences:

‘The modern prototype theory of classification seeks to show that categories frequently
involve stereotypes, fuzzy boundaries, and family-like resemblances; that some category members can be more central than others’ (Green, 2001). This is in part because the criteria for many of the categories used in many branches of knowledge and everyday speech are premised on the public use of such criteria, rather than the internal logical coherence of categories. To be clear: saying that genre is a family resemblance does not mean that genre is not usable, or that genre classifications have no meaning, that texts do not have characteristics that cue audience expectations, and that textual production is not itself informed by an understanding of genre. On the contrary, it means that genre descriptions have a recognisable application, but the relationships between the texts they describe is very unlikely to boil down to a single characteristic, or even a list of characteristics, that covers every member of the family. Wittgenstein’s work also suggests that there are often times we know what a category is, and can name it and assimilate things to it, without having clear and final criteria of membership for it. The principle reason for doing genre analysis is subtly changed in the light of such considerations. It becomes less a matter of providing watertight classificatory schema, and more an effort to illuminate individual works or examples in the light of their complex relationship to a larger family of works and to a public category that informs consumption and production.

These ‘loose’ conceptions of genre are employed in illuminating genre analyses. Douglas Pye offers a near-Wittgensteinian vision of genre in his own account of the Western, when he says that recognising generic works involves:

...the intersection of a range of categories, the interplay of which generates meaning within a context narrow enough for recognition of the
genre to take place, but wide enough to allow enormous individual variation. If the categories are thought of as involving conventions of various kinds, it is easy to see why exhaustive classification of generic elements is impossible. (1986: 143)

In this kind of work, genre has considerable flexibility, and complex networks of resemblance rather than determinant a priori properties. Introducing his own exploration of the Hollywood ‘genre of remarriage’, the romantic comedy, Cavell writes:

...[M]embers of a genre share the inheritance of certain conditions, procedures, and subjects and goals of composition... and that each member of such a genre represents a study of its conditions, something I think of as bearing the responsibility of its inheritance. There is, on this picture, nothing one is tempted to call the features of a genre which all its members have in common. (1981: 28)

Variation will take place within the ‘categories’ that make up genre in different ways in different works; as long as there is sufficient family resemblance to allow recognition, there is a wide range of free play for individual variations in particular texts. Both authors consider that generic texts are worth looking at precisely because of the tension between the individual example and the family, and because of the enormous variation that is possible given an underlying relationship with a family. Derrida, in an oblique way, agrees, when in ‘The Law of Genre’ (1992) he argues that while all texts participate in a genre, participation never amounts to belonging. In part, Derrida is arguing that texts always participate in a number of genres, but also that texts can never be seen to correspond with any essential definition of a particular genre.

In this sense, the ‘nebulosity’ that Newman sees as a problem for taking the ‘native’ genre classifications of the industry into scholarly analysis, and which perhaps drives Wolf into abstracting interactive goals and making them definitive of genre, is actually a
normal feature of genres that reflects the diversity of texts which can nevertheless be seen to relevantly and informatively resemble one another. Part of the point of genre studies, as Roberts (1990) and Neale (2000) among others agree, is the illumination of variation within genres; among the pleasures of generic texts for audiences, along with those of recognition and familiarity, are those of change and difference.

This brings up a crucial point to do with the concern that genre analysis, premised in part on features of the text, is born of a desire to present videogames as formulaic. This is premised on the fear that a text’s proven participation in a genre will be seen only as a failing, a constraint, and proof positive of an absence of cultural value. The idea that ‘generic’ texts are in some sense, inferior, mass produced, or formulaic is one that Buscombe (1986), Threadgold (1989), and Neale (2000) trace to Romanticism, and which informs Modernist attitudes towards popular texts. This is a historically specific attitude to generic texts, as Kress and Threadgold point out:

Genre is valorised very differently in different contexts. From the Romantics through modernism to postmodernism, genre is a devalued term in the dominant literary/aesthetic discourse...In classical periods...the reverse was the case. Literature had to be generic to be considered literature. (1988: 219)

Various stripes of modernist theory in particular equated the generic with the popular mass text, devaluing it as formulaic and pitched to a debased public. Adorno’s work on the culture industry conceived of standardisation and commodification as the essential characteristics of the mass cultural objects: generic texts are therefore a simple reflection of the culture industry’s operations (Adorno, 2001). Similar views of popular, generic texts were evident in a range of scholarship, and literary critic Walter Kendrick’s
thoughts on literary romances are representative of views of genre production across what Andreas Huyssen (1986) describes as the ‘great divide’ between modernism and mass culture:

Escapist, masturbatory, exploitative – romance is all these things. It’s a typical mass-produced American product, catering to a public so dull and timid that even when it dreams, it can only conceive what it dreamt before. (Kendrick quoted in Roberts, 1990: 150)

It is perhaps this kind of use of the idea or concept of genre that Newman fears most when he warns of the implicit desire to present genres as formulaic in genre studies: the kind that sees genres simply as formulas, and formulas in turn as deadening or damaging to their audience, or as symptomatic of modernity’s moral, spiritual, or intellectual poverty.

Recent cultural theory and analysis has often made a different valuation of genrehood. Indeed, Landon (1992) and King and Kryzwinska (2000) see genre study in film, which began as a response to auteurism, as an essentially populist gesture. Some poststructuralist thought has influentially posited the ubiquity of genre – Derrida’s pronouncement that ‘there is no genreless text’ (1992: 230) – which has opened up the concept to include previously exempt examples of high art. More importantly, perhaps, the growth in the academic study of popular culture since the latter part of the twentieth century has often sought to understand genre as something that does not simply limit creativity. Whether emphasising the role of audience expectations, industrial framing and production, or textual analysis, genre work in relation to other popular media has used the idea of genre not to accuse texts of formulism, but to illuminate individual texts and families of texts in relation to one another. In particular, exemplary work in relation to
film, television, and popular fiction is interested in seeing genre as a developmental category that *changes over time*. Roberts argues that genres are not in themselves formulas but need to be understood as families of conventions that undergo constant change:

> A genre... is not a formula; it is not even a set of formulas. Genres contain formulas – for example, the genre of the crime novel includes the formula of the locked-room mystery – but genres themselves are (or rather, include) traditions of formulas that are mutating, formulas that are evolving. (1990: 225)

Steve Neale’s account of film genre argues that variation is just as fundamental to genres as repetition. He points out in his own review of the history of genre theory that most scholars of genre seek to account for variation, making the observation that:

> ...most aesthetic theories of genre take as their starting point the issues of repetition and variation, similarity and difference, and the extent to which the elements repeated and varied are simple or complex. (2000: 207)

Neale criticises the idea that membership in a genre means that a film is in some way ‘predictable’ in its adherence to a formula since the extent to which formula dictates the shape of individual works varies between genres, and almost all genres have observable variations over time in elements such as their conventional endings or narrative structures. He argues, ‘...predictability is as varied and multi-dimensional as genres themselves, not an absolute quality, but a matter of degree’ (2000: 210). These conceptions of genre resemble Klevjer’s ideas about what genre analysis can contribute to videogame studies:

> ...[T]he investigation into how particular generic formations – big or small – develop over time, and how differentiation, hybridisation, ambiguity and conflict within a given domain is being played out in context of technological, economical and cultural change. (2006)
Again, Klevjer’s recommendations emphasise an understanding of change and variation within genres as an objective.

Rather than necessarily being an attempt to assimilate genre products to a recognizable formula, work on genre in other media shows how analysis can instead offer an account that shows the complexity of relationships and differences between members of a generic family. In this sense, the ‘looseness’ or nebulosity of genres is assumed as a necessary element of genres at the beginning, and commonalities and differences are sought in order to illuminate individual videogames in relation to other relevantly similar ones. The idea of genre as multi-dimensional enables an account of genre that is not simply an exercise in Aristotelian classification, but which begins with folk taxonomies – the generic vocabularies of the industry and audiences – and seeks to deepen the reader’s sense of what these ‘native’ classifications describe.

This kind of genre analysis – that which seeks to account for similarities, differences, and changes within videogame genres; which sees genre as multidimensional – has arguably already been carried out in relation to contemporary genres, with the first-person shooter receiving special attention. For example: Bittanti (2006) seeks continuities between changes in the genre and the aesthetics of action cinema. Galloway (2006) traces similarities and differences between point of view in first-person shooters and cinematic point of view. Bell (2003) talks about changing patterns of realism and subject-positioning in the genre. Jarvinen (2003) analyses the genre in relation to the history of visual media. In all of these cases, a central and prominent contemporary genre is
discussed in relation to broader cultural history, other visual media, and as constituted by a range of factors, including audiovisual style and patterns of embodied play.

The analysis below develops the debates — within and beyond videogame studies — that have been reviewed above. It takes account of Newman’s (2004) proposals on genre to the extent that it will only deal with arcade-based videogames. His warning that context frames videogame consumption is important, but the following analysis tries to show that genre analysis can go beyond context alone without necessarily activating the difficulties he sees for ‘text-centred’ accounts of genre. Similarly, it is ultimately inclusive of concepts of player imperatives and action — as Wolf’s (2002) analysis is — without relying on this alone as a principle of classification. Perhaps contradicting Wolf, it shows that we can see how the genre takes on iconographies, conventions, and preoccupations from a broader multimedia ‘kind’ of science fiction in line with Altman’s (1987) view of the utility of ‘folk taxonomies’, in this way it takes the ‘native’ category of the space shooter forward. It shows how the genre takes its character from an intersection of categories and features, and that rather than this resulting in a problematic vagueness, this allows us to see the diversity within a family of videogames whose members are nevertheless relevantly, demonstrably related to one another, and in whose relationship we can derive knowledge that illuminates the analysis of individual games. Rather than an argument that this genre is formulaic, it shows that space shooter videogames are enriched by their reconstruction and recasting of the cross-media kind of science fiction, and in their relationship with one another.
Space Shooters

The following analysis argues for the space shooter as a genre within early videogames according to the principles outlined above. It takes the ‘native’ or ‘folk’ category of the space shooter seriously, as it has been established in journalism, fan cultures, and the industry, and tries to connect it with a broader cultural context and broader debates in cultural theory, but importantly shows how it is distinctive as a product of the earliest period of videogames as a mass medium. A large part of the analysis is comparative, arguing for the relationship of the medium-specific genre with the broader kind of science fiction, examples of which can be found in print, cinema, television, and other media. It uses approaches made to science fiction in other media to establish that science fiction has certain recurring themes and images, and that space shooters articulate these concerns in a new way, and can even be seen allowing a playing out of the ambivalences surrounding the introduction of videogames as a new media technology.

In arguing that videogames are science fiction, it leaves aside some of the debates among science fiction scholars and fans about the distinction between ‘SF’ (used to designate allegedly thoughtful, philosophical, or otherwise serious science fiction) and ‘sci-fi’ (used to designate allegedly more frivolous, adventure-oriented fare). Landon (1992) suggests that this largely corresponds to the difference between ‘serious’ novels and ‘frivolous’ films, especially during the 1950s and 1960s when a slew of cheaply made science fiction B movies were offered to a mass audience. This distinction may have a lasting importance in science fiction fan communities, and it may be that according to such
distinctions, space shooters might have more in common with ‘sci-fi’. But, as is shown below, criticism of science fiction cinema and writing alike suggests that there is enough common ground between the two categories to justify a broader category of science fiction that will be a key category in the discussion of space shooters.

