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## Playing on the digital commons: collectivities, capital and contestation in videogame culture

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'Playing on the commons' – hiding and seeking, roughing and tumbling, dancing and courting, on lands preserved by custom for collective use – is a familiar motif in nostalgic pastoral. But this article applies it to a different sort of play: video and computer games (hereafter 'videogames' except when it is necessary to distinguish console and computer play). The switch of context may appear implausible. *Grand Theft Auto*, *Halo*, *The Sims*, *Pokemon*, *Final Fantasy* and *World of Warcraft* are quintessential high-technology products, icons of consumer culture and the basis of a global \$28 billion industry. As Kline et al. (2003) have suggested, videogames seem the 'ideal commodity' of post-Fordist capital, exemplifying its digital production practices, marketing techniques and consumption habits.

Yet alongside commercial success arises another side of digital games: a player culture where games circulate for free, content is shaped by voluntary collectives and virtual worlds depend on the creativity of their player-populations. This player activity ranges through 'warez' networks and 'abandonware' archives, the 'modding' scene, *machinima* production and the tumults of Massively Multiplayer Online Games (MMOG). Others have noted this 'participatory culture' (Postigo, 2003; Raessens, 2005) of interactive games. Here, however, we examine it in the context of debates about the prospects for media commons in and against global information capitalism.

### Commodities and commons

Commons are resources that all in a specified community may use, but none can own. They contrast with commodities, exchanged for profit on the basis

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of privatized possession. The usual starting point for discussion of commons is the collective land of pre-capitalist agricultural communities, destroyed in Europe between the 16th and 18th centuries as landlords enclosed them in the process of primitive accumulation (Neesan, 1993; Perelman, 2000; Thompson, 1991). Linebaugh and Rediker (2000) have shown that enclosure faced multifarious, 'hydra-headed' opposition, but these struggles were lost and largely forgotten.

Interest in commons has, however, been revived recently by opponents of corporate globalization, for whom they provide a perspective from which to criticize privatization of natural and social resources (Bollier, 2002; McMurtry, 1999; Midnight Notes, 1992; Shiva, 2005). Such recollection sometimes romanticizes the commons as a pre-capitalist utopia, rather than a marginal supplement to a feudal order. But the concept provides leverage for rethinking issues of collective ownership across resources from oceans to radio spectrum (Goldman, 1998).

This is nowhere more so than in new media. Since Raymond Williams (1976: 70–73) pointed out the shared root of 'commons' and 'communications', enclosure has provided a potent metaphor for expanding corporate media power in general and, in particular, for the commodification of digital networks (Bettig, 1997; Dyer-Witheford, 2002; Kidd, 2003; Lessig, 2001; Mosco, 1996). As the early academic-hacker traditions of internet usage succumbed to dot.coms and e-commerce, many analysts spoke of an enclosure of the electronic frontier (Boyle, 1996; Lindenschmidt, 2004). And as terrestrial enclosures had met with resistance, so some saw the cyber-spatial land grab facing a scattered but persistent 'hydra-headed' insurrection that included hacktivism, Free and Open Source Software (FOSS) and Peer-to-Peer (P2P) piracy (Dyer-Witheford, 2002).

In his influential analysis of 'the tragedy of the commons', Garrett Hardin (1965) proposed that collective resources unprotected by private property rights are inexorably degraded by neglect. This perspective has, however, recently been challenged by a number of digital media theorists who propose that open source software discloses a 'cornucopia of the commons' (Bricklin, 2001) or 'inverse commons' (Raymond, 2001: 149), in which voluntary programming collectives produce more robust and inventive results than commercial developers. More generally, Howard Rheingold (2002: 35) has observed that digital media's ease of copying, speed of circulation, dissemination of digital authoring tools and networked conditions generate 'common pool resources' that tend to overflow privatized property rights. Reforming legal scholars have suggested that the vitality of digital cultural production would be enhanced, not by a stricter enclosure in intellectual property regimes, but rather by better recognition of the 'creative commons' intrinsic to networked activity (Benkler, 2002; Boyle, 1996; Lessig, 2001).

We will describe a cluster of games activities of copying, re-purposing and collective production that tend towards commons models of digital play – in

which games are goods shared rather than owned. We say tend towards, not fully achieve: these practices remain subordinate elements in a dominant market regime with which they have a complex relation, at once complementary and conflicted. The games industry often tolerates, and sometimes fosters, this alternative commons economy, but as often criminalizes its many breaches of intellectual property. Surrounded by a market regime, the games commons we describe are rarely pure, shading off on one side towards criminal commodification, and on the other towards corporate collaboration. Nonetheless in aggregate they create patterns of voluntary creation and shared use that deeply complicate and sometimes sharply challenge market logic.

### Hacker games

To understand this videogames commons we must glance back to their origins. Games are today big business, but business did not invent them: they were hacked. Young, male programmers in Cold War research centers such as MIT passed nocturnal hours tending mainframe computer devices in unauthorized, if tacitly tolerated, experimentation (Himanen, 2001; Levy, 1984; Wark, 2004). For this culture a 'hack' was 'a stylish technical innovation undertaken for the intrinsic pleasure ... not necessarily to fulfill some more constructive goal' (Haddon, 1988: 56). As Kline et al. (2003) observe, such playful exploration was supported within a software engineering culture whose military-corporate objectives were utterly instrumental because, paradoxically, its playfulness can result in extraordinarily productive invention.

