# Teleplastic Technologies: charting practices of orientation and navigation in videogaming.

James Ash

The Open University

www.jamesash.co.uk

Full version with images published in the journal:

'TRANSACTIONS OF THE INSTITUTE OF BRITISH GEOGRAPHERS'

Available at:

http://www3.interscience.wiley.com/journal/123341982/abstract

## Abstract

In this paper I develop the concept of 'teleplastic technologies'—technologies which pre-shape the potentials and possibilities for human action, movement and sense—through the example of videogaming. I develop a case study of videogame users through which I unpack the characteristics of teleplastic technologies and the ways in which they operate to reorganise the capacities and capabilities of users' bodies through spatial means. In the first section I argue that teleplastic technologies should be understood from a spatial / ethological perspective and show how ethologically limited videogame environments encourage users to act and move without thinking in response to various inhibitors and disinhibitors designed into that environment. In the second section I show how the somatic techniques users develop in response to these worlds reorganise the cardinal orientation of users' bodies and, thus, how the 'geography' of teleplastic technologies shape the potential and possibilities for spatial sense.

Key words: Teleplasty, embodiment, materiality, technology, videogames

## Introduction

Much recent work in human geography has explored the relationships between materiality, spatiality and technology. A variety of writers have shown how various technologies—for example, the train (Bissell 2009), the car (Laurier 2004), the cinema (Doel and Clarke 2005, Doel and Clarke 2007) and digital computing (Thrift and French 2002, Dodge and Kitchin 2004, 2005, Paterson 2006)—alter human experiences of space and time. Thrift has sought to think through these relationships in terms of a new kind of 'movement space' (2004) or: "The bending of bodies-with-environments to a specific set of addresses without the benefit of any cognitive inputs, a prepersonal substrate of guaranteed correlations, assured encounters, and therefore unconsidered anticipations" (Thrift 2004b, 177, see also Clough 2000). This 'technological unconscious' is a set of unthinking ways of doing that situate and prioritise specific ways of acting, and that are partly constituted in and through our use of technological objects. This is not the unconscious in a Freudian sense; it is not a deeply suppressed desire or a repression that is internal to the body (see Freud 1922, 391). Instead it operates through the ongoing performance of life, in the temporal gap between distinct states, entities, motions and movements. These 'knowledges', as Thrift calls them, are fundamentally geographical, emerging from the relationship between particular bodies and spaces. They "do not belong to 'us' or to the environment. Rather, they have been coevolved, and so refuse a neat distinction between organic and inorganic life or between person and environment" (2004b, 176 also see Thrift and French 2002). For Thrift, the technological unconscious is shaped by all manner of technologies from personal computers, to mobile phones, to train timetables and hotels and so on (see

Thrift 2004b, 2009). Developing Thrift's point, I argue that technology not only shapes the unconscious knowledges humans have about the world, but that technology operates to organise the material sensory capacities of the body itself, and thus the limits of the sensible. In other words technology does not simply organize the spaces in which humans live in different ways, but shapes how space is itself perceived and experienced by humans. As such, technologies can be understood as *teleplastic*. For Caillois, teleplasty literally means molding or forming at a distance. It is a kind of 'morphological mimicry' or "genuine photography…of shape and relief on the order of objects and not of images" (2003, 96). For my purposes here, teleplasty describes those technologies which pre-shape the potentials and possibilities for human action, movement and sense. In this sense, technologies do not only preempt what one can do and the ways in which one can do it; technology itself acts to pre-empt possibilities for sense by shaping the user's 'phenomenal field' (their capacity to sense space and time, and entities within that space-time).

In Thrift's account, all technology is teleplastic in some sense. However, I want to argue that teleplasticity is amplified in technologies which rely upon an intimate relation between gesture and interface. For Galloway interfaces are both "thresholds and transitions" and "significant surfaces" (2009, 936); an interface can be a door, a window, a cricket bat, or a computer screen or keyboard. In either sense, the interface refers to "the place where flesh meets metal or, in the case of systems theory, the interface is the place where information moves from one entity to another, from one node to another within the system" (ibid, 936). Current accounts of 'neuroplasticity' show how the human brain is continuously shaped through the relationship between gesture and interface—especially those interfaces that require the development of complex motor skills—which, in turn, alter and affect the limits and possibilities of

thought and action (for example, Wilson 1999, Lutz and Thomson 2003, Draganski et al 2004, Thompson 2005). As such, interfaces can be considered a key site through which new habits, actions and ways of doing and acting emerge in the world.

Here I want to explore the ways in which teleplastic technology operates through examples drawn from videogame play. Teleplastic technologies are by no means limited to videogames, but videogames offer a useful way to think about how teleplastic technologies operate and how they affect users' bodies because they rely upon complex mediations between user gesture, interface and spatial awareness. The teleplastic effect of technologies like videogames might be understood as an action of 'control' rather than 'discipline' (Deleuze 1992). Whereas in earlier systems individuals were disciplined through particular systems of enforced enclosure and exposure (see Foucault 1977), Deleuze suggests that control now operates inadvertently through systems which pre-shape users' access to space in a dynamic way. This dynamic control limits the very possibilities and potentialities for sense and movement within a space while offering the illusion of complete or total access to that space. For example, in motorway driving one can drive "infinitely and 'freely' without being at all confined yet while still being perfectly controlled" (Deleuze 1992, 3). One has to drive according to a preset number of roads and the rules that govern the road. The potentials for sense on the journey are prelimited by those possible routes and the interface of the car that travels that route. In many imaginings of the future, technologies like videogames are seen as emblematic of the society of control. This position can be usefully summarised by the claim that technologies like videogames encourage users to "willfully limit his or her bodily sphere of influence to a few simple gestures, to the emission—or zapping—of several signs" (Virilio in Conley 1993, 8, see also Virilio 2006 part 3, 2007, 50).

Yet, as Virillo explains, teleplastic technologies are not purely negative; they are both enabling and disabling. In the case of videogames at least, environments and interfaces can imbue users with a new range of capacities with which to sense space and time, and to orientate themselves. These technologies do not simply take away from or stand in for the capacities of the body; they actively alter those capacities. I will show this by attending to the complex comportments involved in the practices of sitting and using videogames. I argue that videogames do not simply lead to sedentary or disorientated bodies; they re-organise the very cardinality of the body itself. In doing so, I expand upon existing work in geography which explores the complex movements made by apparently 'still' or 'immobile' bodies (Adey 2006, 2007, Bissell 2008).