The analysis below also leaves aside the consideration that many of the games it groups together emerge from different cultural contexts, with the most obvious distinction that might be seen as being overlooked – the one between Japan and the United States as places of origin for the games in question. The question of where games are produced, to what extent this context informs their range of imagery, their reception, their relationship with a tradition of design, and their relationship with an incipient global videogames industry is an important one. Aoyama and Hiro (2003) are at pains to differentiate the differences in the histories of videogames industries in Japan and the United States; Poole (2000) advances a useful discussion of traditions in Japanese aesthetics in accounting for the peculiar characteristics of the products of the Japanese industry. These questions will largely be suspended in this discussion, though, since its main aim is to show how a range of games constitute a genre that is also constituted by a multidimensional range of factors. While the analysis is, along with the remainder of the thesis, periodised, and while it makes a contribution to understandings of genre, there is no space here for finer distinctions to be made, though this is not to say that such distinctions are not pertinent. The existence of subgenres which are inflected by cultural differences is therefore offered as a matter for future research. Analogously, it might be said that while the ‘spaghetti westerns’ produced in the context of the Italian film industry have distinctive aspects that
warrant attention in their own right (as for example in Frayling [2006]), they could still be discussed in the context of a survey of the Western that included Hollywood Westerns and other variants of the genre. More concretely, for example, Carroll’s discussion of horror as a transmedial genre, Roberts discussion of ‘pulp’ science fiction novels, and even Landon’s discussion of science fiction film all usefully range across cultural contexts in drawing conclusions about the genres under examination. In a similar way, the following analysis will show that space shooters share a range of preoccupations, regardless of their cultural origins.

*Space Shooters in Folk Taxonomy*

The videogame genre of the space shooter does not much inform the design of new mainstream, ‘triple A’ games – with some recent exceptions such as *Rez* (Sega, 2002) – but it is important in early videogame design and consumption. Even though space shooters are designed for contemporary platforms, it is generally seen as a genre of the past. On the games review website, *Armchair Empire*, Nash writes:

> While we’ve had legions of first person shooters to give us our twitch gaming fix, there’s one genre that has faded into the shadows that has pushed gamers’ reflexes even harder, that being Space Shooters. (2005)

As Nash indicates, the genre was once central in mainstream videogaming but now has a specialised audience or is found away from specialist gaming platforms in areas like mobile gaming (in games like *Vector Blaster* [Rude Scotsman, 2006]), remakes (like *Flyout* [Poppysoft, 2007]) and experimental games (like *Geometry Wars* [Bizarre Creations, 2003]). In these contexts, space shooters are often offered as a ‘retrogaming’
experience: *Geometry Wars* tagline is ‘retro evolved’; *Flyout* is offered as a ‘retro styled game’ on the remakes.org weblog; and *Vector Blaster* is sold on the My-symbian website with the boast, ‘One word: Retro’.

Though it was undoubtedly present in early home console games and continues to have a life in shareware, freeware, and independent videogame design for current home computing platforms, the genre evolved into its characteristic shape in the period where arcades were the dominant venue of reception for videogames and the focus of the industry. Although *Spacewar!* and *Computer Space* (Nutting, 1971) (the first commercially-released videogame) were both space shooters, it is especially after 1978, when *Space Invaders* (Taito, 1978) was released, that the genre became central in arcade gaming. Apart from the games already mentioned, those considered in this analysis include examples of arcade games, some of which were subsequently ported to home platforms, such as *Asteroids* (Atari, 1979), *Galaxian* (Namco, 1979), *Defender* (Williams, 1980), *Phoenix* (Centuri, 1980), *Star Castle* (Cinematronics, 1980), *Galaga* (Namco, 1981), *Gorf* (Midway, 1981), *Tempest* (Atari, 1981), *Moon Patrol* (Williams, 1982) and *Gyruss* (Konami, 1983).

The category of the space shooter is a feature of videogames’ folk taxonomy, informing journalism, audiences, and the industry. It is understood in fan communities and journalism as referring to a specific family of videogames, mostly made in the late 1970s and 1980s, and is often understood as overlapping with other categories, particularly the ‘shoot-'em-up’ or ‘shmup’. The International Game Journalists’ Association, in a
guidance list of genre terms, offers a rather terse definition of shoot-em-ups that implies
space shooters are a sub-genre of this group: "shoot-em-up: [R-Type, Gradius] Games
that are about shooting things. May be linked to a specific narrative genre, such as "space
shooter"." (2006). This suggests that certain specific elements – like 'narrative' – separate
space shooters from shoot-em-ups more generally, but there are examples where the
categories are collapsed. Malcolm Laurie’s community fan site, shmups.com, does not
offer a definition of either shoot-em-ups or space shooters, but talking about arcade
shmups says:

Since videogames infiltrated the electric delights of the smoky arcades
there have always been shmups. From the earliest scrollers such as
Scramble and Xevious, through the golden age of classics with R-Type
and Nemesis, to the modern G-Darius and Raystorm. (1997-2006)

Here, ‘shmups’ are associated with arcade gameplay and with a ‘scrolling’ presentation
of space. The ‘shoot-em-ups’ entry on wikipedia.org offers another definition that seems
to collapse distinctions between shoot-em-ups/shmups and space shooters. It describes
the space shooter genre as:

...where the player controls a vehicle or character along no more than two
axes [sic.] of movement and fights large numbers of enemies with
shooting attacks, usually of a highly stylized nature...This is sometimes
shortened to "shmup." Other terms exist to distinguish this genre,
including "space shooter," "scrolling shooter," and "arcade shooter." In
Japan, where the genre remains most vital, they are known simply as
"shooting games."

Here, destructive imperatives, a numerical mismatch between the player avatar and
adversarial avatars, and shooting are forwarded as characteristic. On the fan-site
Insomnia’s shooting game glossary, the ‘shmup’ is similarly defined in a way that
collapses distinctions between this seemingly broader category and the ‘space shooter’:
Short for "shoot-'em-up." Semi-official classification for video games in which a large amount of shooting is involved, and the gameplay is executed in a 2-dimensional style (though the graphical objects onscreen can be 3-D), and controlled strictly from a third-person perspective. Most shmups automatically scroll the background in a certain direction to create the impression of movement as the player progresses, and involve taking control of a plane or spacecraft (as such they are sometimes called "Space Shooters"). (Kierkegaard and Heine, 2006)

Here, scrolling is again nominated as a feature, along with shooting, a third-person point of perspective on a two-dimensional landscape, and player avatars which are spacecraft or aircraft. The space shooter, then, is popularly recognised as a genre with certain features and is seen as overlapping in certain key respects with a broader category of shoot-em-ups or shmups. All of the features mentioned in these ‘folk-taxonomical’ definitions will be considered as this thesis’s account of the genre is developed.

Following Altman’s (1987) recommendations, discussed above, we can take this ‘native’ category forward as a ‘hypothesis’ about the presence of relevant, illuminating similarities across a family of early videogames. Retaining the category of ‘space shooter’ rather than ‘shoot-em-up’ or shmup, facilitates an understanding of the genre’s participation in a broader family of texts and its importance in the nascent medium of videogames. The first half of the description, ‘space’, adverts to the way that the videogame genre participates in a broader ‘kind’ of science fiction; ‘shooter’ neatly describes the sharply defined imperatives that the fictional worlds of space shooters offer the player, as will be explored further below.
Aspects of Science Fiction

In his study of genre or ‘junk’ fiction, Roberts makes a useful distinction between genre and kind:

It is helpful to speak of a genre as a medium-bound tradition and of a kind as a bundle of such medium-bound traditions. The kind of the western, then, includes the genres of the western in film, in print, on television, in comic books, in commercials, in tourist attractions, in songs, and no doubt in other mediums as well. (1990: 7)

Using this distinction, it can be seen that space shooters both draw on a wider tradition of science fiction, and have distinctive features as a videogame genre. This argument, made in the remainder of the chapter, is much stronger than the concession Juul makes, that images in Space Invaders frame a back-story that informs play but is inessential to it:

If we play Space Invaders (Taito 1977), we are presented with an ideal story that we have to realise using skill. A prehistory is suggested in Invaders: An invasion presupposes a situation before the invasion. It is clear from the science fiction we know that these aliens are evil and should be chased away. So the title suggests a simple structure with a positive state broken by an external evil force. (2001)

Juul’s point about the work done by the title of the game is important and will be returned to, but the analysis that follows shows that it is not just that science fiction and images familiar from other science fiction texts offer a convenient, easily understood frame for ludic/gamic action. In the first place, through features such as their ‘narrative images’, iconographies, and certain key generic oppositions, space shooters are science fiction texts which have elements in common with other science fiction texts in cinema, television, and print works. Space shooters embody, in these aspects, a verisimilitude with the broader kind of science fiction. This can be related to Todorov’s sense of its approximation of ‘The rules of the genre: for a work to have verisimilitude, it must
conform to these rules...[This] designates the work's similarity to a literary discourse' (1981: 118). By means of their characteristic images, oppositions, and the extra-gamic materials, space shooters evince a membership in a broader science fiction discourse. In the second place, through their simplified imperatives of destruction, their circumscribed fields of spatial contest, and the centring of spectacles of destruction and ordnance, they offer a new iteration of science fiction and give the traditional concerns of science fiction – the alien encounter and the human-machine relationship – a renewed importance. Ultimately, space shooters dramatise the alien encounter and the human-machine relationship in a new way and allow a 'playing out' of the ambivalences that arise from the appearance of videogame technology itself, which was the first medium to allow the manipulation of on-screen images and mediate new forms of human-machine cooperation and competition.

But what is the nature of this broader kind of science fiction that space shooters participate in? How have those studying science fiction in other media defined it? There are many overlapping characterisations of science fiction, but as is suggested by the Wittgensteinian versions of genre theory, there may be no single definition that captures the wide range of science fiction texts, even though producers and viewers recognise science fiction as they experience or make it. On the other hand, although some authors warn of the important differences between literary and cinematic articulations of science fiction,34 more recently it has been suggested that there has been a 'convergence between science fiction's various media of expression' (Kuhn, 1999b: 12), and there is in any case

34 See the survey of such positions in the first chapter of Landon, 1992.
a remarkable consistency between the various commonalities that literary and cinema scholars nominate between science fiction texts.

Some definitions emphasise the encounter with the alien ‘Other’ as the fundamental underlying theme of science fiction. This is both a thematic feature of film and literature, and a feature of science fiction cinema’s iconography. McCracken baldly writes in relation to ‘pulp’ science fiction novels that, ‘...at the root of all science fiction is the fantasy of the alien encounter...’ (1998: 102), and that ‘...the encounter with a life form from another planet produces a conflict, sometimes physical, but always cultural, which forces a reflection on the limits of human culture’ (Ibid.: 114). Iconography is a concept used extensively in relation to the analysis of genre in film, where it describes the characteristic stock of images that a particular genre draws on. For the Western, for example, Pye writes that its iconography would include ‘...landscape, architecture, modes of transport, weapons and clothes, and even soundtrack, including recurrent sounds, voices and kinds of speech’ (1986: 146). Many authors see the alien as part of the iconography of science fiction film. According to King and Krzywinska’s (2000) analysis of science fiction cinema, the ‘alien’ can take three main forms: the humanoid robot, the extraterrestrial alien, and the artificially intelligent computer. In all these cases, ‘much of the dramatic and structural tension of science fiction derives from the construction of the primary difference between the “human” and “other”’ (Ibid.: 30). It is not only in narrative or dramatic terms that the alien encounter is presented: Sobchack argues that visually, science fiction film ‘...presents us with a confrontation between a mixture of those images to which we respond as ‘alien’ and those we know to be
familiar' (1988: 87), and that 'the major visual impulse of all SF films is to pictorialize
the nonexistent, the unfamiliar, the strange and totally alien' (Ibid.: 88). As is shown
further on, the alien encounter and the spectacle of the other is a crucial element of the
space shooter.