From this matrix in 1972 emerged *Spacewar*, arguably the first video game, allowing players to maneuver spacecraft blips across an oscilloscope screen and fire space torpedoes at each other. As Stewart Brand (1972) noted, *Spacewar* was 'part of no one's grand scheme' and 'served no grand theory': it was 'heresy, uninvited and unwelcome' that transformed computers from Cold War armaments to play devices. This was a quintessential expression of Steven Levy's (1984: 27) 'hacker ethic', whose most famous sentiment was 'information wants to be free', but which included others even more important to game development: 'You can create art and beauty on a computer', 'Computers can change your life for the better' and 'Always yield to the Hands-On Imperative', meaning 'essential lessons can be learned about the systems – about the world – from taking things apart, seeing how they work, and using this knowledge to create new and even more interesting things'. Hacker culture permeated the informal, anti-commercial ethos of 'rough consensus and running code' that germinated the internet and simultaneously disseminated digital games: UNIX came with *Find the Wumpus* installed; *Adventure* debuted *gratis* on university computers; from *Simsoc* to *Lunar Landing* to *Hammurabi*, games circulated as freeware.

The defining moment of hacker culture's fall from grace to commerce was Bill Gates' commodification of its 'home brew' operating systems (Levy, 1984). But

the same process shaped digital games when Nolan Bushnell, founder of Atari, the first commercial game company, adapted them first for arcades and then for consoles connected to television. In 1984, Atari, already purchased by Time Warner along with many imitators, was destroyed in a market crash and the US industry was only saved by two Japanese companies, Nintendo and Sega. The latter in turn fell victim to competition with Sony, which by 2000 was itself locked in a life and death struggle with Microsoft. But, despite the ups and downs of individual companies, the overall success of commercial games was relentless.

The videogame console, far more affordable to the average US household than a PC, expanded new media beyond a technocratic elite. This expansion came, however, at a price. Games culture was popularized, but also enclosed within a regime of intellectual property rights. Videogames stood at the center of a commercial drive to test the application of copyright, patent and trademark to computer software. Players became accustomed to click-through End User License Agreements (EULAs) under whose provisions they surrendered most rights over the games they bought (Festinger, 2005). Intra-business litigation became a prominent feature of game culture. Atari sued competitors for copying Pac-Man; being copied by competitors, Nintendo secured its games with 'lock and key' technology and notoriously aggressive lawyers; and Microsoft and Sony fought suits from rivals claiming theft of vital game secrets (Kline et al., 2003; Nichols, 2000). But the most publicized face of this proprietary regime was turned against a haunting remnant of hacker culture: piracy.

### **Pirate play**

Historians have shown that terrestrial enclosures were resisted not only by rebellions, but also by theft justified as assertion of customary right. The clearest example is poaching. But, according to Linebaugh and Rediker (2000), both highwaymen who robbed on turnpike roads cutting across old commons, and pirates and mutineers, maritime refugees from enclosure, sometimes reasserted common rights – one of the reasons for the romantic aura that invests their activities. Distinguishing between political and criminal responses to enclosure is not always easy: though the ends of a spectrum may be clear, there is a zone of 'infrapolitical' resistance where rebellion and aggrandisement blur (Scott, 1990: 183), a confusion intensified when both are criminalized by the dominant property regime.

Game piracy, too, is complex. Commercialization criminalized the 'unofficial' copying and circulation intrinsic to hacker culture. Adherents to the 'information wants to be free' credo became de facto 'crackers', thieves of legally protected software. The same commercialization also, of course, meant much money was to be made from stealing games. These conditions generated a pirate culture vigorous and varied in both motives and practices (Gantz and Rochester, 2005; Tetzalf, 2000; Thomas, 2002).

To copy a PC game is, in principle, fairly simple, requiring only a CD-burner and a certain amount of software savvy. In practice it can be a complicated affair that involves hacking a studio's network, or getting an inside accomplice, cracking anti-piracy keys and posting the game (sometimes before its commercial release date, in a 'Zero-Day' crack), to an internet site for public downloading to peer-to-peer networks, such as Kazaa or Bit Torrent. On the console, illicit copying requires a 'modifier' (MOD), to disable security mechanisms, or an 'emulator' (EMU), allowing a PC to impersonate the original platform. Once arcane, such arts and tools have been widely disseminated on the internet.

The video and computer game industry claims losses over \$3 billion a year to piracy (DiCarlo, 2005; Entertainment Software Association, 2003). Piracy rates for computer software are calculated to run at about 22 percent in North America, 35 percent in Western Europe and 35 percent globally (Business Software Alliance, 2006). But, for entertainment software, rates are estimated at 92 percent in China, 91 percent in Malaysia, 91 percent in Latvia, 86 percent in India, 85 percent in the Philippines, 82 percent in Russia and 75 percent in Mexico (International Intellectual Property Alliance, 2006). Calculations often make the implausible assumption that all illicitly copied games would otherwise be purchased at market price (Tetzalf, 2000). Nonetheless, piracy is clearly widespread. It includes individuals burning occasional copies, small groups circulating copies on 'darknets' (Biddle et al., 2002), 'softlifting' by companies or employees obtaining games or authoring tools for use at work, and shady retailers generating their own stock. Most important, however, are black market operations and 'warez' networks.

Black market centers are concentrated in the newly industrializing world. In China, Southeast Asia, Eastern Europe, Mexico and Latin America, piracy syndicates operate duplication plants running on just-in-time, network-production models, often with a retail and phone-order sales forces (US Department of Justice, 2002). This piracy belongs to the criminal shadow-world of the global market – not a player commons, even though it may redistribute wealth from the rich global North to the poor South, an 'anti-imperial' claim made by some software pirates (Kline et al., 2003: 214).