By concentrating on the *materiality* of bodies, this paper attends to the practices of spatial orientation as constructed by bodies through their own movements. Psychoanalytic accounts have tended to emphasise the ways in which screen-based media (such as film) are able to produce a disembodied gaze or illusion of total mastery over a space (see Mulvey 1975, 1989). Starting from the materiality of bodies, rather than the subjective experience of playing videogames (although I do include reflections from users' on their own experience in the paper), allows me to rethink this model. Instead of positing the user as an all powerful or detached observer, this research shows how engaging with videogames encourages the production of fragmented modes of looking and gesturing in which the very body of the user becomes dissimulated into the 'space' of the image and cardinal orientation (the spatial orientation given by the structure of human bodies, rather than in relation to external points in space) becomes distributed into the in-game environment. As such, the primary orientation of the body should not be understood as a fixed or stable 'thing'. Rather, I show how the very 'essence' of cardinal orientation undergoes change as the teleplastic technologies

through which we access the world (as well as the worlds we access through technology) emerge and develop. Indeed, while the body is primary in the process of constructing its own orientation in the world and its own abstract scales for engaging with this world (see Merleau-Ponty 1962, Casey 2003, Malpas 2008), cardinal orientation and the techniques humans develop to navigate through extended space are always culturally and historically relative. In other words, different cultures produce different techniques and ways of conceptualising their embodied orientation (see Hutchins 1995). In this paper, I explore the creative techniques and capacities generated by users in *response* to the spaces and places of *particular* videogames in order to show how those videogames produce new forms of cardinal orientation and ways of making sense of this cardinal orientation that both draw upon and alter existing modes of spatial sense.

For Thrift, modern forms of technology and the systems of 'qualculation' they produce have a number of knock on effects for experiences of spatial awareness and orientation. Speculating about future developments Thrift argues that:

> "in a qualculated world…much greater cognitive assistance is routinely available. First, sense of direction will become a given. It will no longer be something that has to be considered. Second, and similarly, wayfinding will become a much easier matter, with much of the effort of search moving into the background" (Thrift 2004, 599-600).

In this paper it is my aim to move beyond speculative thinking to examine how technologies such as the videogame are having a concrete effect on users' spatial awareness. To do this I draw upon an extensive video ethnography that charted the practices and techniques involved in everyday

video game use with two games for the Xbox videogame console: a platforming action game called *Lego Star Wars: The Original Trilogy* (Travellers Tales 2006) and an arcade street racing game *Burnout 3: Takedown* (Criterion Games 2004)[i]. This research therefore utilizes a 'microethnographic' method (Giddens 2007, 2009, in a similar vein also see Behrenshausen 2007, Reeves et al 2009). This field is concerned with examining practice from an event-based perspective by concentrating on "small-scale and short-duration…events…and their transitory and momentary nature" (Giddens 2009, 149). Drawing upon transcriptions describing the sessions, screenshots from these sessions and direct quotes from participants themselves I argue that videogaming as a practice encourages the development of new forms and experiences of cardinal orientation which are themselves predicated on the production of environments that encourage the user to move and act without propositional or representational thought. As such while I only draw upon a small number of different games, all of which emphasise different somatic techniques, capacities and spatialities, I want to point to a number of techniques developed by users that are common to all of them.

It is worth reflecting upon the specific nature of the study sample group and thus the findings of this case study. All the participants in my opportunity sample were adult men within a fairly narrow age range (between 20 and 27)[ii]. The behaviour described cannot be simply extrapolated to populations of videogamers as a whole, because it ignores the profound differences between different aged, sexed and gendered bodies, and the practices of socialisation which encourage and prohibit particular kinds of

capacities and competencies. While differences between different groups of people are socially constructed, these differences have real effects on the corporeal potential of bodies and the ways in which they go about attempting tasks and actions in the world. For example Young argues that women have been socialised into acting with an "inhibited intentionality" and a "discontinuous unity with [their] surroundings" (1990, 147). It would, therefore, be wrong to assume that the particular techniques and effects described here apply to people in a general sense. It is important to remember that teleplasty, as a process, differs depending on the specific bodies and situations involved.

The remainder of the paper is composed of two main parts. In section two, I argue that the ethologically limited worlds of videogames are able to produce subjects that move and act without conscious propositional thought. In the third section, I outline the techniques (and bodily capacities) users generate in response to these ethologically limited worlds.

## Ethology, Cardinality and dissimulation into space

> "Today abstraction is no longer that of the map, the double, the mirror, or the concept. Simulation is no longer that of a territory, a referential being, or a substance. It is the generation by models of a real without origin or reality: a hyperreal. The territory no longer precedes the map, nor does it survive it. It is nevertheless the map that precedes the territory—precession of simulacra—that engenders the territory…" (Baudrillard 1994, 1).

Baudrillard argues that the sovereign distinction between map and territory that is often assumed to distinguish representation from reality has never existed. In this sense, map

and territory cannot be meaningfully separated from one another; the technology of the map is central to an ability to navigate the territory and, if an area is not marked on the map, the status of the territory is called into question (also see Smith 2003). This is not to say that modern simulation takes control of a pre-existing, untouched 'real world', but rather that any access humans have to the world is already partially simulated and mediated. As Giddings argues, "human culture has always been artificial (in the sense, at the very least, of artifice as making, as art)" (2007, 394). Technology has always been teleplastic in some way. As such, the simulations produced by videogames should be studied on their own terms, rather than in relation to some 'real' to which they supposedly relate or represent (Galloway 2007). Understanding movement and navigation in videogames, then, requires the development of concepts that pay attention to the specificity of the medium itself.

With this in mind, I want to argue that videogames are best understood from an ecological or ethological perspective (see also, Ash 2009). This perspective understands user behaviour as a series of actions and affects, rather aetiologically as causes and effects (see Deleuze and Guattari, 1988). In videogames, action is key. As Galloway explains:

> "If photographs are images, and films are moving images, then video games are actions…Without action, games remain only in the pages of an abstract rule book. Without the active participation of players and machines, video games exist only as static computer code. Video games come into being when the machine is powered up and the software is executed; they exist when enacted" (2006, 2).

It is important, then, to understand how this action takes place and how it is structured by the teleplasty of the machine and its associated software. Galloway attempts to understand this action as constituted around a number of formal qualities (see Galloway 2006 chapter 1) but, in doing so, he does not consider the spatial structure and its effects on the experiences of users of particular games.

What characterises teleplastic technologies (and thus the environments they produce and of which they are a part) is the creation of limited potentials for movement and action, much like in Deleuze's motorways (1992). Videogames produce a limited ethology for movement and action because both the interface and the in-game worlds accessed by this interface are limited (see Ash 2009, Ash et al 2009). The boundaries of and accessibility to entities within videogame environments are *predetermined* by the games designers. In most games, it is impossible to break through walls or jungle shrubbery unless the designers have programmed, modelled and animated those walls or trees as destructible and given the user a way of destroying them through a control input on the control pad. Furthermore, in videogames these objects also act as absolute limits and boundaries for movement. There is literally nothing beyond the limits of the level the designers have created (see Ash 2010).