Another recurrent feature of science fiction's literary and cinematic texts is technology –
as a thematic concern, a source of drama, and as a spectacle. Some literary and cinema
scholars see the thematic concern with technology as not simply being with the bare fact
of technology itself, but with the developing relationship between humans and
technology. As King and Krzywinska point out, oftentimes this relationship is figured as
an opposition between 'the human and the products of science, technology and
rationality', but go on to point out that 'science fiction is at its most interesting when
these lines are blurred' (2000: 11). Often enough, science fiction's concern with
technology assumes the character of ambivalence. Roberts summarises this as it plays out
in print:

Plainly, the writers and readers of science fiction share more than a deep
interest in technology itself, in technology for its own sake. What they
share is a probing, exploratory interest in human-machine relationships,
for underlying these one-dimensional stories is a many-sided interest of
what Australians might call the 'mateship' of man and technology. (1990:
156)

The ongoing relationship between humans and technology is one that Roberts takes to be
fundamental, but also argues that the strangeness of technology's spread over the surface
of the planet is not often acknowledged except in science fiction. For Roberts, technology
and the 'Other' overlap. This sometimes troubled, ambivalent 'mateship' is noted by
cinema scholars, too. Sobchack writes that science fiction offers a '...poetic mapping of
social relations as they are created and changed by new technological modes of “being in
the world” (1988: 229). In both Roberts and Sobchack, the thought is there that science
fiction is a way of presenting the possible consequences of the technological present as
much as the past. In a related way, Landon (1992, 1998) suggests that the spectacle of
technology in science fiction cinema is partly attributable to an ongoing aesthetic of
attractions in the genre: the surface spectacles of futuristic technologies are bound up
with wonderment at the illusions that cinema itself is capable of. Just as Roberts and
Sobchack suggest that the thematic preoccupation with technology is in part a thinking
through of the technological present, Landon suggests that science fiction cinema’s
iconography of a spectacular future is interwoven with a revelation of the illusionistic
possibilities of present technologies. In surveying the genre of the space shooter, it is
shown that in common with other science fiction forms, technology is visualised, but also
that these games allow a ‘playing out’ of the consequences of technological change – not
least the appearance of videogame technology – and display the ‘attractions’ of a
technology which is able to visualise the future in new ways, for new purposes.

A third concern for science fiction texts, which has come to be increasingly emphasised
by film scholars, is space. Space is an overdetermined idea in science fiction. Clearly
outer space is a favoured setting for science fiction narratives, but additionally it is
suggested by genre theorists that space as an ontological or phenomenological category is
what is at stake, or under scrutiny, in science fiction. Sobchack writes that ‘...all science
fiction films are – in one way or another – about space travel and the transgression of
those established boundaries and markers which give shape to mind, body and place’
(Quoted in Kuhn, 1990: 107). We can question the idea of ‘space travel’ as a characteristic feature of all science fiction. For example, many science fiction texts — perhaps beginning with The Time Machine (Wells, 2004) — are premised on protagonists remaining stationary but travelling in time. But even here, perhaps ‘established boundaries’ are transgressed. Sobchack’s comment usefully encapsulates space’s complex presence in science fiction narratives — as a setting, an element of iconography (in film, at least), and as a philosophical category that science fiction thinks through. In any case, other authors agree that space is a fundamental issue in science fiction. For King and Krzywinska (2000), travels in space allow science fiction narratives to function in certain ways:

Journeys into space or through time – or both – provide the opportunity to explore a range of issues. A shift into another galaxy or the past is a way to gain a different perspective on the concerns of our own place and time. (23)

Intriguingly for the analysis of videogames, Schatz sees science fiction narratives as being about contested spaces: ‘The milieu of the science fiction is one of contested space, in which the generic oppositions are determined by some aspects of the [human] cultural community and the conflict itself’ (1983: 102). This recalls Squire and Jenkins (2002) conception of game design as ‘the art of contested spaces’ and opens the possibility, explored a little further on in this chapter, that science fiction’s concerns with a complex sense of space, conflict, and spatialised conflict are given new significance in space shooters.

The idea, developed below, that space shooters participate in the broader kind of science fiction is not quite the same as saying, as Bolter and Gruisin (1999) and Bolter (2000)
famously do of other new media technologies, that these games ‘remediate’ science fiction as it exists in other media. It is useful to consider it in relation to the idea of remediation though. Bolter, and Bolter and Gruisin, use videogames in exemplifying their idea. One aspect of remediation is ‘hypermediacy’, where new media forms try – seemingly paradoxically – to leverage immediacy from their approximations of already-existing media:

...one of the most popular genres of computer games is the flight simulator. The action unfolds in real time, as the player is required to monitor the instruments and fly the plane. Such games promise to show the player ‘what it is like to be’ a pilot, and yet in what does the immediacy of the experience consist? As in a real plane, the simulated cockpit is full of dials to read and switches to flip. As in a real plane, the experience of the game is that of working an interface, so that the immediacy of this experience is pure hypermediacy. (Bolter, 2000: 65)

This suggests that flight simulators do their work by simulating the media environment of an aircraft cockpit. Bolter repeats the terms of Bolter and Gruisin’s discussion of Doom (id Software, 1993) and Myst (Psygnosis, 1993):

Computer games like Myst or Doom remediate cinema, and such games are sometimes called ‘interactive films’. The idea is that the players become characters in a cinematic narrative. They have some control over both the narrative itself and the stylistic realisation of it, in the sense that they can decide where to go and what to do in an effort to dispatch villains (in Doom) or solve puzzles (in Myst). They can also decide where to look, where to direct their graphically realised points of view, so that in interactive film, the player is often both actor and director. (Ibid.: 65)

Again, this suggests that videogames bring about their immediacy by self-consciously adopting characteristics of other, older media forms. Without wanting to dispute the application of this idea in a large range of cases, the argument being made here is fundamentally different. Rather than claiming that space shooters represent remediated science fiction cinema or literature, what is shown over the length of this analysis is that
space shooters are an example of science fiction in a new mode. In a new medium, the images, conventions, and preoccupations that have characterised science fiction are given new significance, and a new articulation. But it is nonetheless true that the participation of space shooters in the broader kind of science fiction is an element of this reconfiguration and reconstruction of science fiction.

The 'Narrative Image' of Space Shooters

The ways in which space shooters can be likened to other kinds of science fiction texts include, first, the way in which aspects of this genre are forwarded in the 'narrative images' that surround and frame gameplay. In addition to the images and conflicts found in the games, the audience's expectations as to the science fiction genre are cued by intertextual materials that surround the games. The idea of the 'narrative image' comes from Ellis, who in Visible Fictions argues that 'the idea of the film is widely circulated and promoted, an idea which can be called the “narrative image” of the film, the cinema’s anticipatory answer to the question, “What is the film like?”' (1992: 30). It is Neale who discusses this in relation to Hollywood’s ‘inter-textual relay’ of information and framing material for films outside cinematic texts and specifically makes connections with genre:

Genre is, of course, an important ingredient in any film’s narrative image. The indication of what the industry considers to be the generic framework – or frameworks – most appropriate to the viewing of a film is therefore one of the most important functions performed by advertising copy, and by posters, stills and trailers...In addition to the provision of generic images for individual films, the industry’s inter-textual relay also provides images of and for genres themselves. (2000: 39)
In other words, as far as films are concerned, a particular work’s participation in a genre is a function of materials that might have previously been seen as promotional ephemera, and further, the broader idea of a genre is built up through the range of intertextual materials that surround various works in a genre. With respect to videogames, it can be seen that generic images are constructed for space shooters that additionally constitute a bid for membership in the broader kind of science fiction, and this includes the use of cabinet art, titles, and promotional materials that evoke science fiction. This idea that videogames display and circulate narrative images has a kinship with Juul’s idea, explored in the last chapter, that videogames’ ephemera is part of the mechanism by which they project fictional worlds (Juul, 2005).

Perhaps the most characteristic way in which science-fictional narrative images are promoted in relation to space shooters is through the art that adorns arcade cabinets. The use of cabinets as a place for attention-grabbing imagery is a technique that videogame manufacturers took over from pinball and other arcade amusement manufacturers, a tradition that books by Colmer (1976) and Eiden and Lukas (1999), as well as fan community websites such as the International Arcade Museum (1995-2006) demonstrate and celebrate. In the case of space shooters, cabinet imagery very often features imagery that evokes science fiction’s traditional topics, dramas, and landscapes. Vanderbilt writes that ‘videogame cabinet art of the 1970s and 1980s, a graphic anomaly held over from the days of pulp novels and pinball machines, offered a lurid come-on that usually bore little resemblance to what was on screen’ (2001: 197). While it may not have resembled the on-screen environment, these cabinet images had a relationship of generic verisimilitude
to the concerns of science fiction. For example, *Space Invaders*’ cabinet art features an alien landscape under a starry sky, flying saucers, stylised spacecraft, and menacing aliens. *Asteroids*’ cabinet art features a spacecraft navigating an asteroid field. *Defender*’s cabinet features Jupiter-like planets against a starry background along with a robot. *Galaga* and *Gyruss* feature highly stylised, insectoid aliens. In all of these cases, the cabinet art for these arcade videogames makes a direct appeal to some of the traditional and then-current concerns for science fiction: alien life-forms, advanced technologies, and space travel, all of which are established concerns of science fiction cinema and print fiction.

Another way in which members of the space shooter genre evoke the broader kind of science fiction is through their titles, which appeal to audiences’ prior knowledge of science fiction in different ways. There are some titles that make clear and obvious references to the settings, dramatic and narrative conventions of science fiction, in particular, efforts of defence against alien invasion. *Space Invaders* and *Defender*, as well as offering a potted version of their own enacted dramas in their titles, refer to persistent narrative traditions in science fiction. *Space Invaders* could have served equally well as a title for H.G. Wells’ nineteenth century work *War of the Worlds* (2004), 1950s science fiction cinema such as *The Day the Earth Stood Still* (Wise, USA, 1951), *Invaders From Mars* (Menzies, USA, 1953), *Earth vs. The Flying Saucers* (Sears, USA, 1956), or more recent works such as *Independence Day* (Emmerich, USA, 1996) and Steven Spielberg’s film version of *War of the Worlds* (Spielberg, USA, 2005). At the heart of all of these books and films, along with *Space Invaders*, are alien invasions that threaten human
civilisation generally, along with the ‘lives’ of protagonists, who are often charged with the defence of the world or the galaxy. This is one version of the fantasy of the alien encounter that McCracken (1998) insists underlies all science fiction, and all of these members of the science fiction kind are structured by confrontations between the human and aliens. This connection between narratives of invasion in science fiction cinema and videogames is central in The Last Starfighter (Castle, 1984) when the protagonist, Alex Rogan’s skills in playing a fictional space shooter with the same title as the film see him recruited by aliens to defend the galaxy from attack. (Interestingly, fan/indie design concern Rogue Synapse, made a game that copies the game in the film in 2006 for the Windows platform.) This doubled title is equally evocative as a film title and a game title, with its connotations of invasion and defence, outer space, and futuristic technologies.