There is also, however, a gift economy circulating free software: 'warez'. While some offerings are easily available through public chat rooms, elite groups are clandestine and selective.

Individuals get points for each crack they bring. The more desirable the game, the more points it's worth. Rankings then determine how much access people have to content on these private networks. (King, 2002)

The reward is not only free 'gamez', but also the thrill of technological accomplishment, standing within a reputation economy, and defiance of what is seen as a greedy corporate order.

In an examination of P2P piracy Thomas (2002: 89) notes the 'constant and specific disavowal of financial motivation' and says 'cracking copy protection for profit is anathema for warez traders'. He identifies three key elements in the 'warez' 'ethos': 'keeping information free and open in the face of corporate control', an act seen as embodying 'the spirit of the Internet'; music- (or game-) lovers 'right to redistribute' goods they have purchased 'providing they do not profit financially'; and a sense of an 'entitlement to digital content', in that, after buying a computer and internet access, many 'see the content as already paid for' (2002: 87). 'If something can be shared', Thomas observes, 'this ethic dictates it should be shared' (2002: 91).

The games industry, of course, makes no distinction between 'warez' and 'black market' piracy, activities that, its spokespeople point out, cannot be kept entirely distinct whatever the intentions of practitioners. Taking software, they say, is just as much theft as stealing a car. The apparent clarity of such analogies becomes confused, however, because of the non-rivalrous nature of informational goods. Anti-piracy campaigns have therefore had to go a step further and argue that the real victim is the legally paying gamer. By destroying profit levels, piracy, it is claimed, 'kills the goose that lays the golden egg', raising development costs and reducing the number of high-quality games produced to the eventual detriment of consumers, publishers and developers alike.

In practical terms, the industry war on piracy has two prongs. One, technological, prong has moved from early, inefficient 'dongles' (anti-piracy hardware) to increasingly formidable DRMS (Digital Rights Management Systems), using encryption, code obfuscation, digital watermarks, spyware and other forms of software surveillance (Myles, 2005). The other, legal, prong has as its sharp end the US Digital Millennium Copyright Act of 1998, making illegal circumvention of copyright-protecting encryption, or development of tools to do so, and expecting that Internet Service Providers remove illicit material from users' websites. This was reinforced by the 2005 US Supreme Court decision, *MGM Studios v. Grokster*, holding file-sharing networks responsible for users' copyright infractions. The US and Japan, homes to the biggest games corporations, led a drive to transnationalize such legislation and bring together games corporations, industry associations, the police and judiciary of individual nation-states, and, gradually, supra-national bodies in the war on piracy.

Yet some say games companies are 'comparatively complacent' about piracy compared to the music and film business (DiCarlo, 2005). Unlike earlier media, games grew up with digital piracy and flourished despite it; developers often tacitly accept its inevitability. Moreover, even those generally opposed to piracy will sometimes concede either that some forms are relatively innocuous or, conversely, that extirpation could be more trouble than it is worth.

The argument that piracy actually fosters game culture is especially strong around 'abandonware' (Costikyan, 2000; Granade, n.d.). Aging games fall out of print and off retail shelves. Publishers and developers, sold, merged and

broken up in a cycle of consolidations and acquisitions, are often unaware what titles they own. In the 1990s websites preserving classic games such as *Missile Command*, *Space Invaders*, *M.U.L.E.* and *Balance of Power* appeared. As US copyright lasts 95 years and no computer game is that old, such sites are illegal. Cease-and-desist letters closed some, but others persisted and today out-of-print games, with emulators to run them, can be downloaded from Home of the Underdogs, the Ultimate Old Games Linkage and other sites. 'Abandonware' pirates have garnered sympathy as renegade archivists of an ephemeral art form, and some credit them with alerting the industry to the commercial potential of 'retro' games.

On the other hand, piracy-quashing technologies and laws breed new resistances. Anti-copying protections for PCs add to game costs, slow game play, interfere with normal computer functions and can be highly intrusive, disclosing entire hard drive contents and all network activities. One DRM system, Starforce, became notorious for causing problems, from hardware crashes to disabled CD and DVD burners. In 2006 a class action suit claiming \$5m damages for harmful security breaches to customers' computers resulted in two major publishers immediately dropping the system (Loughrey, 2006).

Another instance of complications arising from anti-pirate activity is the case *Blizzard Entertainment v. BnetD*. Blizzard is the maker of the famous *Warcraft* game franchise. Early *Warcraft* games were not designed for online play, but players independently created shareware that enabled the option. Blizzard then developed a proprietary multiplayer online meeting place, Battlenet. A group of open source programmers, BnetD, reverse engineered Battlenet software and constructed an alternative network. Blizzard sued, claiming BnetD violated the DMCA's anti-circumvention provisions and allowed use of pirated games. BnetD creators say they aimed only to evade notorious Battlenet problems of crashes, slow response and rampant cheating. BnetD was joined as co-defendants by the civil liberties organization Electronic Frontier Foundation (EFF), which feared that outlawing reverse software engineering would prevent creation of new programs that interoperate with older ones, thus allowing companies to eliminate competitive products that interface with their own. Courts ruled in favor of Blizzard in a decision widely seen as pivotal to legal regulation of new media (EFF, 2005; Miller, 2002; Wen, 2002).