In videogames users move their avatars and react to events within these worlds which are structured around what an ethological perspective terms 'inhibitors' and 'disinhibitors' (see Heidegger 1995 236-246, Agamben 2004 50-52). The 'environment' of the game, and the rules that govern this environment, act to inhibit and disinhibit movement in particular ways. Inhibitors act as absolute limits and boundaries, which constrain users' actions and movements (for example, a wall or a rock that the user cannot pass, modify or alter). Disinhibitors allow the user to engage with the environment in some form (for example, a button on the control pad which allows the

users avatar to run; a switch which drops a gate opening a pathway; or an analogue stick which swings a golf club on screen). However, inhibitors and disinhibitors are fundamentally and dynamically linked. One cannot exist without the other because videogames are predicated on the user working between these limits in order to reach or complete a goal. This is not to say that the user becomes totally constrained or controlled by the technology; the user always operates within a play of possibilities which are pre-given by the technology itself (and, as I will show in this paper, different games rely upon different types of movement and control).

These sets of inhibitors and disinhibitors serve to organise the gestures users develop in response to these worlds. Videogames are particularly effective as teleplastic technologies because of the close links they require and produce between interface and gesture. Gesture, as a series of coordinated movements, is akin to the 'language' and 'grammar' of videogames. Yet, Agamben explains that gesture is never merely a means to an end; it is the process through which means are made visible: "the exhibition of mediality" (2000, 58). For example, the gestures displayed on the cinema screen make the potential for action, narrative and meaning to occur available. The relation between image and gesture is double-edged, however.

> "[O]n the one hand, images are the reification and obliteration of a gesture (it is the imago as death mask or as symbol); on the other hand, they reserve the dynamis intact…The former corresponds to the recollection seized by voluntary memory, while the latter corresponds to the image flashing in the epiphany of involuntary memory. And while the former lives in magical isolation, the latter always refers beyond itself to a whole of which it is a part" (ibid, 55).

Videogames do not present, or represent, gesture, but rather encourage the production of *simulated gesture* from the user. These gestures and their close link to the inhibitors and disinhibitors in the environment (in the games in this study at least) work on the level of what Agamben terms 'involuntary memory' which, once it has been accumulated through prior experience of playing games, allows a user to travel without overtly conscious thought.

*Plate 1: Two users controlling the Leia and Chewbacca avatars move through the 'Jabba's palace' level of Lego Star Wars.*

To explain how videogames are able to shape this involuntary memory specifically, I turn to moments of gameplay captured from my video ethnography using the game *Lego Star Wars: The Original Trilogy*[iii]. In this game, up to two users control a series of avatars and move through levels that depict scenes from the famous series of films (see Plate 1). Within each level users are dropped into an environment and given some kind of mission objective—although they may not be aware of what that mission objective is until they have completed it. For example, in the 'Battle of Endor' level, users have to move through the forest to find and disable the shield that protects the 'Death Star' space station. In *Lego Star Wars* the route to these objectives is always predetermined although, in order to get there, users have to complete a series of puzzles, destroy enemies, and perform timed jumps across various obstacles. Furthermore, their destination is never clearly given (as a point on the horizon, for example); it dwells more spectrally in a general 'off screen space'. Users do not have to navigate across an open ground; they follow and unlock a prefixed path, which limits their navigational possibilities within the game environment.

This limited visibility, which is present in all videogames in some form, serves to organise the basic ethology for action and ways of intervening in the environment for the user. This limited visibility is not equivalent to a human first-person perspective on the environment, which limits vision from a single point *within* a scene. Instead, it provides a contradictory 'a-subjective' perspective from *outside* the scene, whilst still remaining a *partial* view on an aspect of the level environment rather than the level as a whole. Indeed it would be easy to equate such a visual perspective as a prime example of what psychoanalytic inspired film theory would term 'the gaze'.

> "[The gaze] represents a point of identification, an ideological operation in which the spectator invests her/himself in the filmic image. As Christian Metz puts it, "The spectator is absent from the screen as perceived, but also (the two things inevitably go together) present there and even 'all-present' as perceiver. At every moment I am in the film by my look's caress"(1982, 54). Being absent as perceived and present as perceiver affords the spectator an almost unqualified sense of mastery over the filmic experience. In this sense, the filmic experience provides a wholly imaginary pleasure, repeating the experience that Lacan sees occurring in the mirror stage" (McGowan 2003, 28).

The videogame user is never "absent as perceived and present as perceiver" in the way that the cinema spectator is. Videogame users do not achieve a sense of mastery and control over the space; they are encouraged to lose themselves in the space through the proxy of their avatar. Through this avatar—which is controlled via the control pad interface—the user is able to engage with objects within the image on the screen and is subject to the limitations of the in-game world.

In *Lego Star Wars*, the partial a-subjective view on the environment given to a user and the infinite and immediate 'respawning' of avatars after they have been destroyed create a context in which users are encouraged to move their avatar in an excessive and continuous way, even when they are not sure how to proceed or what their objective is, in order to establish the limits and boundaries of what is possible. This limited ethology encourages the production of bodies in which action precedes thought. This is expressed in an exchange between two users in 'The Great Pit of Carkoon'. In this level, users are tasked with escaping from Jabba's sail barge. On one end of the barge these users saw no way to advance other than to experiment with a number of coloured buttons and one paddle style switch (Plate 2 illustrates this sequence). As they were unsure about how to proceed, they engaged in the following short discussion:

User 1: "What are you trying to do?"

User 2: "I don't know."

User 1: "What the hell is going on?"

User 2: "I don't know?"

User 2: "We are having some trouble here."

User 1: "There is a switch down here, and one to the left and one to the right."

User 2: "One's all green, so that's good."

User 1: "We don't know it's good, it could be bad."

User 1: "Oh green is good, because that one can't be forced anymore"

User 2: "There we go!"

User 1: "What happened?"

User 2: "I don't know, I made them all go green!"