The alien encounter is promised more obliquely through titles such as Galaxian, Galaga, Gorf, Zaxxon (Sega/Gremlin, 1982), or Gyrrus. The words in these titles do not have any reference beyond the games themselves but manage to connote an exotic ‘alienness’ in a similar way to the names of aliens in other science fiction texts, like Daleks or Triffids, or titles like Zontar, the Monster From Venus (Buchanan, USA, 1966) or Yog, the Monster From Outer Space (Honda, Japan, 1970). Apart from referring to traditional science fiction concerns or evoking the alien, some game titles forward their science-fictionality by simply referring to a futuristic piece of technology, or a specific feature of science fiction’s iconography. Asteroids, Moon Patrol (Williams, 1983), Star Castle, Pleiads (Centuri, 1981), and Stargate (Williams, 1981) all leverage in their titles either locations or features of outer space, futuristic activities, or technologies, like The Iron Giant (Bird,
USA, 1999), The Death Ray of Dr. Mabuse (Fregonese, Germany, 1964), Voyage to the Moon (Melies, France, 1902) or Mission to Mars (De Palma, USA, 2000). In evoking alien encounters, technologies, and space, shooter game titles forward a narrative image that is, in part, a bid for membership in the broader kind of science fiction.

Beyond the narrative images forwarded by such means as cabinet images and titles, more central aspects of space shooters' information design reflect the preoccupations of science fiction – alien encounters, the emergence of new technologies, and space. These are reflected in the use of science fiction iconographies in audiovisual design and the way players' imperatives are framed in space shooters' fictional world. Some designers tell of the influence of science fiction on the visual worlds and gameplay of space shooters, but the iconographies and themes of science fiction can be seen and read even where such testimony is not available for specific games.

Iconography: Technological and Alien Avatar

Even though they may be seen as crude by the standards of twenty-first century videogames, space shooters foreground the iconographies of science fiction in their audiovisual design. In particular, the use of technologies and alien forms for player and adversarial avatars is a way in which the gamic mise-en-scene of space shooters mediates their participation in the broader kind of science fiction. This is continuous throughout the history of the genre and we can see early videogames designers were directly inspired by their consumption of science fiction in cinemas and print. J.M. Graetz's account of the
development of *Spacewar!* claims equal inspiration from E.E. ‘Doc’ Smith’s ‘Skylark’ and ‘Lensman’ series of science fiction novels and cheap, Japanese science fiction cinema. Graetz was one of the group of MIT programmers who designed *Spacewar!* as a demonstration for the graphical capacities of the PDP-1 mainframe computer. According to Graetz, the initial desire to make *Spacewar!* was sparked in the early 1960s by the absence of films based on Smith’s novels:

> [We asked ourselves] why doesn’t anyone make Skylark movies? Hearing no reply...we often spent our time on Hingham Street in deep wishful thought, inventing special effects and sequences for a grand series of space epics that would never see a sound stage. Nonetheless, these books, movies, and Hingham Street bull sessions established the mindset that eventually led to *Spacewar!* (2001)

This ‘mindset’, the desire the programmers felt for a kind of science fiction cinema that was not available at that time, and the designers’ relationship to the broader kind of science fiction as fans, led to a game whose mise-en-scene included spacecraft, a planet with gravitational pull, and a background of stars — all of which are part of the traditional visual landscape of science fiction cinema. It could be argued that this — the first videogame after *Tennis for Two* (Higginbotham, 1958) and the first space shooter — was explicitly conceived, designed, and visualised as a piece of science fiction.

The space shooter that more solidly established the genre as central in early videogames, *Space Invaders*, was similarly directly influenced by other kinds of science fiction texts. It visualised one of science fiction’s conventional narratives — that of alien invasion — in a new way. As shown in the earlier discussion of *Space Invaders*, designer Nikishaido’s bitmap aliens were directly inspired by *Star Wars* (Lucas, USA, 1977) and his reading of H.G. Wells’ *War of the Worlds*: 
I heard about a movie called *Star Wars* released in the US which was coming to Japan next year, so I came up with a game based in space which had space aliens as targets...The alien design was inspired by *The War Of The Worlds* by HG Wells. In the story, the alien looked like an octopus. I drew a bitmap image based on the idea. Then I created several other aliens that look like sea creatures such as [a] squid or [a] crab. (in Anonymous, 2005)

*Star Wars* provided not only a currently popular science fiction text to emulate, but a setting and elements of a drama that the designer could build on in game design. Nikishaido’s notebooks show the effort poured into visualising Wells’ octopus-like aliens and his own invertebrate additions. In relation both to *Spacewar!* and *Space Invaders*, designers speak about straightforwardly drawing on science fiction – in print and on film – for images and narrative elements that informed their videogame design.

Of course, designers’ testimony is neither the final nor the only source of evidence for the presence of science fiction iconographies in videogames. Contrary perhaps to Wolf’s (2002) arguments about the unreadability of designers’ intentions, we can see or read, an ongoing effort to foreground elements of science fiction’s iconography (as developed in cinema and television) in space shooters. This is true of a range of different elements of space shooters’ visual environments.

Players’ surrogates/avatars in space shooters are usually spacecraft or recognisable as pieces of futuristic technology. In *Asteroids*, the player’s clean-lined spaceship avatar stands out among the floating, lumpy, titular rocks. *Galaxian’s* avatar recalls the rocket ships of 1950s science fiction, *Star Trek’s* Klingon craft, and *Star Wars’* Y-wing fighters. Spaceships also feature in *Gyruss*, *Galaga*, *Zaxxon*, *Phoenix*, *Star Castle*, *Defender*, and
*Gorf*, among others. In all of these cases, the spacecraft are recognisable as such by reference to the iconography of science fiction familiar from other media. It is also worth noting that in many cases, the spacecraft in these games have smooth, sleek lines. This helps them stand out in an often crowded and busy mise-en-scene and offers a contrast with the frequently more organic, compositionally more complex shapes of adversaries. *Space Invaders* horizontally-drawn, linear avatar looks clean and solid compared with the uncanny shapes and movements of the aliens; *Galaga*’s craft is modelled on, and could almost be, a contemporary jet aircraft, and as a recognisably human-designed piece of technology, it is clearly distinct from the xeniform, insect-modelled aliens. They are simply drawn, and therefore make sense in a period where processing power was limited and where designers needed to render sprites with the fewest possible pixels (these had some appeal beside the prospect of potentially more difficult human avatars). There are examples, such as *Moon Patrol*, which differ slightly by offering alternative technological forms – like an armed moon buggy – which are nevertheless connotative of the future and offer generic verisimilitude with the broader kind of science fiction, suggesting interplanetary occupation, colonisation, and conflict.

The complexity and sophistication with which these avatars are rendered does, of course, change over time within the genre in line with increased processing power, development of designer’s skills, and the growth of the genre itself: the relatively static, utterly flat rendering of the defensive craft in *Space Invaders* is clearly different from the dynamic, textured, flame-sprouting craft in *Gyruss*, or *Moon Patrol*’s buggy (whose parts give the appearance of independent movement in response to the environment). Nevertheless, all
of them are unmistakably items of technology that are the focus of the player’s efforts to maintain their presence in the world. The ‘expressive actions’ that space shooters require tend to be destructive and to involve shooting at alien adversaries, and the discharge of weapons within space shooters is often accompanied by synthesised sounds which again underscore the player-avatar’s status as advanced and futuristic technology.

These are, it should be pointed out, audiovisual representations of futuristic technology within highly technologised spectacles. Players, as will be discussed further later, are asked to control represented technologies by means of manipulating gameplay technologies. This ‘doubling’ of technology recalls Landon’s (1992) comments about science fiction cinema’s presentation of spectacles of future technologies as technological spectacles in the present. It suggests that, similarly, the spectacle of future technology is here embedded in the spectacular technologies of gameplay. But it also allows us to think about technological player avatars as a reflection of information behaviour in the information design of the gamic mise-en-scene. Just as players assume control of an advanced technology as they step up to the arcade machines that housed space shooters, these machines mediate control of a technological avatar in the game’s fictional world. The fact that ‘clean’ technological forms are offered as the player’s surrogate might tempt us into making claims here about player identification with technology, but this complication of the technological feeds into a complexity of identification and investment in shooter games that will be specifically discussed towards the end of this analysis.
The visual representation of the adversarial avatars in the videogame – those inhabitants of space shooters’ worlds which threaten the player’s presence – also draws on the iconography of science fiction, and helps to establish the focus on alien encounters in these particular dramas of contested space. In this way, like science fiction film, space shooters ‘...pictorialize the nonexistent, the unfamiliar, the strange and totally alien’ (Sobchack, 1988: 88). Alien life forms are present in many space shooters besides *Space Invaders*, though many games following it often choose to present them in similar terms, in ways that connote the invertebrate, the swarm, the technological, and the artificially intelligent. Insectoid or ‘swarming’ aliens are a feature of classic science fiction novels such as Lem’s *The Invincible* (1972) and influential science fiction writing from the late 1970s such as *Ender’s Game*, (Card, [1977] 1985) that pits humanity against insectoid, swarmlike aliens. Science fiction cinema has also used the terror of the swarm and the representation of aliens as insects; in films from *Them!* (Douglas, USA, 1954) to *Starship Troopers* (Verhoeven, USA, 1994) there are ‘myriad movies feauring...insects, reptiles and other bug-eyed monsters (BEMs)’ (Grant, 1999: 25). But in space shooters, they are presented in particular ways.

Multiple, insectoid aliens, or those who resemble invertebrate life forms, who move in collective ‘swarming’ patterns, are a feature of several games following *Space Invaders*. For example, *Galaxian*, *Galaga* and *Gorf* have swarms of adversarial aliens that are explicitly modelled on terrestrial insects; like *Space Invaders*, *Defender* and its sequel *Stargate* use octopus-like figures to represent aliens; *Phoenix* seems like an exception in using vertebrate birds as the model for its aliens, but as in other games, these birds move
in collective patterns. These ‘swarming’ aliens, as well as varying in form, are like player avatars in that as the representational capacities of videogame technologies increase, so does their complexity, both in terms of the way they look and the way they move. *Space Invaders*’ flat aliens all move in step, predictably shuffling down and across, with the only variation being the occasional appearance of the saucer-shaped bonus alien at the top of the screen. In *Galaga*, many of the characteristics of *Space Invaders* swarm-information are retained, but already individual aliens peel off to carry out individual assaults on the player avatar in a way that resembles the movements of X-wing fighters in some of *Star Wars*’ sequences of space combat. By contrast, *Gyruss*’s aliens are perspectivally rendered – the sprites grow as they approach the edge of the screen, giving the illusion of three-dimensional space – and they have significant apparent autonomy in the way they move, even though all of their movements are commonly directed at the destruction of the player avatar.