Although the game industry officially declares all pirates parasites, there is an element of unavoidable coexistence, perhaps even symbiosis, between parasite and host. Some pirates create free game commons, others make black markets, and both subtract from game revenues on a scale that, although probably not as large as the industry claims, can be damaging, particularly to small companies. They also, however, disseminate game culture, and sometimes save old games and spur new innovations. However undesirable piracy may be, thoroughgoing repression would be more problematic and expensive than partial toleration. It is thus likely to remain an irrepressible part of game

culture, an ineradicable and constantly renewed residue of the incomplete enclosure of games commons.

### **Mods and *machinima***

To fulfill the promise of a 'cornucopian' or 'creative' commons, however, videogame culture would have to not merely circulate illicitly what has already been made commercially, but also generate new forms of production. And this is precisely what is happening with the emergence of game 'modding' (modifying) and *machinima* art. If pirates want free games, modders aim to expand games: changing characters' 'skins', adding weapons, creating scenarios, levels or missions, building new games out of old engine. Such practices can be seen as a version of fan-artists' 'poaching' of literary and cinematic work (Jenkins, 1992, 2002). But it also stems directly from the hacker tradition of digital tinkering that incessantly 'improved' versions of early games (Law, 2002).

Modding, though intrinsic to the hacker tinkering at the root of games, only became popularized in the 1990s. The developer, Id Software, had already seen teenage boys convert its Nazi-hunting *Castle Wolfenstein* into a gnome-hunting parody: *Castle Smurfenstein* (Kushner, 2003). When it released its blood-curdling *Doom*, Id included editing tools enabling players to create their own scenarios, or 'levels', and share them on the internet, generating near-inexhaustible renewable interest in its games, and also providing the company with a voluntary training and recruitment ground for digital talent.

Other companies quickly followed suit. Modding history was made when a player-adapted game won more success than the original. Valve's *Half-Life* pitted the sole survivor of a laboratory disaster against hideous mutants and sinister security forces. A Canadian computer science student adapted it to create *Counter-Strike*, a terrorist/anti-terrorist game played by networked teams. *Half-Life* was a smash hit, but *Counter-Strike* became the most popular online game in the world. Today, a game failing to release its development tools is 'more worthy of comment in a review than a game that does' (Edge, 2003: 57). Some recent games, such as *Neverwinter Nights*, are as much an editing toolkit as a standalone experience.

'Mods' are circulated for free, with or without the cooperation of developers. Witnessing their success, some companies 'buy back' successful mods, hiring the teams that created them. Others host competitions with lavish cash prizes for modifications to their games (Todd, 2003). But despite such re-commodification, modding can pose problems for commercial companies. Publishers welcome the attention a successful mod garners, but are concerned if it impinges on profits from sequels, missions and add-ons: 'Obviously, the big money earners in the company want to prevent changes in the game, especially if they give extra features to users for free' (Edge, 2003: 60).

A flashpoint is modders' importing of content from other games and media. The first known intellectual property prosecution of modders occurred when 20th Century Fox Corporation shut down a *Quake* 'Aliens vs. Predator' mod. Fox became notorious for contacting mod teams, demanding they cease production, remove websites, surrender files, destroy copies, and reveal the names and addresses of members. A new term – 'foxing' – entered gamers' lexicon (Kahless, 2001). But other corporations followed suit. Mods for *Quake*, *Mario* and *Mortal Kombat* have been 'foxed' to degrees from total shut down to renaming; a recent high-profile case involves the importation of copyrighted comic-book characters into the super-hero game *Freedom Force* (Smith, 2001).

One point that mutes potential hostilities between modders and publishers is that most mods are thematically conservative, undertaken by technically accomplished fans who love a particular game and want more of it – more weapons and monstrous opponents for shooters, different campaigns and battles for war games – in variants that don't stray far from the spirit of the original. Contrasting digital fan culture with more politicized cultural jamming, Jenkins observes it is 'dialogic rather than disruptive, affective more than ideological, and collaborative rather than confrontational' (2002: 167).

There are, however, some controversial adaptations: *Velvet Strike* makes peace activist interventions in *Counter-Strike*, while *Escape from Woomera* converted a well-known shooter into a politically charged game about Australia's refugee detention centers (Schleiner, 2005). In 2005 the volatile potential of mods was highlighted by the 'Hot Coffee' incident. A patch available on the internet unlocked sexual scenes in *Grand Theft Auto: San Andreas*. The ensuing controversy forced the publisher to withdraw the game pending re-rating by the ESRB (Entertainment Software Ratings Board). In fact, the patch only released latent content already buried in the game by the developer. But in the wake of Hot Coffee many anticipated a crackdown on modding technologies (Poulsen, 2005). The issue was highlighted again the following year, when the role-playing game *Oblivion* was re-rated, partly because of a mod that made it possible to unclothe characters.

The issues raised by modding are only intensified by *machinima* – movies made from games. In the 1990s, players realized that the graphics and engines of *Quake* or *Unreal* could create quick, cheap films (Lowood, 2005). A digital camera situated in the point of view of a character films in-game action: voice and music are dubbed in. *Machinima* is developing rapidly with increasingly sophisticated hardware and software. Full-length *machinima* features tour film festivals, *machinima* music videos rotate on MTV and there are *machinima* sections on TV cable gaming channels (Kahney, 2003).

In the US, *machinima* creators filming from a game without permission could be prosecuted for EULA violations. If these issues are so far untested, it is because game companies have been willing to accommodate, and profit from, *machinima*. The most famous *machinima* creation is *Red vs. Blue*, made

from Microsoft's science fiction combat game *Halo*, featuring sardonic exchanges between bored soldiers waiting for battle, and released on both the Web and DVDs for retail sale. Microsoft distributes *Red vs. Blue*, clearly believing that, however irreverent, the spoof increases the cultural cachet of *Halo*. Id Software has allowed the *Quake II* engine to be converted to open source software, providing *machinima* artists a valuable resource.

