

GAME STUDIES' MATERIAL TURN

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This article argues that among the burgeoning approaches to game studies there is a crucial re-imagining of digital games in their material contexts across different scales and registers: the machine, the body and the situations of play. This re-imagining can be seen in a number of approaches: platform and software studies, which examine the materiality of code and/or the technological infrastructure through which it is enacted; critical studies of digital labour; and detailed ethnographic studies that examine the cultures of online worlds and situate gaming in relation to everyday practices. The article traces these three strands, focusing on how they demonstrate a heightening of the stakes in game studies research by providing access to scale and connecting digital games research to wider interdisciplinary contexts.

KEYWORDS

digital labour, ethnography, game studies, materiality, media ecologies, platform studies

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Academic attention to digital games considerably preceded what Espen Aarseth (2001) termed 'Computer game studies: Year one'. Interest came from a variety of disciplines including cognitive psychology (Loftus and Loftus, 1983), media effects and education (Provenzo, 1991), new media studies (Manovich, 2001) and literary theory (Aarseth, 1996; Buckles, 1985). In spite of this previous work, Aarseth's (2001) declaration was not unmotivated – in coinciding with the launch of the first issue of *Game Studies: An International Journal of Computer Game Studies*, it was one of the opening salvos in the infamous ludology–narratology debate. The debate was somewhat unsatisfying on its own terms because discussion often stalled at an inability to agree on basic premises. Self-identified ludologists were unhappy with being charged with formalism (Aarseth, 2004; Frasca, 2001; Juul, 2005), while many scholars were loath to be drawn into a debate on form by accepting the moniker 'narratologist' in the first place (Jenkins, 2001; Murray, 2005). Much shadow boxing ensued, and by 2005 Janet Murray declared the whole thing a bust: 'Game studies, like any organized pursuit of knowledge, is not a zero-sum contest, but a multi-dimensional, open-ended puzzle that we are all engaged in cooperatively solving' (Murray, 2005, 2).¹

While Murray presented this as a vision of things to come, a need to 'reframe the conversation', in fact (as noted above) this landscape of diverse methodological approaches was already the norm. Here we will examine one of the most important strands in this research that exceeds the range of the debates of formalism. This strand, which we here refer to as the 'material turn', has precursors in the game studies that precede 'year one' and has become increasingly prominent in recent years, containing some of the best work in the field. Here we will provide an overview of the way this theme has enriched the study of digital games in various contexts.

The notion of materiality is used broadly here, indicating a certain 'stubbornness' of material reality that introduces an aleatory or contingent element into what might normally be thought of as formalized and calcified structures (academic or otherwise) – bodies as sites of resistance and alterity. We contend that work attentive to materiality has become a key thread in game studies and also a bridge to other disciplines. Such work exhibits an increased concern for the contexts, uses and material qualities of games technologies on the one hand, as well as attentiveness to the situated analysis of play and players on the other. Our examination of this material turn will be focused through three major methodological tendencies: ethnography, platform studies and digital labour.

Ethnographic Game Studies – What Is the Audience? And Where Are They?

Game studies struggles to define the 'audience' of games. Galloway (2006, 2), for example, advocates 'operator' rather than player. 'Gamer' is even trickier, as people who watch 'Let's Play' videos or write FAQs certainly use games but do not

fall under this title. How these terms are used to define an object of study varies from project to project. Ethnography, or rather – with respect to the particular commitment of anthropologists to ethnography – ethnographic methods or approaches provide game studies with a way of connecting objects to practices, and understanding those practices in relation to the lives and experiences of the people who enact them. In short ethnography – with a long history of examining play as a part of culture (e.g. Geertz, 1973; Turner, 1982) – provides the resources for in-depth analysis of how people play digital games.

Game studies was by no means the first discipline to use ethnographic approaches to data gathering and analysis of online communities. By 2000 the term 'virtual ethnography' (Hine, 2000) had emerged to describe the ethnographic study of online communities within the disciplinary framework of anthropology. Hine's work addressed many of the methodological challenges of shifting traditional ethnography to online environments, particularly the orthodox assumption that the ethnographer had to be totally immersed in the life of the community (*ibid.*, 60). Other important work examined the connection between online activities and location, arguing that local context is particularly important for understanding online activities (Miller and Slater, 2001), and that online communities and interest groups supported – and in some cases demanded – the establishment of broader offline relationships (Kendall, 2002).