The swarm and insect life, as echoed in space shooters, has often been presented in science fiction and elsewhere as a model of a new, possibly superior kind of cognition and social organisation. Weissert (1992) argues that in Lem’s fiction, insectoid swarms are used as a figure of different kinds of cognition and intelligence, and as a parable for the impossibility both of fruitful contact with an intelligence that is formally different to our own, and as a way of thinking through the possibilities of artificial intelligence. Heinlein’s (1959) original novel of *Starship Troopers* offered a wholesale militarization of human society as the only response to his insectoid aliens’ superior social model (see Grant, 1999). More recently, metaphors of the swarm and the ‘hive mind’ have come to
characterise discussions of artificial intelligence and even online social software as alternatives to humanist epistemologies. Galloway and Thacker (2007) explain the traditional use of the swarm in science fiction where it was often a metaphor for social systems that were ‘the opposite of Western, liberal democracies.’ But now the swarm metaphor in artificial intelligence research is used to underpin ‘...theories of biocomplexity and swarm intelligence, which suggest that there is no "queen" but only a set of localized interactions which self-organize into a whole swarm or colony’ (Ibid.). Brockman (2007) offers just one utopian view of ‘Web 2.0’ and social networking software as a transition to a ‘hive mind’ that represents:

...nothing less than the migration from individual mind to collective intelligence. I call it "here comes everybody," and it represents, for good or for bad, a fundamental change in our notion of who we are. In other words, we are witnessing the emergence of a new kind of person.

In all of these cases, over a long period, metaphors and images of swarms are used to represent new kinds of consciousness and organization which threaten to supersede or replace the human through greater efficiency and unity, and the simple advantages of strength in numbers. Where swarming adversarial avatars are used in space shooters to represent the game’s contending presence, they are perhaps related to this tradition of swarm metaphors in science fiction and futurology.

Other space shooters feature adversarial presences that are more in line with the robots and artificial intelligences that King and Krzywinska argue for as the other guises of the alien. *Star Fire* (Exidy, 1980), *Space Fury* (Sega/Gremlin, 1980), *Tempest, Satan of Saturn* (SNK, 1980), *Tempest, Sinistar* (Williams, 1982) and *Gravitar* (Atari, 1982) are among those games where the alien presence is represented technologically – as robots,
spacecraft, or other clearly technological shapes. There are a few games – *Sinistar* and *Gorf* are key examples – which intriguingly attempt to represent an artificial intelligence: in the case of *Sinistar*, the game’s intelligence is given a prominent, robotic face that is gradually assembled in the player’s presence, and importantly a *voice* that is marked, in its timbre, as technological. *Sinistar* and *Gorf* speak directly to the player from the game’s narrative world, and in this sense make the adversarial challenge of the shooter explicit, underlining the fantasy that the player is facing a real, contending intelligence. These perhaps appeal to a sense of the uncanny, which in Freud’s initial definition of it is a feeling that can arise from:

...doubts whether an apparently animate being is really alive; or conversely, whether a lifeless object might not be in fact animate...[and] uncertainty whether a particular figure in the story is a human being or an automaton. (Freud, 1953: 219)

Gunning (2003) takes Freud’s notion of the uncanny further by suggesting that many new technologies carry the charge of the uncanny due to their apparently ‘magical’ properties, and certainly arcade videogames, which produce a semblance of a contending intelligence in their enacted narratives, are able to underline this basic uncanniness with an explicit evocation of that spectral intelligence. The spectre of the uncanny is raised in such games by activating doubts about whether the machine the player is contending against is animate. As King and Krzywinska indicate, presenting the other in terms of artificially-intelligent, apparently alive machines has been a ‘principal embodiment of the other’ in science fiction (2002: 34). But games like *Gorf* and *Sinistar*, in which machines appear to speak outside or through the confines of the game, can be thought about in relation to what Gunning has called an ‘aesthetics of astonishment’ in relation to early cinema (2003). This aesthetics of astonishment refers to the way in which the coherence
of narrative worlds is often sacrificed for a (to modern eyes) gratuitous display of the illusionistic capacities of cinema: ‘...display dominates over narrative absorption, emphasizing the direct stimulation of shock or surprise’ (2003: 162). McQuire holds that the ‘...experimental disintegration of space-time in film was an integral part of the spectator’s pleasure’ (2005: 135). The novelty of the technologies of voice synthesis that allow games like Sinistar and Gorf to speak may seem rudimentary beside the audio capacities of contemporary games, but the foregrounding of speech in these games is evidence of an attempt to astonish with new technological capacities and the simulation of attributes of artificial intelligence, a traditional figuring of the other in science fiction.

The alien, the swarm-like, the technological, and the artificially intelligent, as characteristics of the adversarial presence in space shooters, are evidence of their membership in a broader kind of science fiction. But they can also be read, as they are in science fiction cinema and novels, as connoting particular anxieties around technology. The swarm’s embodiment of a different form of cognition, and of inhuman principles of organisation, can be connected with anxieties about the replacement of the human by more efficient forms of thought and life. Images of robots, or those artificial intelligences that speak directly to players from the gamick mise-en-scene connect these games with traditions in science fiction film and literature, but also activate the disquiet of the uncanny as ambiguously animate, ambiguously alive things. They also serve to astonish the player, and once again, the spectacle of futuristic technologies is connected with contemporary technological spectacles in space shooters, just as it is in science fiction cinema. Following a discussion of the complicated figuring of space itself in the space
shooter, there will be an examination of what is at stake in opposing such othered images to technological avatars in the enacted narratives of space shooters.

*Space in the Space Shooter*

If science fiction's concerns with technology and the alien other are both represented in space shooters' iconography and fictional worlds, so too is a third prominent concern, space. Space is an over-determined category in the generic identity and gamic mise-en-scene of space shooters. It functions as an element of the iconography of space shooters and a fictional setting. But this can be thought of in connection with the spatiality of these games in terms of the different and sometimes experimental relationships they set up between on-screen spaces (of composition, contest, and movement), off-screen spaces, and the possibilities of player actions. This corresponds with the use of space in science fiction cinema as explored above in science fiction novels and cinema: as an element of iconography and as a philosophical category to be experimented with and thought through.

There are two broad ways space is represented as a setting in the gamic mise-en-scene of space shooters, which are related to changing informatic capacities, but have additional implications. The first way that space appears in space shooters is as a pure void. With *Space Invaders*, for example, the setting must be taken on trust and as constructed by the game's narrative images, since the space that appears in the mise-en-scene is pure emptiness. The restrictions within which Nikishaido's images were composed also meant
that there was no capacity to render visual elements that were not directly part of play (See Edge Online, 2005). This is repeated in vector-based space shooters such as Star Wars (Atari, 1983). Vector technologies – involving a direct scan onto specially-designed monitors – were better able than raster technologies to render more detailed and complex scalable objects, but the price paid was the textured worlds that raster graphics were able to offer, even by the time Atari had released Star Wars in 1983. The result was a spectrally empty mise-en-scene, where objects have detailed outlines but no filling. In games like Red Baron (Atari, 1980), whose First World War biplanes and landscape are rendered in blue vectors, or Bradley Trainer (Atari, 1980), whose realistically-shaped tanks are presented in outline against a background of hills, this can feel like a deprivation where it seems like outlines await colouring in. In the case of the voids of vectoral space shooters, though, the fictional setting seems to underwrite the textureless shapes and the void in which they move. The outline objects coincide with concurrent imaginings of technologised vision. The vectoral world of Star Wars, for example, resembles moments in the film whose narrative universe it draws on. The Death Star’s blueprints are rendered in vector form in the film, and in the climactic sequence where the Death Star is destroyed, its contours are vectorally mapped in the targeting computer of Luke Skywalker’s X-wing fighter. This is reproduced as an audiovisual motif in the equivalent sequence of the film: the textureless, void spaces of vectoral games coincide with concurrent imaginings of futuristic vision. Tempest (Atari, 1980) is an example of a videogame whose vectoral abstractions – due to factors of composition and avatar design – exceed the idea of ‘textureless’ vector graphics to assert the beauty and particularity of incipient digital visuality. Rather than attempting to transcend the unfilled lines of vectors
through the addition of detail, *Tempest* foregrounds its geometrical construction in symmetrical, prismatic playfields that wholly defined the movement and paths of avatars.

Not all shooters represent space as a void, though, and some represent the contents of space—planetary surfaces, winking stars, spiralling galaxies, and silent, suspended planets—as an integral element of the spectacles they offer, and even as spectacular rewards within their grammar of stages. *Asteroids*, however similar it may appear to the void-spaces of other vector games, still includes the objects in its title and models their disintegration as an element of its visual spectacle. *Galaxian*’s multicoloured pinpricks are minimal but effective; the same strategy for economically drawing a setting is employed in *Astro Blaster* (Sega, 1981), *Galaga*, and *Defender* which use a mixture of vectoral planetary surface with a background of pinprick stars. In other games, elements like spiral galaxies and planets are drawn in some detail in the background picture planes of games. *Phoenix* offers clusters of blue stars and larger planets that change as players pass through its stages while *Gyruss* proffers the planets of the solar system as spectacular rewards in its progressive structure of stages. Some shooters base their action on a planetary surface: *Moon Patrol* displays the craters, rocks, mountains, and alien buildings of an imagined lunar surface; *Lunar Rescue* (Taito, 1980) has the player avatar defending the surface of the moon from alien swarms. In *Pleiads* (Centauri, 1980), changing scenery combines green planetary surfaces, spiral galaxies, suspended planets, grid-like spaces, and starry backgrounds. In all of these games, space as a setting

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35 Interestingly, this minimalist strategy for settings is retained for much later space shooters such as *R-Type* (Nintendo, 1987) and *Gradius* (Konami, 1986) where contending avatars and foreground elements of settings are drawn in much more detail.
is clearly visualised in the gamic mise-en-scene, and in this they participate in the iconography of the broader transmedial kind of science fiction.

The foregoing shows how space – as iconographic element and as fictional setting – is as important to space shooters as it is to other forms of science fiction. But space as an ontological category, as a medium, as a set of relationships between players, on- and off-screen elements and interfaces, is also important as a characteristic concern of the genre.

Before considering the variety of ways in which elements of mise-en-scene, audiovisual spatiality and level structures are treated in the genre, it is worth underlining something that we could see much of the genre as sharing: these are dramas of emphatic, spectacular spatial contest. However space is constructed in shooters, there is an unremitting threat to the player’s presence in it, and equally unremitting imperatives of expressive destruction and defensive movement. The ‘shooter’ part of the genre’s description (and alternative descriptions like ‘shoot-em-up’ or ‘shmup’) indicate the centrality of destructive imperatives in these games: the immediate logic that governs player engagement in these games is to kill or be killed, and to defend or extend the portion of space under their control by destructive means. In almost every game mentioned so far in this chapter, players must challenge the inhabitation of contending avatars of on-screen space, and maintain their own presence in the game’s fictional world by means of expressive acts of firing. This differs from the racing games (like Night Driver [Atari, 1976] or Gran Trak 10 [Atari, 1974]), maze-based games (like PAC-MAN), proto-platformers (like Q*Bert [Gottlieb, 1982] or BurgerTime [Midway, 1982]), or sports games (from Pong [Atari,
1972] to *Hyper Olympic* [Konami, 1983]) that characterised the period, where even at the time, spatial contest was conducted in more oblique terms than simply destroying opposing avatars, and where movement actions, or different kinds of expressive action were demanded by the games’ imperatives. Expressive acts of firing are themselves varied within the shooter genre, with games coming to demand the use of different kinds of projectile, associated with different buttons for ground-based and aerial targets (as in *Xevious* or *Scramble*). Also, the genre comes to encompass ‘power-ups’, bonus points that increased the weight or changed the nature of the fire they unleashed, a destructive cleansing of various kinds of space of alien presences is common across the family.