Again, however, the limits of tolerance may be strained as *machinima* artists venture into volatile political or erotic content – something that is already happening. Peter Molyneux's *The Movies* simulates the history of Hollywood: the game's advertisements invite players to use the built-in *machinima* capacities to recapitulate the exploits of moguls from DeMille to Spielberg. But one player used them to make a short film, *The French Democracy*, about the causes of urban riots in Paris. Sharply critical of the racism of police and political authority, the film opens with a young immigrant expressing disgust at mainstream news coverage of the unrest: *machinima* enabled, for the \$60 cost of the game, a digital rebuttal, widely downloaded, circulated for free.

Modding and *machinima* represent a return of the digital 'DIY' practices at the root of game culture. They arise within a fan culture that regards games not as fixed properties, but rather as the raw material for continuous collective authorship whose products, even if they eventually pass back into commodity form, enjoy a sustained, and often indefinite, free circulation. Because modding and *machinima* re-purpose commercial games, it may be objected that they remain derivative and secondary. But when some games are designed mainly as vehicles to support such player production, as is increasingly happening today, this primacy of commercial versus amateur activity, and of commodities over commons, is strangely inverted

### **Commodity-commons: MMOGS**

The most complex encounters between commons and corporate play regimes are, however, in Massively-Multiplayer Online Games (MMOGs). Played on the internet, these 'synthetic worlds' (Castronova, 2005) allow thousands of players to interact in persistent virtual environments. The ethnography, legal and commercial aspects of these games recently attracted much discussion (Dibbell, 2006; Taylor, 2006; *Terra Nova*, 2003); here we focus on their unstable synthesis of commons and commodity logics.

MMOGs originate in digital enclosure. Their precursors were text-based internet games called MUDs (Multi-User Domains), with typed-in commands – 'kill monster' – volunteer creations, played for free. In the 1980s, some MUDs adopted graphics interfaces, requiring software that was both expensive to develop and easy to charge for. Coming as the commercialization of the internet gained momentum, this change laid the basis for commodification. In 1997 Electronic Arts launched the first commercial graphic MMOG,

*Ultima Online*, a neo-medieval fantasy world in which players looted, pillaged, hacked, slashed, crafted and traded. Plagued by problems from server crashes to mass killing of novice players, *Ultima* suffered both virtual peasant revolt and a real-life player class action suit (Kline et al., 2003).

A decade later, however, there are some 40 operating MMOGs, with 28 more in development (Woodcock, 2005). Early successes such as *EverQuest*, *Ultima* and *Asheron's Call* are being displaced by new arrivals such as *World of Warcraft*, which alone has some 8 million subscribers. Globally, MMOG 'populations' are reckoned at about 10 million (Castronova, 2005) and growing, particularly in Asia, where games such as *Lineage* and *Ragnarok* are popular.

MMOGs are far from free. Games usually require not only purchase of initial software, but also monthly subscriptions, as well as expansion packs and add-ons. The economics are risky. Successful MMOGs cost between \$30 million and \$50 million to launch (Mulligan, 2002), with ongoing costs for staff to maintain, tweak and troubleshoot. But if a game attracts sufficient player base, revenue streams are impressive. It is estimated that, in 2005, *World of Warcraft* alone was bringing Blizzard, its developer, over \$700 million a year, while worldwide MMOG revenues were over \$1.5 billion (Schiesel, 2005; Woodcock, 2005). This seems no commons, but a game commodity *par excellence*.

What complicates the analysis is the role of players in creating MMOGs. While developers program the initial parameters of such games, the interaction of the players provides the substance of their virtual worlds, creating behavior patterns, social rules and collective institutions. The vibrancy of the online community determines whether a game persists and becomes profitable. Since MMOGs depend on the multiple interactions of thousands of inhabitants, all of whom use the game but none of whom own it, they have, in a very general sense, a commons component. This is enhanced at a second, more specific level, in that much of the governance of these worlds is performed by player associations – 'guilds' or 'clans' – which evoke high levels of voluntary cooperation, mutual aid and resource-sharing among players.

Thus, while ownership of MMOGs lies with the game publisher, player populations collectively determine much of what goes on in them. This ambivalence has provoked debate among game scholars as to who actually 'rules' MMOGs (Jakobsson and Taylor, 2003; Lastowka, 2005; Taylor, 2006). In an examination of *EverQuest* guilds, Jakobsson and Taylor (2003) suggest that while requirements for player cooperation and interdependence were designed into the game, the success of this feature in turn makes the game's publisher, Sony, dependent on player associations to sustain the game's interest and profitability. Looking at the issue from the other side, however, Sal Humphreys (2004: 4) sees MMOGs as a co-optive triumph for game capital, which appropriates the 'immaterial, affective, collective production' of their virtual population. Such worlds are, he suggests, a classic example of the 'free labor' Tizania Terranova (2000: 42) identified as a key element in commercial online culture more generally.

MMOGs may thus be seen as a chimerical commodity-commons form, or as Taylor (2006: 155) puts it, a 'co-creation' of player communities and corporate developers. EULAs assert the publisher's ownership of all aspects of game content (including players' avatars). But in practice owners must constantly track player activity, solicit feedback, update and refine code, and rebalance the game in response to their populations, or risk disaster as players abandon boring or buggy MMOGs for those of rivals, who on occasion even court wholesale defections by important guilds or clans. Attempting to deal with a decline in its popularity, Sony in 2004 actually implemented a formal 'summit' to consult about the future of the game with leaders of high-level guilds (Taylor, 2006: 149).