Ethnographic approaches quickly became an accepted methodology for studying game communities (although more orthodox scholars would continue to argue that this technique does little to shed light on digital games themselves). This methodology was widely adapted to studying the online interactions taking place between players in massively multiplayer games (Jakobsson and Taylor, 2003) and also less commonly to a situated analysis of the unfolding process of playing a game or games in a particular location. The former group were quick to note the blending of game-specific communications with more general everyday topics (*ibid.*, 83). The latter untangled the complicated relations that take place in a space where digital games are being played, between people, technologies and objects (Flynn, 2003), and how gaming was interspersed with the use of other digital technologies (Wright et al., 2002). Many subsequent large-scale projects shed further light on the experience of playing massively multiplayer games, and ethnographic methodologies were even adopted for very focused short-term analysis of individual games, in the form of 'micro-ethnographies' (Giddings, 2009; see also Reynolds, 2010).

Similar work on single- and/or multiplayer games also turned to online communities. Scholars noted how online communities emerged that connected people with mutual interest in particular digital games and gaming practices (Consalvo, 2007; Newman, 2008). Scholarship has highlighted the practices of specialist communities that focus on activities like speed-runs (Ashton and Newman, 2010; Newman, 2008) or glitch spotting (Bainbridge and Bainbridge, 2007; Krapp, 2011). However, this indicates a

general understanding of the relationship between common practices of digital gaming and other forms of digital media: people use – potentially remixed – digital games as content for their participatory and social media, suggesting that digital play exists in a suite of other online, computer-based activities.

Ethnographic observations of massively multiplayer online (MMO) games also noted how they generated a large amount of ancillary supporting material – both player and community developed – that players often referred to, even during the course of play. Materials included maps, FAQs, walkthroughs, specific guides to using particular classes and, at the extreme, unofficial add-ons that provided in-game affordances, for example Taylor's (2006) and Chen's (2011) discussions of interface mods or 'unit frames' for World of Warcraft (Blizzard, 2004). Scholarship also began to explore conflicts that arose between the communities of players and the corporate owners of the digital game, identifying that governance was a key issue that shaped the experience play (Humphreys, 2008). The highlighting of the relationship between players, owners and technologies in producing the experience of online play suggests a particular complexity that has been described as an 'assemblage' (Taylor, 2009) or 'mangle' (Steinkuehler, 2006).

This complexity is not limited to the online experience of digital games. Both Taylor and Steinkuehler argue that offline concerns have considerable influence on the online experience of play. Reciprocal influence is highlighted in Steinkuehler's work; she and her collaborators argue that online play is having a considerable impact on general literacy skills (Steinkuehler, 2010; Steinkuehler et al., 2010). Mackenzie's (2002, 166) example of players using 'lag' caused by slow connection speed to optimize their in-game performance illustrates a palpable connection between the material site where the game is enacted and actions and strategies used in gaming networks. One of authors of this article examined how the material conditions in which play takes place influenced both the selection of games and the actual process of gameplay (Apperley, 2010). For example, the number of people that were expected to play might influence what game was chosen to play, while someone paying by the hour to play games in a cybercafé might very well prefer to skip the cut-scenes in *Grand Theft Auto: Vice City* (Rockstar North, 2003).

Relatively few studies using ethnographic approaches have focused on the location where games are played and the behaviours of players. However, collectively they suggest a move to approach gaming as an everyday and material activity. Jansz and Martens' (2005) study of LAN-ing in the Netherlands makes an important and fundamental point: that digital play is facilitated by access to relatively expensive technologies. To this basic materialist concern we would also add several factors that obtain in the age of networked and mobile gaming: access to utilities like power, telecommunications and the internet, and access to a credit or debit card to facilitate purchases or goods and services from iTunes, PlayStation Network, Steam and/or Xbox LIVE.