(Conversation during gameplay between Users 1 and 2, both long-term users)

*Plate 2: Users one and two recklessly experiment with entities in the environment in an attempt to open the door blocking their path.*

The users recognised that a process of puzzle solving needed to be undertaken in order to move forward, but they had no idea how to go about approaching the task, or even what conditions and variables might have been involved. They even questioned the assumption that turning a light green from its initial red state is a good thing (as it signals 'go'): "we don't know it's good, it could be bad". Furthermore, the relationship between the paddle switch and the lights remained unclear. Once all the lights have been turned green, a door opens which allows the users access to the interior of the sail barge. However, even upon the completion of such a task, these users had no idea what the mechanics underlying the relation between paddle position, light activation and door response were. Interestingly, this is not something they viewed as a problem; all that mattered to these users was that the task has been completed and they could move onwards in the level.

The desirable aspects of these kinds of unthinking movement and the reckless experimentation they encourage are expressed by another user in a different session, who explained:

"I play games to get away from thinking…(laughs)…Well, not thinking, obviously you think, your brain is active, but I play to get away from the typical kinds of thinking…It's a kind of escapism I suppose" (User 3, long-term user).

Using videogames allows User 3 an escape from the ingrained processes of instrumental and habitual thought required by their particular everyday activities. While User 3's experience is not necessarily universal (other individuals with different everyday activities might view playing the game as a challenge that requires a lot of conscious thought), his description of videogame use as "escapism" points towards arguments that games can have a therapeutic function. Games can act as "a compensation for the injury to personality caused by bondage to work of an automatic and picayune character" (Caillois 1961, 32). User 3 finds escape from a particular kind of thinking—one which requires premeditated plans of action and rational reflection—and enjoys the gameplay mechanic in which his actions and thought-processes are actively guided by the inhibitors and disinhibitors in the environment. User 3 goes on to explain that movement within an ethologically limited environment can be comforting and relaxing as well as frustrating. On the one hand he claimed: "I don't like to think about my actions, do them now, think about them later…When I play games I don't want to think about my movements". But, at other times, he has a sense of being trapped by the limited ethology of movement and visibility offered by *Lego Star Wars:*

> "Its irritating, I feel quite restricted. I feel I am being forced into doing these particular things and this space is also quite restricted, in terms of what I can push these things on [referring to a set of blocks that can only be moved on tiled surfaces]. I think this is the most irritating thing about it. Not being able to turn around and see, like my vision would be in real life".

In this way, the limited perspective a user has on the environment, as well as markers within the environment itself (such as switches, tiled blocks and so on), acts to both

*enable* and *disable* the user's capacity for action and thought. Working between these tightly defined limits recalls Heidegger's notion of the animal organism as occupying a "disinhibiting ring" (1995, 259), which he defines as a series of pre-given receptivities and non-receptivities to stimuli in the environment. Heidegger argues that the animal is inescapably caught within a tightly defined ring of what it is and is not capable of affecting and being affected by (its behaviour) (ibid, 236). In contrast, humans inhabit an open relation with the world which gives us the capacity to reflect upon entities in the world in a decontextualised, theoretical way. Yet, we can also, as Dreyfus puts it, "let ourselves be involved" in a situation to such an extent that we can act without propositional thought (2007, 355). What videogames do, as emphasised in the quotes above, is to simulate a context in which the user can enter into a disinhibiting ring (the tightly controlled set of possibilities and actions designed into the game), without having to give up their 'open' relation with the world (the capacity to reflect upon entities in the game from a theoretical perspective). For user 3, allowing himself to enter into a disinhibited relationship with the environment of the image is perhaps the primary pleasure of videogaming. It is only when he compares the limitations of the game environment with his everyday extended environment that he becomes frustrated and considers the limitations of the game environment in a negative sense.

As a 'proficient performer' User 3 has moved through what Dreyfus terms an 'intentional arc of skill acquisition' (2002a, also see Dreyfus 2002b, 2007). As a long-term videogame user, User 3 has already acquired an understanding of how various inhibitors and disinhibitors in the environment act to constrain and enable movement. He can approach the situation with the implicit knowledge that in order to move through the game they need to identify these (dis)inhibitors through experimentation. However this 'implicit knowledge' is not a form of conscious or detached reflection on the

situation. As Dreyfus argues, in becoming an expert at a particular skillful activity one does not become more aware of a general set of rules that govern a situation. Instead the user is able to make finer sets of situational discriminations based upon past experience to respond in an appropriate a way as possible to a particular situation: "the idea of the intentional arc is meant to capture the idea that all past experience is projected back into the world. The best representation of the world is thus the world itself" (ibid, 373). This form of 'involuntary memory', as Agamben described earlier, is then enacted without thought, when responding optimally to a situation. Dreyfus gives the example of swinging a tennis racket:

> "If one is a beginner or is off ones form one might find oneself making an effort to keep one's eye on the ball, keep the racket perpendicular to the court, hit the ball squarely, etc…But if one is expert at the game, things are going well, and one is absorbed in the game, what one experiences is more like one's arm going up and its being drawn to the appropriate position…[A]ll of this so as to complete the gestalt made up of the court, one's running opponent, and the oncoming ball…But the gestalt need not be represented in one's mind. Indeed it is not something one could represent. One only senses when one is getting closer or further away from the optimum" (ibid, 379).

Being able to move around the environment of Lego Star Wars can then be "*purposive* without the agent entertaining a *purpose*" (ibid, 379 emphasis in original). The tightly controlled and prescribed nature of the disinhibiting ring of the Lego Star Wars environment therefore amplifies the capacity for

the user to enter into an optimal state of moving without propositional thought.

This disinhibited relation with the environment of *Lego Star Wars* has a number of knock on effects for the cardinal orientation of users (in this study at least). To move through each of the levels in *Lego Star Wars* requires users to fulfil a series of unarticulated tasks. The users did not always seem to know what these tasks are—even where they were able to successfully complete the task as a result of their experimentations—but they were fully aware that there is a task that needed to be completed. Often the best way to complete this task was for users to move around the level experimenting with the objects they come across with absolute abandon, searching for inhibitors and disinhibitors. A consequence of this experimental approach was that the specificity of 'site' (understood as a series of entities that constitute a specific location, see Malpas 2008, 29-30, 2008b, 28) was largely overlooked by *Lego Star Wars* users in favour of a focus on a potential for movement as such. Site is something that is often discussed as central to accounts of spatial experience in extended space (see Lynch 1960, Downs and Stea 1977 and Laurier and Brown 2008). However, the *Lego Star Wars* users in my study were often so busy experimenting with the game environment that they lost track of 'where' they were in a particular level.

For example, in the 'Speeder Showdown' level, Users 1 and 2 became so caught up with experimenting that they were not aware that their movements within a game were such that they were stuck in a spatial loop, which could only be undone through solving a puzzle or by completing an unspecified task. In the level the users gave chase to the enemies on their speeder bikes and shot at them using the bikes' blaster cannons. The path along which they are travelling in order to chase the enemy bikes is a circular loop

that leads back to the opposite side of the clearing from which the level began, but the users did not realise this because they were so caught up in the chase. At the end of first lap, the users returned to the clearing, which triggered the possibility of flipping a switch to destroy one of five lights on the gate barring their entry to the next area.