This hybrid arrangement also, however, results in frequent conflicts between 'corporate' ownership and 'common' practice. Guilds and clans or other collectivities representing particular 'classes' or 'races' of player-characters often vigorously contest publisher decisions about disciplining players, changing rules or default avatar appearances, and, although publishers frequently override such protests, they also sometimes have to back down. In a celebrated recent instance, Blizzard was compelled to reverse a decision banning the publicizing of gay and lesbian guilds in *World of Warcraft*. The possibility of a 'Players Bill of Rights' protecting MMOG inhabitants from favoritism, arbitrary discipline and insecurity, and explicitly declaring 'the aim of virtual communities is the common good of its citizenry', have been circulated and widely discussed in online forums (Koster, 2000).

'Virtual trading' has further complicated the situation. In 2001, Castronova publicized what gamers had known for some time: currency, armor, spells, property and even characters in MMOGs traded for *real-world* dollars at online auction sites. Dividing the value of avatars' assets by the hours required to accumulate them, he estimated an average player 'earned' \$3.42/hour, making the imaginary continent of Norrath the 77th strongest national economy in the world. Virtual trading began with individual sales but soon became industrial in scale, with commercial enterprises located in Mexico, Hong Kong and Eastern Europe (Thompson, 2005), either directly selling the loot of low-wage employees hired to play MMOGs, or facilitating player trades on a commission basis. Recent reports describe hundreds of enterprises in China selling game-goods to Western MMOG players (Barboza, 2005). The value of the 'ancillary market' for in-game items is variously valued at between \$200 million and \$1 billion annually (Eyewitness, 2005).

MMOG EULAs make unauthorized sale of in-game properties illegal. But game companies take varying attitudes to virtual trading; most condemn it, many tacitly tolerate a practice difficult to stop and some encourage it. In 2005 Sony created a furor by allowing the sale of in-game items for cash on two servers for its new *EverQuest II*, taking a 10 percent commission plus listing fee (Terdiman, 2004). On the other hand, Blizzard wages war against virtual trading in *World of Warcraft* with disciplinary sweeps suspending thousands of accounts at a time.

The resulting controversy has given considerable prominence to capitalist libertarians asserting their prerogative to hold and exchange game properties. Games such as *Entropia* and *Second Life* have emerged as a sub-variant of MMOGs that are hinged on the exchange of real cash for virtual assets, such as the (in)famous exchange of a digital space station for \$100,000. *Second Life* now allows players to retain full intellectual property protection for the content they create, including characters, clothing, scripts, textures, objects and designs (Herman et al., 2006). The overall direction of these proposals is towards the validation and encouragement of player-created content, but within the boundaries of fully commodified system.

In other games, however, playing for profit – ‘farming’ – is widely criticized. Purchasing equipment and characters detracts from the skill of play, undermines community formation (the character you met last week may next week belong to someone else) and alters game play dynamics; for example, farmers frequently ‘camp’ – occupying a strategic site where they can kill the same re-spawning monster repeatedly, looting whatever treasures it drops, while aggressively blocking other players from the location. Some use automated programs, ‘farmbots’, to harvest game worlds, populating the world with golems. The backlash against farming within MMOGs was reflected in the refusal of a major game magazine to accept advertisements from virtual trading companies.

Virtual trading shows how paradoxically intertwined commons and commodities have become in MMOGs. On the one hand, gold farming displays the commodification of the player self-activity that might be considered characteristic of the commons ethic – a micro-level entrepreneurship sounding the last knell of the hacker ethic. On the other, the backlash against the commercial infiltration, and the mounting pressures players apply to prevent worlds being overrun by farmbots, speed hackers and duping bugs, means that MMOG publishers may find that some preservation of the digital commons, on whose commercial enclosure their business was founded, may be a condition of their continued success.

## Conclusion

In a recent discussion James Hamilton links contemporary intellectual property regimes to commons enclosure, pointing out that both emerged as aspects of an industrial capitalism in which concrete ‘acts of making and using goods and services’ came to be defined as ‘abstract pairings of producer and consumer’ (Raymond Williams, cited in Hamilton, 2003: 296). Enclosure destroyed communal subsistence in favor of private industry and dispossessed laborers. Copyright replaced the collective traditions of oral culture with the rights of individualized authors and the publishers to whom those rights were sold.

Hamilton describes this latter shift as one from a 'multidimensional' media model, in which cultural creation is conceived as the outcome of practices 'varied, hybrid and, in many cases, not identifiable', to a 'unidimensional' model that sharply compartmentalizes producers and consumers (2003: 297). As corporate globalization has reawakened interest in terrestrial commons so, he suggests, digital media catalyze a recovery of 'multidimensional' media traditions. Desktop creation and alteration, instant copying and networked circulation blur the identities of producers and consumers and strengthen copiers, adapters, fans and amateur authors/artists. Hamilton cites alternative journalism as an example of this new 'multidimensionality'; but, as we have attempted to show, an even better place to examine it is in the domains of digital play.

In digital play the breakdown of division between producers and consumers becomes strikingly apparent. The defining feature of videogames, their interactivity, undermines this model at root. Where there are no audiences, only players, the always dubious boundary between passivity and activity, production and consumption, is undercut from the start. The same digital capacities that allow games to be played enable players to copy, modify and create games. Tensions between legalities and actualities mount and multiply. These commotions are in turn part of a larger tumult produced by the confrontation of corporate media and digital commons.