Other research has focused on the cultures of customization of personal computers among members of the LAN community (Simon, 2007), and on the 'modding' of primarily gaming-specific platforms to create multi-purpose computers (Cesarini, 2004). Ethnographic examinations of cybercafés have also emphasized the material context of gaming (Apperley, 2010; Lin, 2008), arguing that the 'situation' in which digital games are enacted is a key factor shaping the experience of play (Apperley, 2010). The overall impression arising from this ethnographic work is one in which the play of digital games is integrated into the mundane practices of everyday life (Apperley, 2010; Pargman and Jakobsson, 2008).

For game studies, ethnography offers an approach that acknowledges the complex contexts in which game play takes place. Furthermore, it provides a useful strategy for accounting for the multiple ways in which an individual game may be played, not simply in terms of structural execution of the algorithm, but in terms of diverse affective, cultural and situated responses. Ethnography is a methodology that demands that digital games are not simply treated as homogeneous objects and experiences by highlighting the diverse – yet material – practices that take place in and around gaming.

Platform Studies: Artefact and Code

Platform studies is one of the more focused developments that we locate within the material turn in game studies. The project was announced with the 2009 release of *Racing the Beam: The Atari Video Computer System* by Nick Montfort and Ian Bogost as the first of a series of books which developed the concept through the examinations of specific technological platforms. The first book of the series demonstrated a welcome concern with the materiality of the platform and how that materiality shaped game design and the experience of play.

While it emerged in the context of contemporary interest in digital humanities tools and approaches, platform studies has a materialist basis that connects it to a wider methodological development in media research: media archaeology. The approach is associated with the work of Friedrich Kittler (1990) and particularly the work of Jussi Parikka (2007; 2010) who, like Erkki Huhtamo (Huhtamo and Parikka, 2011), is a notable contemporary advocate of media archaeology whose work is available to the Anglophone academy. The goal of media archaeology is, according to Zielinski (1996), to 'dig out secret paths in history, which might help us find our way into the future'. In spite of the very different intellectual contexts in which media archaeology and platform studies have arisen, Montfort and Bogost's (2009) project conceives of the materiality of games in a similar fashion. By focusing on a series of innovative digital games designed for the Atari 2600, the authors clearly pinpoint historic strategies and techniques that succinctly frame contemporary issues and future directions for research. The platform studies project also gestures towards an allegiance with key scholars outside of game studies who share similar concerns, namely Kirschenbaum's (2008)

examination of the materiality of computer hard-drives and Galloway's (2004) case study of packet switching.

This approach shares a concern with the materiality of digital media that can also be found in the developing fields of software studies (Fuller, 2008) and format studies (Sterne, forthcoming). Platform studies would differentiate itself by arguing for a strong separation of code and platform, which is evident in Montfort and Bogost's (2009, 146) schematic diagram. Other scholars argue that this separation is not so clear. We position platform studies – along with software and format studies – as a part of Lev Manovich's 'move to something called software studies' (2001, 65). This is largely because Manovich's (ibid., 63–4) proto-definition of software studies involved understanding the 'cultural' and 'computer' layers of new media, and, crucially, how these layers influenced each other. Seen in this light, Montfort and Bogost's (2009) project is entirely focused on thinking through the relation between the computer and cultural layers by examining how the material computational limits of the platform shape and influence design decisions and consequently player experience. Through this analysis, Montfort and Bogost highlight how particular generic and aesthetic conventions have emerged in relation to these historical considerations.

The case studies in *Racing the Beam* are bookended by an introduction and coda that situate them in the conceptual framework of platform studies. It is a relatively open framework – clearly not a manifesto – that is presented as an interdisciplinary and theory-neutral approach relevant to both researchers and practitioners (ibid., 145–50). The utility of this framework for game studies stems from how this manoeuvre – from games to platforms – aligns both with important contemporary humanities and social sciences research, and how digital media industries currently understand themselves (particularly in earmarking the historic difference between carriers and content providers, see Gillespie, 2010).

Platform studies establishes gaming platforms as both 'standard objects' (Fuller, 2005) and 'black boxes' that give the object of game studies a consistency that was previously unavailable (see Krapp, 2011, 76). Furthermore, it turns the object of study away from the nebulous interactions of people and software mediated through the platform to a focus on the interactions between platform and software (albeit with a focus on how human agency is able to shape those interactions). Certainly, for game studies, it is one step closer to how Parikka (2012) describes Kittler's project: 'a media anthropology without the man'.