*Plate 3: Users move around the forest track unaware they are repeatedly travelling the same pathway.*

It was only on the third return to the clearing that the users realised they had been returning to the *same* clearing each time. This is evidenced in their discussion with one another.

User 1: "Is that where we came from?"

User 2: "I don't know"

User 1: "I think it is"

User 2: "Yeah its right back at the beginning!"

It took the users around four minutes to recognise that they had been travelling the same path, and returning to the same clearing, three times in a row. The specificity of 'site'—that which made the clearing an identifiable location—was not sensed by or relevant to the users (in this example at least) because they were captivated within the immediate sensory stimulus of the environment; they were concerned only with the activity of chasing the enemy speeders around the forest 'track', and largely unaware of—and certainly not overly concerned with—the ends to which they conducting the chasing. The clearing itself was important because, once the gate was destroyed in its entirety, the users would be able to move on to the next part of the level. The 'site' of the clearing only became important to the users because they recognised that their task

involved destroying the gate at the far end of the clearing. What this example points to is that, in using *Lego Star Wars,* spatial location is often of secondary importance to the immediate task occupying the user. Any sense of location is derived from and secondary to the actions and affects users can have upon this world. Here a sense of location is created from absolute movement through the environment, rather than through processes of slowing down, stopping and assessing, which are prevalent in forms of navigation in extended space (see Laurier and Brown 2008, 205-209).

Practices of movement in *Lego Star Wars* are both constrained and enabled by the disinhibiting ring created by the game. This encourages a break down and reorganisation of the cardinal orientation of users' bodies. Their sense of 'near' and 'far'—which Mearleau Ponty argues to be constituted relative to the users body (1962)—becomes exploded and distributed onto the screen as they play the game. This process of distribution reflects what Caillois terms the 'lure of space' by different forms of animal being. Caillois suggests that organisms do not mimic their environment for some form of competitive advantage, but instead are lured into space, seduced by it and 'succumb' to it in a process of "depersonalisation through assimilation into space" (2003, 100). Spatial perception becomes a complex expanding and contracting field that extends beyond the epidermal limit of the organism, which he terms a 'double dihedron' of action and representation:

> "continuously changing its size and location: it is a dihedron of action, with a horizontal plane determined by the ground and a vertical plane determined by the person walking and thus pulling the dihedron along at the same time; and it is also a dihedron of representation, shaped by the same horizontal plane as before (which is represented rather than

> perceived) and cut by a vertical plane just where the object appears in the distance. Matters become critical with represented space because the living creature, the organism, is no longer located at the origin of the coordinate system but is simply one point among many. Dispossessed of its privilege it quite literally no longer knows what to do with itself" (2003, 99).

In the example above, the users lost their sense of situatedness—their sense of where they are—and became, as Caillois argues, one point in the environment amongst many. The relation between the avatars that they controlled, their hands which controlled their avatars, and the ethological environment of the game which inhibited and allowed movement and interaction becames blurred to the extent that cardinality was no longer a 'property' of the body, but emerged from the ecological relations between the affects of the environment and user. This is not to say that playing videogames encouraged these users to return to some basic animalistic state, but rather suggests that, in playing videogames, the users' intentionality became decentred and distributed into the in-game environments with which they engaged. The users did not exhibit a detached mastery over the space; they were actively shaped by it. This shaping occurred through the somatic techniques users develop in response to these environments, which I outline in the next section.

## Teleplasty and gesture

While Caillois suggests that teleplasty in the natural world occurs on the "order of objects and not on images" (ibid) in the videogames in this study at least, the images on screen shaped the corporeal dispositions and capacities of the bodies that engaged with them. In terms of videogames then, teleplasty refers to the process by which a body

enters into a disinhibiting ring with the game environment and through which the corporeal capacities of that body are shaped as it responds to this environment. This process of teleplasty can be outlined in greater detail through an example drawn from the videogame *Burnout 3: Takedown*, where users develop proprioceptive techniques to cope with and navigate through the game. *Burnout 3: Takedown* is an 'arcade style' street racing car game (Plate 4 shows a typical screenshot from the game).

*Plate 4: A typical screenshot of gameplay in Burnout 3: Takedown*

The main threat in Burnout 3: Takedown is crashing. If the user crashes (into an opponents vehicle, an obstacle, or other traffic) all the users 'boost' is lost, and they have to begin accumulating it again In order to successfully navigate the race without crashing, users develop a series of sensori-motor skills to cope with the excessive sense of speed generated within Burnout 3: Takedown. In the first instance, users concentrate their visual attention on the middle-distance of the screen—on the vanishing point where the extended road ahead merges into the landscape and backdrops of the surrounding environment—rather than focusing on the car or the car's immediate and current position. As User 4 (a medium-term videogames user) discussed in a short exchange which occurred during one of the video ethnography sessions:

> User 4: "I find this a bit tiring on my eyes, it's a bit, it's the fast movement. The screens a bit symmetrical, in the sense that there are lots of trees…"
>
> Author: "Do you find yourself concentrating at any point on the screen, when you are playing?"
>
> User 4: "Just ahead of the car…I concentrate, just literally over the top of the car, on the horizon of the car."

During the video sessions users only recognised that they were focusing on the point just above the horizon of the car when they were explicitly asked about the part of the screen on which they were concentrating. This focus aided User 4 in anticipating the emergence of cars and obstacles on the road ahead. Focusing on the middle-distance in this way allowed the user's eye to remain focused on a relatively set point in the centre of the screen. The vanishing point remainsed more or less fixed in relation to the frame of the image (the screen) whilst the road and surrounding environmental features rushed past the user's vehicle.

In the 'double diahedron' of action described by Callois, we can consider how the inhibitors and disinhibitors of the environment in *Burnout 3* (the boost system, the flow of the other traffic on the road, the 'camera's' perspective on the scene etc) shape the spatio-temporal horizon of expectation or *phenomenal field* that users inhabit while they concentrate on avoiding traffic. User 4 concentrated on the middle distance, both literally and figuratively. Literally his eye concentrated on the middle point of the image and figuratively his body inhabited a concentrated point within a temporal horizon of recollection and anticipation. He was drawing upon his past experience to dodge oncoming traffic (recollection) and he constantly attempted to judge and pre-empt the emergence of this oncoming traffic (anticipation).