In this presentation of dramas of contested space, space shooters resemble the broader kind of science fiction. As discussed earlier, Schatz (1983) sees all science fiction texts as being concerned with ‘contested space’ — science fiction texts that deal with the invasion of the earth (*War of the Worlds, Independence Day*), interstellar conflict (*Star Wars, Starship Troopers*), or the meeting of human and alien other in some confined spatial circumstance (*Alien, 2001: A Space Odyssey*) are all in one way or another setting up spatial conflicts where human or individual survival is at stake. Space shooters simply and clearly set out the spatial conflicts that are part of the wider kind of science fiction as a conflict between the mediated capacities of the human player, and the capacities of a relentless machinic ‘intelligence’, represented in the mise-en-scène by avatars that connote an uncanny other.
But the spatiality of the fictional worlds that are contested is manipulable, pliable, and mutable in space shooters. If these are consummate dramas of contested space, then the stakes change across the genre due to the different ways in which space is treated. Space is arranged and designed in different ways, and players and contending presences have different relationships with it across the genre, but one commonality is a willingness to experiment with videogame spatiality which is to some extent permissible and coherent due to the games' participation in the broader kind of science fiction. An exhaustive account of the spatiality in space shooters in the period of focus in this thesis would require a specialised study, and there is no need to reproduce Wolf's (1997) typology of on- and off-screen spaces in videogames, but three broad spatial strategies in the genre can be considered here.

First is the static, highly circumscribed spatiality of the earliest shooters. These involve two-dimensional fields with a third-person perspective. With the exception of the saucer-shaped UFOs that occasionally intrude at the top of the screen to offer players bonus points, every element of Space Invaders is visible on-screen at all times. There is no real variety in the basic visual outlook of the game, and off-screen space (such as it is implied) has minimal relevance to the game. Succeeding levels are essentially repetitions of the initial spatial arrangements. The player avatar is confined to a single axis of movement – horizontal – and the player imperative is to defend the most proximate part of the screen from the steady, unrelenting advance of the alien swarm. Galaxian and Galaga offer minimal but important variations on this arrangement. Aliens here do emerge from different sectors of off-screen space, and although the player may not move
into it, there are advantages in understanding where and in what sequence the contending avatars will emerge. In these games, the terms of spatial contest are sharply drawn, with diametrically-opposed ranks of player and non-player avatars. In *Asteroids*, on the other hand, the single screen is constantly impinged upon by the incursion of off-screen objects.

*Scrolling shooters* involve a constant vertical or horizontal passage into an unfolding off-screen space by the player avatar, where the avatar is threatened at all times by the onrush of contending avatars. *Defender*, as well as allowing movement within the central frame of on-screen space, allowed players to move horizontally in either direction into off-screen space. As Wolf (1997) points out, the game thus implies a space that is cylindrical. It represents the complete space of the game in a scanner at the top of the screen, showing the totality of the game’s fictional space (including off-screen space) as a schematic inset within the main diegetic screen, which shows only a selected portion of diegetic space. This is featured alongside non-diegetic information, but rather than non-diegetic space, it is a doubled representation of diegetic space. Following *Defender*, some space shooters also offered horizontal scrolling into off-screen space, but as in *Scramble*, player avatars are often impelled into this space, rather than choosing their direction of progress, and movement into off-screen space was unidirectional. *Scramble* offered a side elevation, third-person point of perspective in on-screen space, in a kind of two-dimensional cross section, with solid colours representing a planetary surface at the bottom and top of the screen, and blank space in between indicating the path of the players’ intended passage. *Scramble* matched two broad kinds of on-screen enemy — surface-based and aerially
mobile — with two kinds of expressive fire acts for the player. By contrast, some videogames offered a bird’s eye view of impelled scrolling movement into off-screen space. In *Xevious*, players’ have a third-person point of perspective onto a two dimensional on-screen space, and as in *Scramble*, players are constantly impelled into off-screen space, and the imperatives of survival and destruction are enacted over a constantly changing landscape. Scrolling shooters become subject to experiments in dimensionality: *Zaxxon* projects scrolling space isometrically and produces an illusion of spatial depth. Therefore player avatars’ progress through the game’s world using a diagonal movement through on-screen space. In all of these games, the threat of contending avatars is embedded in a constantly changing and shifting landscape, such that variety and change is a source of pleasure and danger.

*Perspectival* shooters offer different renditions of depth to isometric scrollers. Games like *Gyruss* and *Tempest* use scalable game sprites in lending an illusion of three-dimensionality to their contested spaces. Though *Tempest* is vector-based and *Gyruss* is raster-based, each game allows player movements around the perimeter of their respective diegetic spaces, with contending machine avatars emerging from the centre of the screen, where they are at their smallest, and gradually growing larger as they move towards the perimeter that the player avatar is restricted to. These are not rendered three-dimensional spaces as are found in more recent videogames, but rather use restricted player movement and perspectival techniques derived from other forms of visual art to create a visual illusion of a three-dimensional space stretching out in front of the player. The imperative that other games share — to clear the spaces of gameplay of contending
avatars – are still present here, but the relationship between contending parties in that space is changed. Player avatars and machine avatars alike are more *mobile* than in static shooters, and the geometry of relationships between player and machine avatars is significantly more variable than in scrolling shooters. Having said this, the player avatar’s complete range of movement relative to on-screen space is less in *Gyruss* than in, say, *Defender*.

Different spatiotemporal ordering principles, though, are visible in space shooters’ employment of stages and levels. To return to Newman’s (2004) useful discussion of level breaks and the progression through levels as a structural feature of videogames, we remember that his account of levels stressed their role in providing a structure of ascending difficulty and ‘detours’ through which players can delay the end of their experience. This is a function of the ‘logic of informatics’ (Galloway, 2006) that means that practical data storage and processing limits impose themselves on the spatiotemporal possibilities of play, but also offer respite from gamic imperatives, indications of progress, various kinds of reward for progress, and opportunities to develop story or fictional features of worlds of play (Newman 2004: 83). Though Newman himself does not use the word at any stage, in this way, ‘levels’ become part of the grammar of videogames’ fictional worlds, and they are a primary focus of players’ information behaviour, providing a graduated passage through games, and providing an important function in layering gameplay imperatives. The use of this stylistic grammar varies across the genre of space shooters, but what most of them have in common is some use of stages as a structuring element of their spatiality.
It might be argued that the simplest use of stages is found in games like *Space Invaders*, where it is closest to reflecting the logic of informatics within which the game operates. When the player has cleared the screen, it simply refreshes with more aliens. Even here, though, the fact that the game’s processor had fewer objects to handle as more adversarial avatars were destroyed meant that the invaders would move more quickly — a happy accident that heightened the urgency of destructive imperatives as each level progressed. (Edge Online, 2005). Very quickly, though, certain conventions arose around level progression. More and more varied contending avatars as a player progresses through levels are present by the time that *Galaxian* is produced. *Galaxian* also offers an early instantiation of the presence of an especially difficult ‘boss’ that needs to be destroyed in the course of play. In examples of games like *Gorf*, this use of stages to provide a variation in contending presences along with ascending difficulty is extended such that players must carry out a range of behaviours in relation to a wide variety of aliens. As discussed in Chapter One, *Galaga* offers a variation in the imperatives governing a player’s presence in its successive stages by offering occasional ‘challenging stages’ where the players are not attacked, and must simply destroy as many aliens as is possible as they fly past in formation, thereby combining a respite in imperatives (which Newman associates largely with level breaks) with a sense of reward for progress made. In *Gyruss*, for example, the planets of the solar system that appear at various points through its seventeen stages function as spectacular rewards, they indicate the reward of bonus rounds where (similarly to *Galaga*) imperatives are relaxed and points accrued by way of an additional reward, facilitating the construction of the game’s spatial narrative.
However simply, the game offers an enacted and evoked narrative of spatial progress through the contested spaces of a perilous, alien-occupied solar system. Throughout the period of early games, as can be seen in this limited selection of examples, the structural role of stages and levels, and their use as part of the stylistic grammar of videogames, becomes more sophisticated.

The fact that diegetic space is set up in different ways in space shooters, and that players are able to travel through it in various ways, is at once part of the unique technological spectacle that space shooters provide, a part of the way they develop and extend the structural grammar of stages and levels, but it also indicates another way in which they join with the thematics of a broader kind of science fiction.

What the foregoing shows is that space, beyond being a fictional setting and an element of iconography, is subject to emphatic contest, but is also a category for experimentation and variation in space shooters, and that as a genre space shooters are concerned with realising a range of spatial possibilities. In the last part of this chapter’s analysis of the genre, it is asked: what does it mean to combine all of this in space shooters’ enacted, science-fictional narratives?

*Space Shooters as Enacted Narratives: Ambivalent Play*

The foregoing discussion of the genre of the space shooter has pointed out some of what these games share with a broader transmedial ‘kind’ of science fiction, and has justified
our thinking about them as sharing membership in this broader family of texts. In a range of ways, space shooters reflect some broad concerns that scholars of science fiction cinema and literature have nominated as typical: namely the representation of alien ‘others’, images of and meditations on technology, and space (as a fictional setting, an element of iconography, and as a category or set of relationships to be thought through, experimented with, and placed at the heart of fictional worlds). In their narrative images, iconographic features of the mise-en-scene, and certain thematic conventions, space shooters evince shared preoccupations with other kinds of science fiction texts, and treat them in ways that we can connect with longer science fiction traditions. The swarming aliens in *Space Invaders*, *Galaga*, *Gyruss* and a range of other games are connected with the technological capacities of hardware platforms, but importantly, they also connect with a much longer history of representing inhuman modes of cognition and organisation that oppose and threaten the human. The metaphor of the insectoid swarm, made visible in space shooters, is shared across a range of texts that meditate on how human intelligence and social organisation might be challenged or even superseded. Technologies represented in the games – whether player avatars or contending presences – connect with the history of using spectacles of futuristic technologies as part of technologised spectacles in the present, which is a key element of science fiction cinema. Space shooters also connect with science fiction’s history of taking technology, and the relationship between humans and technology, as one of its central themes. Importantly, techniques such as voice synthesis, that rupture diegetic worlds of play, offering an illusion of a direct address to the player from a game’s contending intelligence, awaken a sense of the technological uncanny. Like other forms of science fiction, space shooters
take space as a fictional setting and an iconographic element of narrative images and
mise-en-scene, but they also play with space as a category, as a set of relationships
between screen and viewer, and between what is seen and not seen in worlds of play.
Travel through space and experimentation with spatiality are foregrounded in the genre.
All of these are factors that connect space shooters with one another as a family of texts,
and which constitute their membership in the broader transmedial ‘kind’ of science
fiction.

In all of this, to underline a point, we can think about space shooters visualising and
taking as a theme the strangeness, or ‘queerness’ as Roberts (1990) puts it, of new
technologies. Science fiction, as David Thorburn (2003) remarks, is a characteristic genre
of the early life of new media technologies throughout modernity, not least because
science fiction’s concern with reflecting on technological change has a special resonance
where audiences are faced with new media technologies. Such technologies – with their
capacity to ‘astonish’ (Gunning, 2003), activate the sense of ‘queerness’, or the
 technological ‘uncanny’ (Ibid.) that attends on the ‘the flooding of machines out onto the
surface of our planet’ (Roberts, 1990: 156). Videogames, as we have seen, offer a
contentious spectatorship to players: they explicitly challenge the player, they offer a
strange ‘inversion’ of human-machine relationships (Fiske and Watts, 1985), and they
activate then resist the player’s desire to remain present in their fictional worlds. For all
that they share with other audiovisual media – in their embedding of particular kinds of
imperatives for information behaviour in their information design, in their instantiation of
real-time play with screen images, in their uncanny power of holding players in thrall to
them (See Chesher, 2003; Friedman, 1995), in their constant revelations about the limits of players’ human cognition and reflexes – videogames in the earliest period of their presence as a mass medium offer an utterly different context for audiovisual information. The strange technologies that inhabit the mise-en-scene of space shooters are themselves embedded in a technology still new enough to project its own strangeness; spectacles of technology are embedded in a technology that offers new kinds of spectacle.