The platform studies project is notable because it makes the central object of study material even though it is highly dispersed. The 'black boxing' that serves to isolate and privilege the platform within the digital game ecology (Apperley, 2010) does not exclude the possibility of a more detailed examination of the peculiarities of the hardware inside the console, or how the capacities of individual components impact on the overall performance of the platform. *Racing the Beam* (Montfort and Bogost,

2009, 12–15) very effectively conveys this point through a detailed excavation of the changing components of the various versions of the Atari 2600 platform that were released. Montfort's more recent piece on platform studies, with collaborator Mia Consalvo (Montfort and Consalvo, 2012) suggests an even wider scope for examining how individual components shape the past and future of the gaming industry when they refer to how supply issues associated with particular components meant that SEGA was unable to meet demand for their Dreamcast console during a period of crucial interest in the technically innovative software. Inhibiting consumer uptake during this period had a serious impact on the long-term financial viability of the console.

These recent developments, combined with the open framework provided by Montfort and Bogost in *Racing the Beam* suggest that the technique of platform studies the book demonstrates is one among many possible approaches to examining gaming platforms and media platforms in general. The key theme of *Racing the Beam* is human ingenuity in face of technical constraints and, more specifically, how creative software coding within the constrained conditions of the platform can generate new knowledge of the possibilities of code and the optimal capacities of those platforms.

This examination of the material limits of the Atari 2600 still exists as a trace in contemporary digital game design where aesthetics once associated with problem solving has become entrenched as generic detail. Taking the platform as the central object of examination within the rubric of platform studies appears only to require that the materiality of the platform is taken seriously. For example, Montfort and Consalvo's (2012) examination of the SEGA Dreamcast is framed as platform studies, but focuses more on SEGA's attitude to, or ethos of, in-house game design using that system. The connection between innovative game design and corporate structure is refracted through a platform studies lens, demonstrating the utility and flexibility of the approach.

The framework provided by platform studies, while based in a material concern, may be effectively connected to issues on a number of levels, both micro and macro. The materiality of platforms can be turned inwards to examine the individual components of a platform, and just as easily outwards to focus on the organizational structure that allows the platform to be produced. The genius of platform studies is to locate the platform as the stable object within this complex, unfolding entanglement, allowing it to perform the role of a centre around which other relationships may be traced and examined.

Digital Labour: Political Economy and the Materialities of Multitude

Digital games are prime candidates for testing new ideas about the relations between work and play in contemporary society. These concerns go beyond the academy: 'In recent years, play has become an abiding concern in the popular business literature and a crucial aspect of organisational culture' (Butler et al., 2011, 329). Although games are primarily viewed as leisure technologies, the demands that games make on attentiveness and cognition are more reminiscent of work than traditional play

pursuits. Furthermore, players may well produce value in their activities – by modding, producing ancillary fan materials, designing new levels or characters – which raises the issue of how this labour may be conceptualized, evaluated and attributed, and to which legal precedents and forms of governance such labour might be subjected and potentially subvert.

The precarity of modding has been emphasized by Julian Kücklich (2005), who coined the term 'playbor' to describe the circulation of playful, cultural and commercial discourses that mould the way such work is produced and evaluated. Kücklich focuses on the extremely successful Counter-Strike mod for Valve Software's Half-Life. Game companies benefit in several ways from modding: establishment of a new brand, adding to the 'shelf-life of the original product' and innovative experiments created by highly skilled workers that overcome certain limitations implicit in a risk-averse industry (ibid.).

In spite of producing this value, modding is precarious insofar as 'it is unclassifiable in traditional terms of work and leisure' (ibid.). Insofar as modders do not own the products of their labour, the practice can be compared to wage labour, although it obviously lacks the access to resources and benefits characteristic of such work. Modding can be compared to volunteer work, but this is usually undertaken for non-profit organizations whereas the game industry is highly lucrative for many companies. These qualities intersect with the industry discourse of participation to legitimize the conditions under which modders work.

In total, these factors – modding's uncertain status in respect to traditional notions of work and leisure, the deprivation of modders of their intellectual property rights, the game industry's outsourcing of risk to the modding community and the ideological masking of modding as a collaborative process – make modding appear as a very precarious form of labour indeed. (ibid.)