The relation between the limited visual perspectives and ethologies for action created by videogames like *Burnout 3*, encouraged users to develop complex forms of pseudo-digital bodily movement in order to sense and respond appropriately to the complex forms of time and sensory motor challenges presented to them. By pseudo digital movement I mean movement reliant on discreet states, rather than differences in degree. Movement was, then, judged and sensed on a proprioceptive level. For Massumi, proprioception is a self-referential sense, in that what it most directly registers are

displacements of the parts of the body relative to each other" (2002, 179). He contrasts the proprioceptive systems of the flesh to other exoreferential senses like vision (which register phenomena from the 'outside' world). In order to navigate through the traffic in *Burnout 3*, users controlled their vehicle using a series of short staccato flicks on the Xbox's left analogue stick. In the following sequence (illustrated by Plate 5), User 5 was driving down a long, straight section of road which contained traffic moving in both directions.

*Plate 5: The user spots oncoming traffic and moves the analogue stick to avoid crashing.*

In order to avoid hitting these vehicles, while maintaining his speed and travelling in a straight line, he jogged the stick away from its centred neutral position in order to move left around a car, then right and so on. He allowed the stick to return to its centred neutral position after each jog, which had the effect of keeping the vehicle on a straight course except for the necessary adjustments. The analogue sticks on the Xbox control pad are sprung so as to return to a centred position in the absence of pressure from a thumb. In most cases, users kept their thumb engaged with the analogue stick and simply stopped applying pressure to it. These jogs are themselves very small, both in terms of the physical distance the stick is displaced and the amount of time taken between the initial displacement of the stick and its release and return to its central neutral position. In an average game of *Burnout 3*, the users participating in this research completed around 30 jogs or flicks of the analogue stick each minute, which equals around one shift every two seconds[iv]. This technique was present in both very experienced users—one of whom had played the game for "over seventy six hours" (User 5)—and users who had never played the game before the video sessions, although the more experienced users were able to flick on the analogue stick faster to respond

better to events in the game. Regardless of their level of prior experience in using the game, users were not overtly aware of the fact they were steering using this technique. In other words, they quickly achieved an optimal state within an intentional arc of skill acquisition (Dreyfus, 2002a).

Reflecting upon why this technique became the dominant mode for successfully steering in *Burnout 3* foregrounds a number of issues. Firstly, the dead centre of the analogue stick becomes a consistent point of measurement from which displacements of varying length of time and space can occur. The dead centre of the analogue stick—where it rests when it is not being manipulated—serves as a cardinal point from which relative stick movement can be made. As the example with User 5 suggests, jogging the stick acts to cut the movement of the thumb (and, thus, the movement of the car in the image) into component pieces. Cutting of the movement into a series of short staccato flicks produces a relative 'metric' between thumb and eye, image and car. Displacing the analogue stick by three millimetres to the left results in the car moving (approximately) ten degrees to the left in the image. This process of naturalisation can be understood to produce a series of bodily capacities. Skilled users naturalise the disjunction between these two forms of distance: the distance they displace the analogue stick, and the degree of movement to the left or right that this produces in the image. This, in turn, creates new ways of haptically relating to the difference between different units of measurement—in this case between millimetres and degrees of movement in the image. Employing short staccato movements also acts as a technique to allow users to cope with the fact that objects and other vehicles would suddenly appear on the horizon and move quickly into the foreground, where they became a threat to the vehicle.

For Agamben "what characterises gesture is that in it nothing is being produced or acted, but rather something is being endured and supported" (2000, 57). In using *Burnout 3*, what is supported is not the body but the capacity of the vehicle in the image to move down the track at its maximum speed. Here user gesture is organised around a cardinal point which operates between the neutral position of the analogue thumbstick and the vanishing point of the horizon of the image. The inhibitors and disinhibitors in the environment encourage a body that is more sensitised, and thus able to respond to incredibly small units of space and time.

## Conclusion

In this paper I have developed the example of videogaming to show how technologies can operate teleplastically to shape users' capacities for sense. In the accounts and instances of videogame play developed here, I have argued that when playing the videogames in this study "ones sense of personality (as an awareness of the distinction between organism and environment and of the awareness between the mind and a specific point in space) is quickly, seriously undermined" (Caillois 2003, 100). In learning to deal with the various inhibitors and disinhibitors in the environment, these videogames encourage particular forms of movement and gesture from users as they navigate through them. This leads to a dissolution of bodily cardinality and reorganisation of this cardinality in relation to the disinhibiting ring created between user and game environment. Whilst the user's body is still corporeally 'present', located and placed in front of the screen, the user's sense of perception of presence is spread and distributed into the environment on screen. In other words, through the creation of a disinhibiting ring (the limits and potentials for movement and action in the game),

videogame environments operate teleplastically to reorganise user's cardinal orientation.

According to Wetzels, Caillois's concept of teleplasty radically decentres the human organism: "render[ing] the formerly sharp distinctions between inorganic and organic nature, between man and the rest of creation as mere gradual differentiations" (1971, 41 in Frank 2003, 13). Thinking through these implications in relation to practices of videogame use complicates an account that posits an intentional or conscious user taking control and mastering the space of the image from a detached or disembodied perspective. Instead it suggests a process of somatic reorganisation of the human being as users engage with these games. In relation to the male users in this study, this reorganisation occurred through the development of pseudo-digital forms of movement and the remapping of their cardinal orientation in relation to the specific inhibitors (such as walls, pathways and control limitations) and disinhibitors (such as switches, triggers and doorways) designed into the spaces of the games. Although they controlled the game using their hands, they succumbed to the ethology of the environment and in doing so became *unaware* of their location in the image, for example.

It would be easy to argue that videogaming, as part of a broader 'screen culture', is an incapacitating and sedentary practice (on the relationship between movement and screen use see White 2006). What I have argued here is that videogames are far from incapacitating. While the XBox user is relatively immobile in front of the screen, they cultivate and develop a positive set of somatic techniques for coping with the ethologically limited worlds of videogames. Furthermore, one should not equate engagment with an ethologically limited world with the creation of ethologically limited bodies. As I have shown, limited ethologies encourage the production of more intense and accurate sensorimotor responses from users, often within incredibly small temporal

windows. This is aided by the simulated nature of the rules and variables that govern the worlds that users interact with. Videogames present the user with a lower number of contingent variables than one might experience in extended space (for example, they do not have to contend with wind direction in *Burnout*). In doing so, they create bodies primed to creatively respond to intensive situations without thought. A lower level of contingency present in the environments of the games allows users to better anticipate events within the disinhibiting ring of the game and thus to respond more easily without overt thought.