In these commotions we can, very schematically, identify three positions: those of rejectionists, reformers and radicals.

The rejectionists, represented most forcefully by major media corporations and industry associations, see much of the commons activity we have described as criminally endangering the growth of new media industries by violations of intellectual property. They seek, realistically, not to eliminate, but to minimize such threats. In terms of games, this would mean that piracy is met both by intensified prosecution and escalating use of intrusive surveillance; cracking down on politically, culturally or economically volatile mods and *machinima*; and resolving frictions in MMOGs by stringent specification and enforcement of EULAs.

The reformers, on the other hand, aim at an accommodation between commons and capital. The Creative Commons initiative, for example, argues that cultural production under digital conditions requires a relaxation of copyright regimes, and protection of the role of audiences and sources, not just authors, in creative processes (Lessig, 2001). Heretical as this may sound in an era of neoliberalism, Creative Commons does not challenge the market system, but rather proposes greater formal assimilation within that system of users and adapters, recognized primarily as commercial agents and digital property holders. The game business, as the first entirely computer-based consumer entertainment industry, more responsive to new digital conditions than film, music or book publishing, might be a pioneer for such compromise, bestowing limited rights and recognition for modders, *machinima* artists and MMOG

players as valuing-adding partners for commercial industry: indeed, individual property ownership within *Second Life* can be arranged under a 'creative commons' license (Herman et al., 2006). As mounting development costs inspire increasing interest in incorporating user-created content in games, this may seem an increasingly attractive path.

A third, more radical perspective, suggests that intellectual property conflicts signal a digital socialization of production ultimately incompatible with commodity exchange. In this view, discussions of how best to commodify digital culture resemble 'a group of feudal serfs sitting around a newly invented power loom, wondering whether the lord of the manor will now increase their tithes' (Boyle, 1996: xiv). According to Strangelove (2005), Dyer-Witheford (2002) and Wark (2004), new collective practices of production and circulation, not of course just in games, but also in other fields, such as P2P, FOSS, tactical media, grid computing and micro fabrication, might be avatars of what Barbrook (2001) christens 'dotcommunism'. Such a shift could only follow a very protracted crisis, in which heightened policing of intellectual property confronts expanding piracy, a proliferation of freeware and open source programming, and the migration of much that is inventive, not just in games, but in digital culture at large, to 'autonomous zones' (Bey, 2003). In this view, then, 'commons' logic, not only in games but also in wider digital culture, is no anachronistic remnant of fading hacker culture, but rather a premonitory avatar of some yet-to-emerge 'commonist' mode of production.

For now, however, the relation between commons and commodities remains fluid, fertile and unresolved. The commons processes of the videogame world are complex and variegated, defying both romantic celebration and reflex condemnations. They include illicit copying, twilight zone re-purposing and quite legal virtual world creation. Many of these processes are subject to forms of re-commodification, as black, gray or ancillary markets. Nonetheless, they are also generating games that are either voluntarily produced, or freely circulated, or that compel publishers into ongoing negotiations with 'co-creating' players. The relation of these player-commons to commercial games is ambivalent. On the one hand, it is symbiotic. Commercial games, themselves children of hacking, generate the technological know-how and cultural excitement that fuels 'do-it-yourself' player activities, which companies often in turn re-market. But games commons and commerce are also antagonistic, with frontiers marked by smoldering border wars over piracy and property rights that sometimes burst into major conflagrations. Game capital, robust but my no means impervious to crisis, may be in the process of effectively squashing the game commons or of pioneering their inventive co-option within the commodity form – or of demonstrating contradictions that doom such an attempt. 'The crisis', Antonio Gramsci (1971: 32–3) wrote, in a very different context, 'consists precisely in the fact that the old is dying and the new cannot be born: in this interregnum, morbid phenomena of the most varied kind come to pass'. Providing we recognize

that, as horror games like *Stubbs the Zombie* and *Bloodline Masquerade* show, 'morbid phenomena of the most varied kind', offer their own peculiar pleasures, this sums up the current contested and uncertain 'interregnum' between commodities and commons in the culture of digital play.