Modders are rich in social capital but are 'hardly aware of the position of power this puts them into. As a dispersed multitude, they are vulnerable to exploitation by the games industry' (ibid.), and unlikely to politically organize. However, it is precisely this dispersal of technical infrastructures and skills that facilitates the movement of mods through wider communities and contexts.

Kücklich's analysis combines economic and legal considerations (such as End User Licence Agreements) with an attentiveness to the complex material circuits in which the products of both commercial entities and modders move. His invocation of the 'multitude' of course brings to mind Hardt and Negri's *Empire* (2000) and *Multitude* (2004), which are pivotal references for the most sustained and sophisticated discussion of games as political economy: Nick Dyer-Witheford and Grieg de Peuter's *Games of Empire* (2009).

Drawing on theorists such as the autonomists, Hardt and Negri, Virno (2004) and Deleuze and Guattari (1987), the authors locate gaming in a 'complex spiral of virtual-actual interactions' (Dyer-Witthford and de Peuter, 2009, xxxii). Their method is to show in these various situations how virtual and actual relations obtain and to tease out the implications. They note that the 'virtual' can mean 'the digital world fabricated by the computer or game console' as opposed to the 'actual ... corporeal, embodied world off-screen' (ibid., xxxiii) but that there is another meaning in ontology:

In recent philosophical discussions of ontology – the nature of being – 'virtual' denotes potentiality: the manifold directions in which a given arrangement of forces, in any concrete situation, might develop.... The technological and ontological virtual, digitization and potential, are distinct; they should never be conflated. (ibid., xxxiii)

There is, however, 'an oblique relation' between these two senses of the virtual: 'Computers create compelling, dynamic digital depictions of potential universes', extrapolating 'from what is to what might be' (ibid., xxxiii). There is nothing necessarily resistant about this: 'Many – probably most – digital virtualities amplify and reinforce imperial actualities' but 'elements of gameplay can and occasionally do link to radical social potentials' (ibid., xxxiii). It is on these premises that they go searching for answers to the question 'Can there be games of multitude?'

Thus while it may seem odd to place *Games of Empire* in a critical lineage based on materiality given that the book opens with a discussion of the 'immaterial labour' of the 'playbor force', we argue in this context that immateriality is not simply an antonym of materiality but indicates newly emergent sets of virtual-actual relations. In fact, over the course of the book Dyer-Witthford and de Peuter trace ontological virtualities that serve to conceptually re-integrate 'immaterial' videogames with the 'all-too-material labour far from the game studio, in electronics factories, e-waste dumps, and coltan mines' (2009, 5) from which they are so readily abstracted. These virtual dimensions indicate that 'Capital's attempts to constrain this autonomy within the limits of profit lead to recurrent cycles of struggle' (ibid., 5).

Attentiveness to these submerged material flows and connections enables Dyer-Witthford and de Peuter to propose an alternate 'workers' history of gaming' that subverts the all-too-familiar linking of games to the military-industrial complex and instead accentuates their provenance in the radical 'labour, student, and social movements of the 1960s and 1970s' (2009, 5). In contrast to Kücklich's characterization of modding as a double bind, Dyer-Witthford and de Peuter show that the precarious status of multitude means that resistance has always been part of the multitude's response to game culture and technology, tracing the oppositional

practices of exploited programmers, radical feminists, modders and gold farmers. At the same time, the virtual latitudes opened up by digital games can act to constrain, discipline and order bodies: the subtle coercions of America's Army (U.S. Army, 2002) that banalize contemporary warfare (Dyer-Witthford and de Peuter, 2009, 99) and the 'way in which the virtual mapping of the metropolis in urban simulations such as GTA [Grand Theft Auto] is informed by, and reinscribes, dominant relations of power' (2009, 157). In both cases, material relations are pivotal in generating the particular virtual-actual relations that produce the phenomenon in question.²

If the analyses of both Kücklich and *Games of Empire* misread dimensions apparent to a more contemporary eye – overstating the status of the Wii console, neglecting the interlinked ramifications of mobile gaming and independent game production facilitated by new technologies, for example – this goes to show that the 'lag' in academic work is considerable, and the cultural phenomena we presume to study ever more mercurial and precarious.

A Materialist Turn?