This work has offered a way of documenting practices of technology use. Concentrating on the micro-ethnographic level has allowed me to demonstrate how technologies operate to organize user gesture and in turn how engaging with the disinhibiting ring of the games shape the users' phenomenal field. These movements and gestures, and the ways in which users' capacities for sense were shaped by the games, would have been missed if I had relied simply on discussion with users. In doing so, I have attempted to move beyond accounts of technology as "a set of tools ready and waiting deployment" (Dixon and Whitehead 2008 p602) which may constrain or enable people to move through and use space (as Adey, 2007, shows in relation to airports). Instead, I begin to think through how technologies operate teleplastically to shape human beings ability to sense space and time itself. Applying the concept of teleplasty to technologies other than videogames would involve tracing out the number and type of affects that emerge from engaging with those technologies, and using this to understand the types of disinhibiting ring that are created. It involves considering how these rings shape the temporal horizon of user action, and what actions and possibilities they open or close.

Technologies capacity for teleplasty should not be misunderstood as something that is just intentionally shaped by the designer or producer of the technology itself with a

specific end or effect in mind (whilst this is attempted it is often subject to failure, see Ash 2010). As others have argued, the contingent and unanticipated effects of technologies have played a massive and constitutive role in the biological and social evolution of the human being (see Stiegler 1998, 2008, Kittler 2009). In this paper, I have gestured towards the fact that technology continues, often unintentionally, to play a role in shaping what it is to be and to have a body. Whilst videogames may seem an 'unimportant' (albeit popular) activity, as Caillois puts it:

> "Preferred and widely diffused games, reflect on the one hand, the tendencies, tastes and ways of thought that are prevalent, while at the same time, in educating and training the players in these very virtues or eccentricities, they subtly confirm them in their habits and preferences" (1961, 83).

By taking games seriously, we can explore how the environments they produce subtly alter the users' ways of thinking and acting. To think about the teleplastic effects of technologies is to attend to the unanticipated consequences that particular technologies have on users' phenomenal fields and sense capacities, alongside their intended (potential) effects. As such, the actual effects of technology use can only be understood in practice.

## Acknowledgements

I would like to thank two referees for particularly challenging and thought provoking comments and suggestions, which significantly improved the paper. The research

reported in this paper formed part of a PhD project that was generously funded by an ESRC 1+3 scholarship and undertaken at the University of Bristol between 2005 and 2009. Thanks to JD Dewsbury for reading earlier versions of the paper in draft form. Finally thanks to Lesley Anne Gallacher for reading numerous drafts and offering much advice and support throughout.

## References

**Adey P** 2006 If Mobility is Everything Then it is Nothing: Towards a Relational Politics of (Im)mobilities, *Mobility Studies* 1 1 75-94
**Adey P** 2007 'May I have your attention': airport geographies of spectatorship, position and (im)mobility *Environment and Planning D: Society and Space* 25 515-536
**Agamben G** 2000 *Means without ends* Minnesota Press, Minneapolis
**Agamben G** 2004 *The Open: Man and Animal* Stanford University Press, Stanford
**Ash J** 2009 Emerging spatialities of the screen: videogames and the reconfiguration of spatial awareness *Environment and Planning A* 41 9 2105-2124
**Ash J** Romanillos P and Trigg M 2009 Videogames, visuality and screens: reconstructing the Amazon in physical geographical knowledge *Area* 41 4 464-474
**Ash J** 2010 Architectures of affect: anticipating and manipulating the event in practices of videogame design and testing *Environment and Planning D: Society and Space* (forthcoming)
**Baudrillard J** 1994 *Simulation and Simulacra* University of Michigan Press, Chicago
**Pratchett R** (2005) *Gamers in the UK: Digital Play, Digital Lifestyles* BBC New Media, Creative Research and Development
**Behrenshausen B G** 2007 Towards a (kin)aesthetic of video gaming: the case of dance dance revolution *Games and Culture* 2 335 – 354
**Bissell D** 2008 Comfortable bodies: sedentary affects *Environment and Planning A* 40 1697–1712
**Bissell D** 2009 Visualising everyday geographies: practices of vision through travel-time *Transactions of the Institute of British Geographers* 34 42-60
**Caillois R** 1961 *Man, Play and Games* University of Illinois Press
**Caillois R** 2003 *The Edge of Surrealism A Roger Caillois Reader* Duke University Press, Durham
**Casey E** 2003 *The Fate of Place: A philosophical history* University of California Press, Los Angeles
**Clough P** 2000 *Autoaffection: unconscious thought in the age of teletechnology* University of Minnesota Press, Minneapolis
**Criterion Games** 2004 *Burnout 3: Takedown* Guilford
**Deleuze G** 1992 Postscript on the Societies of Control *OCTOBER* 59 Winter 3-7
**Deleuze G and Guattari F** 1988 *A thousand plateaus* Continuum Publishing, New York

**Dixon D and Whitehead M** 2008 Technological trajectories: old and new dialogues in geography and technology studies *Social & Cultural Geography* 9 6 601-611
**Dodge M and Kitchin R** 2004 Flying through code space the real virtuality of air travel *Environment and Planning A* 36 195-211
**Dodge M and Kitchin R** 2005 Code and the Transduction of space *Annals of the Association of American Geographers* 95 162–180
**Doel M and Clarke D B** 2005 Engineering space and time: moving pictures and motionless trips *Journal of Historical Geography* **31** 41-60
**Doel M and Clarke D B** 2007 Afterimages *Environment and Planning D: Society and Space* **25** 890-910
**Downs R M and Stea A** 1977 *Maps in Minds: Reflections on Cognitive Mapping* Harper and Row, New York
**Draganski B Gaser C Busch V Schuierer G Bogdahn U & May A** 2004 Neuroplasticity: changes in grey matter induced by training *Nature* 427 311-312
**Dreyfus HL** 2000 Intelligence without representation – Merleau-Ponty's critique of mental representation: The relevance of phenomenology to scientific explanation *Phenomenology and the cognitive sciences* 3 367-383
**Dreyfus HL** 2002 Refocusing the question: Can there be skillful coping without propositional representations or brain representations? *Phenomenology and the Cognitive Sciences* 1 413-425
**Dreyfus HL** 2007 The return of the Myth of the Mental *Inquiry* 50 352-365
**Foucault M** 1977 *Discipline and Punish: the birth of the prison* Random House, New York
**Frank C** 2003 Introduction in **Caillois, R** 2003 *The Edge of Surrealism A Roger Caillois Reader* Duke University Press, Durham
**Freud S** 1922 The Unconscious *The Journal of Nervous and Mental Disease* 56 3 291-294
**Galloway A** 2006 *Gaming: Essays on Algorithmic Culture* Minnesota Press, Minneapolis
**Galloway A** 2007 Radical Illusion (A Game Against) *Games and Culture* 2 376 – 391
**Galloway A** 2009 The Unworkable Interface *New Literary History* 39 931–955
**Giddings S** 2007 A Pataphysics Engine: Technology, Play, and Realities *Games and Culture* 2 392-404
**Giddings S** 2009 Events and Collusions: A Glossary for the Microethnography of Video Game Play *Games and Culture* 4 144-157
**Hansen M B N** 2009 Living (with) Technical Time From Media Surrogacy to Distributed Cognition *Theory, Culture and Society* 26 2-3 294-315
**Heidegger M** 1995 *The Fundamental Concepts of Metaphysics* University of Indiana press, Indiana
**Hutchins E** 1995 *Cognition in the Wild* MIT Press, Cambridge
**Kittler F** 2009 Towards an Ontology of Media *Theory, Culture and Society* 26 2-3 23-31
**Laurier E** 2004 Doing Office work on the Motorway *Theory, Culture & Society*, 21 4 5 261-277
**Laurier E and Brown B** 2008 Rotating Maps and Readers: praxiological aspects of alignment and orientation *Transactions of the Institute of British Geographers* 33 201-216
**Lutz, A & Thompson E** 2003 Neurophenomenology Integrating Subjective Experience and Brain Dynamics in the Neuroscience of Consciousness *Journal of Consciousness Studies* 10 9–10 31–52