In this light, we can see the ‘swarms’ of aliens that players face in many space shooters as being directly related to the feeling of contending with a machinic intelligence that games activate, and the understanding of a new mode of organising sounds, images, and information. Outer space – the fictional and iconographic space that futuristic technologies allow humans to explore and inhabit in science fiction – is conflated in the genre with the space which videogames offer new constructions of and relationships with – the fictional, narrative contested space that the present technologies of videogame play allow new kinds of inhabitation of. This space of play, the possibilities of contesting screen space in these particular ways, is not, in the earliest period of videogames as form, a space that players are accustomed to inhabiting or knowing in the ways that videogames demand and allow.

All of this feeds into a sense that these enacted science fiction narratives represent science fiction in a new mode: they are a new iteration of the kind that inflects its concerns in new ways. In ‘Hellivision’, Springer (1991) draws on Kleinian psychoanalysis to claim that arcade games, including space shooters, represent an attempt
to play out anxieties about the interior spaces of the maternal body. We do not need to
dispute this in order to claim that the anxieties being played out in space shooters might
also involve some that are closer to the surface of the spectacles they offer. If, in common
with other science fiction texts, they represent a thinking-through and reflection on
changes in the relationship between humans and machines, perhaps they more
specifically represent a playing-out of the relationships that pertain to real-time,
computer-mediated play, and the disquiets that arise from this.

To understand this further, we can reflect once more on the ‘cyborg circuits’ that
develops Friedman’s (1995) idea that ‘mastery’ and success in videogame play involves
coming to ‘think like a computer’. Friedman describes the loss of the sense of self that
occurs when playing games like Sim City (Maxis, 1994):

...[It produces an] easy slide into a routine with absolutely no down-time,
no interruptions from complete communion with the computer. The game
can grow so absorbing, in fact, your subjective sense of time is
distorted...You look up, and all of a sudden it's morning. It's very hard to
describe what it feels like when you're "lost" inside a computer game,
precisely because at that moment your sense of self has been
fundamentally transformed. (1995)

Whereas Friedman limits this claim to strategy simulations, Newman thinks it has a wider
application:

What the player relates to [in videogame play] is the entire contents of the
gameworld...Perhaps [a] concentration on Mario [as the focus of player
identification]...masks the complexity of the player’s perspective. Perhaps
the manner in which the Super Mario player learns to think is better
conceived as an irreducible complex of locations, scenarios and kinds of
action. Certainly, it is difficult to dislocate Mario the ‘character’ from
Mario World, with its interconnecting pipes, or from running, jumping and
puzzling, or even from enemies, adversaries and opponents. (2004: 138)
The ‘cyborg play’ of videogames is a way of conceiving, translated into the terms developed in this thesis, the way that information behaviour and information design are interrelated to the extent that players feel a subtraction of their sense of self, their human agency, and begin to become ‘lost’ in the fictional worlds videogames construct. The concept of the ‘cyborg’ in cultural criticism, as set out in the work of Haraway (1991), involves thinking about human bodies in a ‘posthuman’ context, where human actions and human subjectivity is seen as imbricated with the operations of machines, and the human is even seen as disappearing in the face of a recognition that most of what we do involves cooperative relationships with machines. As pointed out in Chapter Three, the idea that the kinds of experience described here could be adequately conceived of in a model that inscribes an essential separation between rules and fiction seems to miss something characteristic about the way videogames’ narrative architectures work to absorb players. This aside, we can see that this ‘cyborg’ dissolution of players’ subjective sense of self into videogames means that the nature of ‘control’ in the videogame is, to say the least, ambiguous:

The videogame engineers a constant imbrication of different operations of human and non – human agency. At the very least we can argue that ‘mastery’ is only one pleasure among many, that activity and passivity are not opposites in videogame play but fluctuations in the circuit, and thus that a new conceptual language is needed to attend to both the operations of nonhuman agency and the human pleasures of lack of agency, of being controlled, of being acted upon. (Giddings and Kennedy, forthcoming)

This imbrication of human and machinic agency and control in enacted videogame narratives is, as is discernible in the work of all these authors, part of their uncanny power. If cinema seemed ‘magical’ to its early audiences (Gunning, 2003), the loss of
self in gameplay’s information behaviours seems even more disturbing. As Lister et al. put it, part of the fear of videogames arises from the fact that they are:

...the ‘repressed’ of the cybercultural enthusiasm for interactivity -- losing oneself in the medium can be creative and liberating, but is haunted by the possibility that this immersion can be hypnotic, seductive, ‘mindless’ as well as bodiless. (2003: 263)

If science fiction is about reflecting on the ‘mateship’ of humans and technology, and the limits of the human in relation to an alien presence, this is a new closeness in that mateship, and a new kind of limitation of the human.

In this light, the technological avatars of space shooters, their presence as technological images within new kinds of image technology, the player’s doubly-mediated struggle with technology, the contention with an alien kind of intelligence in terms set by that intelligence, the oddly resistant spectacles of gameplay, and the overdetermined spaces that are only able to be navigated by technological means, are all parts of a technological queerness that the science-fictionality of early space shooters as enacted narratives can be seen as an aid to meditation on, or better still, as an invitation to play out. If part of the pleasure of videogames is submersion in a cyborg circuit of play and a loss of the sense of self, then the depiction of player avatars in technological terms perhaps visualises that disappearance of the human. If the information behaviours required in videogame play include adopting a new mode of cognition -- ‘thinking like a computer’ – then the appearance of alien swarms not only visualises that intelligence, but given the complexities of identification and mastery in videogames, reflects back at the player the disavowal of patterns of human cognition that gameplay requires. If players submerge themselves in a cyborg circuit in play, their struggle to measure up to the imperatives of
play in space shooters, and the limits of the playing body as a component in these circuits, are revealed by contrast with images of swarms and artificial intelligences that emphasise machinic relentlessness, and which directly — sometimes explicitly in electronic speech — call into question the efficacy of the organic in the face of new machinic capacities for contest and motion. The way in which these games offer mastery is undercut — especially in literally unwinnable games like *Space Invaders*, where the aliens will simply not ever stop coming — by the difficulty or impossibility of ever achieving that mastery, no matter how hard the player tries to submit in body and mind to the agency of the machine. The spaces that players contest, just like the outer space with which they are conflated, are not accessible by humans unaided, but only through the cooperation of humans and uncanny technologies.

Space shooters as enacted narratives show how every pleasure videogames offers is riven with ambiguity. Pleasures of mastery are countermanded by the loss of self that play requires; technological spectacle is tinged with the uncanny conflation of inanimate and animate; the pleasures of contest are hedged around with questions about what one is contending with, and the perpetual reinforcement of human inadequacy to that contest; the exploration of space is constantly threatened. All of these aspects of videogames, which space shooters make visual and ask players to enact, are topics that videogame aesthetics still struggles to find a critical language for, and in this sense, scrutiny of the genre is an aid to meditation on videogames as a medium, or family of media. What is the relationship between player and game? What relationships pertain between player’s bodies and the spaces videogames visualise? What is it to play with an ‘artificial
intelligence”? What forms does our cognitive and affective ‘identification’ with game elements take? What are the specific aspects of gameplay that we find affecting, distinctive? What is at stake in the contested spaces of play? This genre in early videogames can be seen to pose, visualise, and have players enact these questions, to activate and resolve the anxieties around the uncanny spectacles of real time play before the fact of videogame studies — as a genre, it is tempting to view it as a centre to which videogame studies might make successive, productive returns.

This chapter’s analysis of the space shooter has not been complete in its coverage of all the games that might be considered as space shooters, and it has not considered some questions about where limits might be drawn, and what does and does not count as a space shooter. This is in part because of the theoretical framework that informed its approach to genre, which eschews processes of strict and final definition in favour of illuminating description. Nevertheless, some pertinent questions have been left unanswered, or as possibilities for future explorations of this genre. Does 1942’s (Capcom, 1984) similar style of gameplay qualify it for consideration as a space shooter, despite the derivation of its iconography from the Second World War? This chapter has not explored areas of thematic expansion in the genre: what about Time Pilot’s deployment of time travel alongside space travel as a gameplay dynamic? It has not given extensive coverage to any particular aspect of the genre, and aspects such as the increasingly sophisticated structural deployment of stages and levels could perhaps in themselves sustain a useful genre study. What it has done though, in relation to debates in videogame studies around genre, is show how a concept of genre that is not based on the
strict application of one or a small number of criteria, nor on one aspect of play alone, can be fruitful in understanding what is distinctive about certain families of games, and how they fit into a broader media context.

The chapter began by considering accounts of genre that emphasised the ludic context or players' goals in genre analysis of videogames. It considered the anxieties that have been expressed in relation to 'text-centred' accounts of genre: that it might obscure player experiences, or that it might lend weight to a view of videogames as formulaic experiences. It was suggested in the light of emerging debates in videogame studies that our accounts of genre might be more useful if they were finer-grained than a sense of their context alone could provide, and if they involved a more multidimensional picture of genre than a single category of differentiation could provide. The chapter then considered genre study and genre theory as developed in relation to other media, and showed how 'folk taxonomies' in relation to genres could usefully be taken as a starting point in scholarly analysis, and how genre study had in some instances been conceived not so much as an 'Aristotelian' exercise in binary classification, but as a 'Wittgensteinian' exercise in the elucidation of family resemblance. Rather then viewing genre as directed at uncovering the 'formulaic' aspects of popular texts, this approach was shown to allow an understanding of genre families as complex networks of similarity and difference, and the task of criticism as expanding and clarifying our sense of these differences through descriptive analysis.
In approaching the genre of the space shooter, it started with an elucidation of the genre as a ‘native category’ in fan and journalistic writing, and the hypothesis that it was part of a broader transmedial ‘kind’ of science fiction. It considered aspects of this broader kind as analysed in film and literary scholarship, namely its preoccupations with alien encounters, technology, and space – both outer space and spatiality itself. It showed how the ‘narrative images’ of space shooters exemplified these same preoccupations, and how they were also iconographic features of the space shooters’ mise-en-scene. More than simply sharing a surface of resemblance, though, space shooters’ specific presentations of these kinds of image showed how they fitted with traditions of visualising alternative modes of cognition, the technological uncanny, and space as a zone of conflict. Considering the contested spaces of space shooters as enacted narratives, it showed how we could think about space shooters as science fiction in a new mode. In particular, it argued that space shooters represented an invitation to play out particularly striking aspects of videogames as a new media technology of embodied, cyborg, real-time play.