The material turn in game studies can be traced in a number of important areas of scholarship within its emerging interdisciplinary tradition. These developments, as a whole, all suggest approaches to researching digital games that do not adopt the prima facie notion that games are virtual aesthetic experiences. Rather, they place the experience of digital games within a set of materialist frames. Digital games are objects that exist in the world; however much their digital virtuality is celebrated they are enacted and produced in strikingly visceral – ontologically virtual – ways. The noise that a PS3 game makes when it is pushed into the blu-ray drive, the cables over which Xbox LIVE arcade games are downloaded, and the wars and environmental depletion taking place to produce the coltan-based batteries in your wireless devices (see Dyer-Witthford and de Peuter, 2009; Wark, 2007) – all suggest a materiality to gaming that links digital games to the world and demands that they are also understood as objects in the world. We believe this raises the stakes of game studies considerably. In their status as objects in the world, digital games are linked to topics of global importance, for example international relations, finance, organization of labour, and environmental issues. There are, however, potential areas for further research oriented towards materialist concerns.

One area that is important for understanding the significance of the materiality of games is how they impact on bodies, both individual and collective. When they deal with 'Becoming Woman', for example, Dyer-Witthford and de Peuter speak of 'a new gender split within the world of waged work' (2009, 19), but the representation of women's embodied experience gets relatively short shrift, subordinated to the issue of a misrepresentation of 'reproductive work' (ibid., 22). Dyer-Witthford and de Peuter's notion of political economy largely remains a critique of 'Cognitive Capitalism': the

ability of the control society (Deleuze, 1992) to manipulate and mould the mental surplus value of human beings, as in their judgement of *Grand Theft Auto* as a cynical and satirical interpretation of the 'Imperial City' (Dyer-Witheford and de Peuter, 2009, 181). The authors claim that 'All games of Empire are, it bears repeating, also games of multitude, shot through, in the midst of banal ideological conventionality, with social experimentation and techno-political potential' (ibid., 228).

To these two possibilities for social experimentation and techno-political potential we would add another virtuality that integrally transforms embodied experience. Games of Empire discusses biopolitical control of labouring populations and the negative potentials of *Grand Theft Auto's* satirical depiction of the post-industrial city. This approach leaves aside how the potentially explosive, embodied potentials of laughter implicit in satire, acknowledged since Baudelaire's poetry of the city and critiques of caricature (2001), can help individuals adapt to the exploitative environments of modernity – the body or 'machinic subject' not as hardcore gamer, 'man of action' or nomadic software pirate (Dyer-Witheford and de Peuter, 2009, 80–4) but as itself a site of vital struggle between Empire and multitude. Dyer-Witheford and de Peuter flag this problem (ibid., 92), gesturing towards Shinkle's (2005, see also 2003 and 2008) discussion of the 'anamorphic subject', but it largely remains undeveloped in favour of social and technical aspects of multitude. Similarly, Montfort and Bogost's treatment of the Atari 2600 as a platform study is very light on analysis on the feel of the console and the controller.

Embodied experience is thus another potential area, as yet under-emphasized, in which materialist approaches can forge links between game studies and other disciplines as well as trace distinct virtual–actual interfaces. Swalwell's (2008) ethnographic account of a LAN party expresses both embodied experience and a feeling of transitivity and response between human body and apparatus, a particular relation between virtual and actual that exceeds (or falls short of) cognition:

At the start of *Grand Prix Legends*, John insisted I put his headphones on. Featuring classic vehicles from 1967, the sound of twelve Ferrari engines warming up (actually screaming is more accurate) on the grid was exhilarating and intensely visceral. I thought that I was beginning to appreciate some of the aesthetic pleasures of gaming. Then the race began and I found my body starting to move involuntarily in response to the fuel-rich sounds of 'my' car's engine, anticipating and responding to its gear changes. This was a surprise to me; I hadn't meant to do anything. (ibid., 73)³

These transformative potentialities coincide with the central concerns of other disciplines, connecting digital games with a long history of controlling, modifying and harnessing human attentiveness. As Jonathan Crary has argued, these techniques of

melding work and play, attentiveness and distraction, can be traced back to nineteenth-century visual cultures:

modern distraction was not a disruption of stable or 'natural' kinds of sustained, value-laden perception that had existed for centuries but was an effect, and in many ways a constituent element, of the many attempts to produce attentiveness in human subjects. (Crary, 2000, 49)