**Lynch K** 1960 *The Image Of the City* MIT Press, Cambridge
**Malpas J** 2008 *Place and Experience, a philosophical topography* Cambridge University Press, Massachusetts
**Malpas J** 2008b *Heidegger's Topology; Being, Place, World* MIT Press, Cambridge
**Massumi B** 2002 *Parables for the Virtual: Movement, Affect, Sensation* Duke University Press
**McGowan T** 2003 Looking for the Gaze: Lacanian Film Theory and Its Vicissitudes *Cinema Journal* 42 3 27-47
**Merleau-Ponty M** 1962 *Phenomenology of Perception* Routledge Classics, New York
**Metz C** 1982 *Psychoanalysis and the Cinema* Macmillan, London
**Mulvey L** 1975 Visual Pleasure and Narrative Cinema *Screen* 16 3 6–18
**Mulvey L** 1989 *Visual and Other Pleasures* Indiana University Press, Bloomington
**Paterson M** 2006 Feel the Presence: technologies of touch and distance *Environment and Planning D: Society and Space* 24 691-70
**Reeves S Brown B and Laurier E** 2009 Experts at play: understanding skilled expertise *Games and Culture* 4 205-227
**Smith R G** 2003 Baudrillard's nonrepresentational theory: burn the signs and journey without maps *Environment and Planning D: Society and Space* 21 1 67 – 84
**Stiegler B** 1998 *Technics and Time: The Fault of Epimetheus* Stanford University Press, Stanford
**Stiegler B** 2008 *Technics and Time 2: Disorientation* Stanford University Press, Stanford
**Stiegler B** 2009 Teleologics of the Snail The Errant Self Wired to a WiMax Network *Theory, Culture and Society* 26 2-3 33-45
**Thomson E** 2005 Sensori-motor subjectivity and the enactive approach to experience *Phenomenology and the Cognitive Sciences* 4 407-427
**Thrift N** and French S 2002 The automatic production of space *Transactions of the Institute of British Geographers* 27 309-335
**Thrift N** 2004 Movement-space: the changing domain of thinking resulting from the development of new kinds of spatial awareness *Economy and Society* 33 4 582-604
**Thrift N** 2004b Remembering the technological unconscious by foregrounding knowledge's of position *Environment and Planning D: Society and Space* 22 175-190
**Thrift N** 2009 Different atmospheres: of Sloterdijk, China, and site *Environment and Planning D: Society and Space* 27 1 119 – 138
**Travellers Tales** 2006 *Lego Star Wars: The Original Trilogy* Knutsford
**Virilio P** 1993 The Third Interval: A Critical Transition in **Conley V A** ed 1993 *Rethinking Technologies* Minnesota Press, London
**Virilio, P** 2006 *Speed and Politics* MIT Press, Cambridge
**Virilio, P** 2007 *The Original Accident* Polity Press, Cambridge
**Wetzels, W D** 1971 Aspects of natural science in German Romanticism *Studies in Romanticism* 10
**White M** 2006 Where do you want to sit today? Computer Programmers' static bodies and disability *Information, Communicaion and Society* 9 3 396-416
**Wilson F R** 1999 *The Hand* Vintage Books, New York
**Young, I R** 1990 *Throwing like a girl and other essays in feminist philosophy and social theory* Indiana University Press, Bloomington

[i] The empirical material from this research was collected between 2007 and 2008 as part of my PhD research into practices and processes of videogame design and use. The video ethnography consisted of fourteen hour long gameplay sessions with seventeen self professed 'gamers'. During these sessions I used two cameras: one to record the participants themselves as they used the game and another that directly captured images from the games as they were sent to the screen from the games console. In this paper I have not included any images of the participants themselves because this would violate participant confidentiality that was agreed at the outset of the research. The images that are presented in the paper are direct captures from the video feeds of these sessions. The quotations presented in the text are transcriptions of users comments and answers to my questions during these sessions. The descriptions of game play are transcriptions I created while reviewing this footage after the sessions took place.

[ii] According to a report published by the BBC (Pratchett 2005) the average gamer in the UK is male, plays console games and is 28 years old, which makes the male gamers in this study a significant part of the videogame user demographic.

[iii] *Lego Star Wars* is an action platforming game that is part of a franchise of Lego themed, movie based, videogames designed for children (other games include *Lego Indiana Jones* and *Lego Batman* for example). The game draws upon aspects of both the Lego building brick toys and the original trilogy of *Star Wars* movies (1977, 1980, 1983). Although designed for children, the cross generational appeal of the *Star Wars* license means the game is played by a broad demographic of users. In the game, one or two users move around levels which depict famous scenes from the original trilogy of films, albeit versions that appear to be made from Lego bricks. The main characters from the films (such as Han Solo, Luke Skywalker and Princess Leia) and the enemies they encounter are also depicted as caricatured Lego figures. The game also utilises sound effects, movements and expressions that were made popular in the films.

[iv] This figure was calculated as an average of the number of thumb movements made by different users during randomly selected, minute-long samples from my recording sessions. For each sample, I counted the number of stick displacements that took place within that minute of time. The minute did not include time spent crashing or waiting for the users car to 'respawn' in the middle of the track.