In all of this, there has been no suggestion that the ways into genre suggested by Newman (2004) and Wolf (2003), the authors considered at greatest length in the review of approaches to videogame genre, are irrelevant. Newman’s stress on ludic context is important, and the space shooter is a genre that is particularly characteristic of arcade play, which has been the focus of this thesis over its length. The kinds of prolonged science fiction games that emerged very quickly in domestic play — with games like Elite (Firebird software, 1985) as key early examples — are deserving of separate treatment for their intriguing incorporation of managerial imperatives in play, and their peculiar
characteristics are clearly related to the context they were directed at and played in. Wolf's stress on player's goals is important, as videogames are played, but the complete disavowal of representational commonalities in accounts of genre flies in the face of the way in which genres circulate publicly, and the way that the games industry, journalists, and fans are informed by, use, and understand genre. We can incorporate an attention to context and an acknowledgement of the characteristics of players' information behaviour in accounts of genre that recognises that videogames are related to one another in multilayered, multidimensional ways, and the construction of and enjoyment of generic games is tied to a broader context and history of audiovisual media and predigital narrative. This account of the space shooter has been, in line with the themes of this thesis, comparative, concerned with critical accounts based on the author's own gameplay, and attentive to audiovisual aspects of play, and while focussed on early videogames as periodised in this thesis, it has been developed in relation to current and emerging debates in videogame aesthetics. The following conclusion will summarise and reflect on the results of sustaining this focus throughout the thesis, while thinking through the construction of intimacy in gameplay as a future focus for a post-formalist videogame studies.
CONCLUSION

The Aesthetics of Intimacy

This thesis has tried to ‘read’ a series of early videogames with attention to their contexts. It has resisted up to this point the idea and the vocabulary of reading: the idea that a film can be ‘read’, let alone a videogame, is still controversial. Nevertheless, by playing games, then thinking through their relationship with a broader framework of media technologies, texts, and other videogames, it has sought to understand their pl

The first important contribution this thesis has made has been in carrying out forms of aesthetic analysis in the context of a particular period in videogame history. The precise terms of its periodisation, however clearly rooted they are in existing research, could be debated and no doubt finessed in the future. However, the idea that there is an eternal essence of gameness that applies to all games -- even predigital games -- might well be seen as having been problematised by this thesis’s outline of a range of issues and preoccupations that are characteristic and distinctive of the period when ‘old games were new.’ Understanding videogames as embedded in specific historical contexts has enabled comparisons with a broader range of theoretical and cultural reference points, and has pointed towards the possibility that further periodised analysis might be informative in terms of understanding the history of videogame aesthetics. Rather than attempting to contribute to linear histories, it drew on already-published historical work to understand the archaeology of ‘participation’ in the earliest games, the relationship between strategies of visual presentation in videogame design and other media, and the way in which genre is established in videogames by drawing on the iconography and thematic
concerns of broader, transmedial collections of texts. Avoiding both the teleological discourse of upgrade culture and the celebratory narratives of retrogaming, the thesis has specifically engaged with certain games during the earliest period of videogames' emergence, with a focus on the relationship between particular games and a broader landscape of media, culture, and technology. The historical focus has helped to show that the earliest period in videogame history, which introduced the technologies and spectacles of real-time play, can still be seen as offering innovative forms of interaction, sophisticated audiovisual design, fully-fledged fictional worlds and complexly interrelated families of texts. At the same time, the preoccupations of designers and players at this point are distinctive, and some games offer the opportunity to play out the 'astonishment' and sense of the uncanny that these early examples of real-time play provoke. In these senses, the thesis has contributed to the idea that analysis without due attention to historical context may lead to misconstruing the games under consideration.

Audiovisual aspects of videogame design have also received extended attention in this thesis – as offering a way of thinking about videogames in relation to other media, as well as thinking about the role audiovisual design has in presenting the specific nature of the worlds of play videogames offer. In particular, the thesis synthesised and applied a model of gamic mise-en-scene that was used in understanding how the visually-constructed worlds of videogames are presented and made accessible to the player, how fictional worlds in videogame play are, to a significant extent, visually constructed, and how genre can be understood as existing partly on an audiovisual dimension in videogames. As mentioned in the first chapter, Atkins (2006) has wondered about
whether or not the study of digital games might not be better bifurcated in 'game studies', where structural essences of play are pursued, and 'videogame studies', where the visual aspects of games are considered more closely. Without committing itself entirely to such a position, the thesis has shown that extensive attention to audiovisual aspects of games, as opposed to Ludology's concern with deep structures, for example, offers a way into critical analysis that allows an attention to the specificity of the fictional worlds and pleasures that particular games offer. This thesis has shown that, even in the earliest games (often seen as examples of 'pure gameplay'), the process by which players come to understand the requirements of a particular game's information behaviour can be understood in terms of gamic mise-en-scene, whereas it is unclear what an attention to deep, abstract, underlying rule structures as distinct from 'fictional projections' can tell us about individual games. Audiovisual aspects of particular videogames have been used in this thesis to point out relationships with forms of media art, different kinds of screen-based texts, and transmedial phenomena such as the broad 'kind' of science fiction. This has also enabled a discussion of games in terms of a broad range of informative theoretical tools from aesthetics, film and television studies, cultural studies, technological history, and elsewhere.

Throughout, the thesis has evinced an explicit commitment to contextualising early videogames in relation to other media, and games were discussed in relation to media art, cinema, television, other new/digital media forms, literary genres, and visual art. All of these comparisons served to illuminate aspects of videogame aesthetics, whether in terms of their constructions of space, their construction of or participation in genres, their
ambition to deliver new kinds of experience to audiences, or the ways in which they
guide players’ information behaviour. Rather than distorting our view of what
videogames are, it has been shown that it is possible to more extensively illuminate them
by bringing them into dialogue with a broader field of media, technologies, texts, and
cultural forms. In advancing this comparative method, the thesis problematised
approaches to videogames that seek to seal them off from other media, and from methods
and critical concepts developed in relation to other media.

The thesis has also made a contribution in the development of specific critical terms and
concepts for describing the pleasures of videogame play. It brought debates in
philosophical aesthetics into videogame studies in order to justify a method based on
close, piecemeal textual analyses. Drawing on the work of Manovich, it suggested that
designers could be thought of as engaged in information design, and as in part embedding
in games certain imperatives for players’ information behaviour. This more flexible idea
of the relationship between players, worlds of play, and designers allowed analyses that
were less focussed on formal rule structures or videogames as games, and more attuned
to reflecting on the experience players have of worlds of play, and the comparisons it is
possible to make between videogames and other media. It applied Galloway’s notions of
move acts and expressive acts in this context, as a finer-grained way of thinking through
the nature of the requirements that videogames exacted on players as a condition of
remaining present in their worlds. It contributed to the methodology of videogame
archaeology, seeking precedents and contextual relationships for the forms of
participation that the earliest videogames offered. The thesis criticised and modified
Juul's notion of fictional worlds, using Jenkins' and Manovich's notions of game design as a kind of architectural practice in order to understand how games evoked, embedded, and asked players to enact their spatial stories. It also brought concepts of genre developed in film studies, literary studies, and elsewhere to nuance and extend emerging conversations in videogame studies around this topic.

Importantly, given the emphases of the thesis, it carried out close analyses of particular games and families of games that can be said to have illuminated them further, and extended the discussion around them. It related Pong to movements in 'postobjective' art, and to a broad technologically utopian discourse in 1960s culture as a way into understanding its relationship with television and the character of the experience it offers to players. It showed how Night Driver incorporated its mise-en-scene, its haptic elements and references to works in other media to produce a rich fictional simulation of driving. It showed how Missile Command used its evocative, embedded, and enacted elements not only to produce an unusually tense and compelling gameplay experience, but how it also formed part of a broader family of cultural forms and experiences that thought through the consequences of nuclear war. And it showed how early space shooters refract in new ways the traditional concerns of science fiction – with the alien encounter, technology, and space – and could be seen to allow a playing out of anxieties around the very technologies of real-time play in which they were embedded.

The thesis has also mapped out or contributed to several clear pathways for further research. Chapter One has suggested that a further exchange between debates in
aesthetics, new media studies and film studies may further refine, or give new impetus to debates in videogame studies. Chapter Two suggested that more specific investigations on the earliest period of videogame history using frameworks of technological and media history combined with specific kinds of historical method might produce a clearer view of the development of videogames as cultural technologies. Chapter Three showed the productivity of close analyses of videogames which were attentive to their audiovisual aspects as a way of understanding the way in which they constructed relationships between players, rules, and spaces, and how videogames’ visual aspects and themes could be tied to a wider context. In this sense, it was suggestive of the future productivity of such piecemeal close analysis. Chapter Four showed how future genre studies could benefit from a multidimensional model of genre, which opened genre out to relationships with other media forms.

Taking together the larger themes of the thesis, though, what has been suggested, without being explicitly stated before this point, is that it is possible that videogame studies might benefit from a reorientation away from underlying rules and structures, mechanisms of interactivity, and abstract modellings of what games have in common, to consider instead how, from the early 1970s, a mass medium was constituted on the basis of a desire — by producers and audiences — to construct a greater intimacy with televisual images. There is a consistent movement in the foregoing arguments that can here be made explicit: beginning with the image that players spend most of their time looking at and thinking through the differences and similarities between the imagery of particular games and other games, the history of vision and a broader visual culture can yield insights that an
attention to rules alone, for example, cannot. Rather than thinking about videogames as
games that have been remediated through the happenstantial agency of computers and
screens, thinking of them as a form of information design aimed at a new level of
intimacy with screen images allows new kinds of critical insight. Atkins’ suggestion of a
videogame studies that thinks through the character of the image has the benefit of
expressing this insight — that the audiovisual image is still central in videogames, and that
this is where spaces are constructed, actions played out, consequences understood and
read, progress measured and judged, where rules have their relevance, and it is an
important place where the history of videogames can be mapped.

If this is taken as one consequence of the foregoing arguments — that the desire for
intimacy with a screen image is crucial to understanding videogames — then the
contribution made by this thesis, and the future research it suggests, can be restated
slightly differently. What it suggests is that the tools developed in relation to other media
have an enduring relevance for videogame scholars, and that this hybrid form of
information design, which can be seen as a crucial instantiation of convergence, needs to
be seen as being embedded in the histories of the moving image, real-time interaction,
media technology, cultural discourses around science and technology, and aesthetic fields
that deal with the pleasures of seeing, hearing, and touch. Atkins takes the continuing
relevance of vision to suggest the possibility that the field may require bifurcation;
perhaps a better suggestion on the basis of the arguments made in this thesis is that these
popular artworks that mobilise the intimate pleasures of prolonged looking, listening, and
touching in relation to a real-time image is best understood within an interdisciplinary
framework that can harness the widest possible range of resources. Rather than being focussed on the formal definition of videogames in an effort to make them internally consistent and utterly distinct from nearby forms, a popular aesthetics of videogames that speaks to the pleasures of the audience and can take its place alongside journalistic criticism may need to be post-formalist, and to actively eschew the desire to fix, to define, and to classify in quite the way that many approaches to videogames have.

If each designer begins with the project of constructing a piece of information design that will pleasurably hold players in place, and which will stimulate their desire for prolonged contact with the world of a game, then it may be that a criticism that seeks to establish boundaries, borders, and rules will be unable to capture the processual experiences of intimacy that specific games provide. Rather than approaching games with a romance of information that seeks the deep structure beneath the complex surface pleasures of videogames, there may be something to be gained by attending to that which has been seen as the ‘window dressing’ by ‘hardcore’ critics. If nothing else, this thesis has shown that this window dressing takes some accounting for – it can occupy our critical faculties, and is deeply imbricated with a range of histories, discourses, and traditions.
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