Significant claims have been made about the relationship between gaming, neuroscience and cognition, for example that games may shape brain plasticity (e.g. Dye et al., 2009). Certainly, games leave their material traces upon the body, with a massive catalogue of gaming injuries that dates back to the earliest games. Amis (1982, 29), writing in 1982, describes a condition known as 'Pac-man finger', while more recently medical journals have uncovered such conditions as the 'how palm', caused by prolonged play of the N64 version of *Mario Party* (Hudson Soft, 1998; Wood, 2001, 288).⁴ Recent developments in the game industry – the Wii, PlayStation Move and Microsoft Kinect – re-emphasize the role of the body in play. As Simon (2009) points out, the Wii (and motion gaming platforms in general) makes the body spectacular: part of the enjoyment of these platforms comes from watching bodies at play. The materiality of the bodily experience of motion-based gaming was a big selling point for the Wii, which helped Nintendo shift units into totally new demographics through the successful promotion of the *Wii Fit* (Nintendo EAD, 2008) and *Wii Fit Plus* (Nintendo EAD, 2009). Digital games, then, also shape and transform our bodies and perceptions, and more research in this area would be a welcome contribution to understanding games in the world and how games play a role in mediating our relationship with the world through their subtle and intimate relationship with our cognition, perception and subjectivity.

While there is a growing body of work that examines the digital and cognitive labour that takes place in the gaming industry, another useful direction in which to take material examinations of gaming is towards a more nuanced understanding of how the hardware is produced. This does not need to be limited to the conditions of labour in factories, but could also include what minerals are required and how they are sourced. Factories making gaming components have drawn criticism in the long term because they are located in 'Maquiladoras' or other special economic zones in the developing world (Apperley, 2010, 15). However, more recently Foxconn (a major producer of both Xbox 360s and iPhones) has been in the news because workers allegedly threatened 'mass suicide' because they had been 'denied compensation' (Plunkett and Ashcraft, 2012). If digital games and gaming practices are conceptualized as being imbricated with material practices in such intricate ways, the importance of both examining them as objects in the world, and what is at stake in the study of digital games, is significantly amplified.

Conclusion

Initial approaches to digital games came from a wide variety of disciplines, obviating Aarseth's claim that the launch of the *Game Studies* journal marked 'year one' of academic attention to the form. Many of these approaches displayed close attention to the material contexts in which games moved – through commercial, ludic, social and national circuits. These efforts were relatively isolated from one another, and the call for unification of a field of study brought many scholars together in productive debate. However in the course of this discussion, the original attentiveness to gaming's materialities risked being lost.

The 'material turn' that we have sought to identify here marks a significant and powerful set of theoretical concerns brought to the study of games, which has arisen in various forms over the last few years of the game studies project. Materiality has been an abiding concern of cultural studies, ethnography, Marxist political economy and many other disciplines, opening up links and productive cross-fertilizations beyond formalist claims to methodological primacy.

The past and continuing productiveness and success of materialist methods across the history of game studies shows that the ingenuity with which scholars have approached gaming cultures, technologies and bodies has been considerably underestimated. Whether tracing the material relations in terms of mangles, assemblages, platforms, audiences, virtual-actual relations or other conceptual approaches, materialist methods have provided avenues for scholarly accounts of bodies at play, situated within determinate contexts. Perhaps, then, it is time to re-open the debate on method without the presuppositions that attended the earlier debates on formalism. This would enable game studies to chart a course towards the future, while making the most of its material turn.

1.

For an informative, and more contemporary, account of this debate we recommend: Crogan (2004).

2.

The oft-discussed *America's Army* was published in 2002 by the U.S. Army. The original digital game *Grand Theft Auto* (DMA Design, 1997) was published by BMG Interactive, and launched a popular, controversial and critically acclaimed series of games. A fifth installment of the game is currently under development by Rockstar North.

3.

Grand Prix Legends was developed by Papyrus Design Group, and published by Sierra Entertainment in 1998.

4.

Pac-Man was published in 1980 by Namco.

Acknowledgements

Our thanks to Christian McCrea and Luke van Ryn for their comments on draft versions of this article.

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