## References

- Barboza, D. (2005) 'Boring Game? Hire a Player', *International Herald Tribune* 9 December. URL (consulted December 2005): <http://www.iht.com/articles/2005/12/08/business/gaming.php>
- Barbrook, R. (2001) *Cyber-communism: How the Americans are Superseding Capitalism in Cyberspace*. URL (consulted June 2005): <http://www.hrc.wmin.ac.uk/theory-cybercommunism.html>
- Benkler, Y. (2002) 'Freedom in the Commons: Towards a Political Economy of Information', *Duke Law Journal* 52: 1245–76. URL (consulted May 2006): <http://www.law.duke.edu/shell/cite.pl?52+Duke+L.+J.+1245>
- Bettig, R. (1997) 'The Enclosure of Cyberspace', *Critical Studies in Mass Communication* 14: 138–57.
- Bey, H. (2003) *T.A.Z. The Temporary Autonomous Zone*. New York: Autonomedia.
- Biddle, P., P. England, M. Peinado and B. Wilman (2002) 'The Darknet and the Future of Content Distribution', paper presented at ACM Workshop on Digital Rights Management, Washington, DC, 18 November. URL (consulted May 2006): [http://www.bearcave.com/misl/misl\\_tech/msdrm/darknet.htm](http://www.bearcave.com/misl/misl_tech/msdrm/darknet.htm)
- Bollier, D. (2002) *Silent Theft: The Private Plunder of Our Common Wealth*. New York: Routledge.
- Boyle, J. (1996) *Shamans, Software and Spleens: Law and the Construction of the Information Society*. Cambridge, MA: Harvard University Press.
- Brand, S. (1972) 'Spacewar: Fanatic Life and Symbolic Death Among the Computer Bums', *Rolling Stone* 7 December. URL (consulted May 2006): [http://www.wheels.org/spacewar/stone/rolling\\_stone.html](http://www.wheels.org/spacewar/stone/rolling_stone.html)
- Bricklin, D. (2001) 'The Cornucopia of the Commons', pp. 59–63 in A. Oram (ed.) *Peer-to-peer: Harnessing the Power of Disruptive Technologies*. Cambridge, MA: O'Reilly.
- Business Software Alliance (2006) 'Study Finds PC Software Piracy Declining in Emerging Markets while Worldwide Piracy Rate Remains Stable', 23 May. URL (consulted May 2006): <http://www.bsa.org/usa/press/newsreleases/2006-Global-Piracy-Study.cfm>
- Castronova, E. (2001) 'Virtual Worlds: A First-hand Account of Market and Society on the Cyberian Frontier', *The Gruter Institute Working Papers on Law, Economics, and Evolutionary Biology* 2 (29 June). URL (consulted May 2006): [http://www.bepress.com/giwp/default/vol2/iss1/art1/current\\_article.html](http://www.bepress.com/giwp/default/vol2/iss1/art1/current_article.html)
- Castronova, E. (2005) *Synthetic Worlds: The Business and Culture of Online Games*. Chicago: University of Chicago Press.
- Costikyan, G. (2000) 'New Front in the Copyright Wars: Out-of-print Computer Games', *New York Times* 18 May. URL (consulted May 2006): <http://nytimes.com/library/tech/00/05/circuits/articles/18aban.html>
- Dibbell, J. (2006) *Play Money, or How I Quit My Day Job and Struck It Rich in Virtual Loot Farming*. New York: Perseus.
- DiCarlo, L. (2005) 'Do Game Publishers Ignore Piracy?'. *Forbes.com*, 18 July. URL (consulted May 2006): [http://www.forbes.com/2005/07/18/videogame-piracy-worldwide\\_cx\\_ld\\_0718piracy](http://www.forbes.com/2005/07/18/videogame-piracy-worldwide_cx_ld_0718piracy)

- Dyer-Witheford, N. (2002) 'E-capital and the Many-headed Hydra', pp. 129–64 in G. Elmer (ed.) *Critical Perspectives on the Internet*. Lanham, MD: Rowman and Littlefield.
- Edge (2003) 'The Modern Age', *Edge* 126: 58–67.
- EFF (Electronic Frontier Foundation) (2005) 'Federal Court Slams Door on Add-on Innovation', press release, 1 September. URL (consulted May 2006): [http://www.eff.org/news/archives/2005\\_09.php#003949](http://www.eff.org/news/archives/2005_09.php#003949)
- Entertainment Software Association (2003) 'ESA Applauds Creation of Congressional International Anti-piracy Caucus', press release, 21 October. URL (consulted May 2006): [http://www.theesa.com/archives/2003/10/esa\\_applauds\\_cr\\_1.php](http://www.theesa.com/archives/2003/10/esa_applauds_cr_1.php)
- Eyewitness (2005) *Farmer's Market* (July 2005 edn), PC Gamer.
- Festinger, J. (2005) *Video Game Law*. Markham, Ont.: LexisNexis.
- Gantz, J. and J.B. Rochester (2005) *Pirates of the Digital Millennium*. New York: Prentice Hall.
- Goldman, M. (1998) 'Introduction: The Political Resurgence of the Commons', pp. 1–19 in M. Goldman (ed.) *Privatizing Nature: Political Struggles for the Global Commons*. London: Pluto.
- Gramsci, A. (1971) *Selections from the Prison Notebooks*. New York: International Publishers.
- Granade, S. (n.d.) 'WareZ, Abandonware and the Software Industry', Brass Lantern: The Adventure Game Website. URL (consulted May 2006): <http://www.brass-lantern.org/community/companies/warez.html>
- Haddon, L. (1988) 'Electronic and Computer Games: The History of an Interactive Medium', *Screen* 29(2): 52–73.
- Hamilton, J. (2003) 'Remaking Media Participation in Early Modern England', *Journalism: Theory, Practice and Criticism* 4(3): 293–313.
- Hardin, G. (1965) 'The Tragedy of the Commons', *Science* 162: 1343–8.
- Herman, A., R.J. Coombs and L. Kaye (2006) 'Your Second Life? Goodwill and the Performativity of Intellectual Properties in On-line Games', *Cultural Studies* 20(2/3): 184–210.
- Himanen, P. (2001) *The Hacker Ethic and the Spirit of the Information Age*. New York: Random House.
- Humphreys, S. (2004) 'Commodifying Culture – It's Not Just about the Virtual Sword', paper presented at the Other Players conference, Center for Computer Game Research, Copenhagen, 6–8 December. URL (consulted May 2006): <http://www.itu.dk/op/papers/humphreys.pdf>
- International Intellectual Property Alliance (2006) 'IIPA's Chart of USTR's April 2006 Special 301 Decisions', 28 April. URL (consulted May 2006): <http://www.iipa.com/statistics.html>
- Jakobsson, M. and T.L. Taylor (2003) 'The Sopranos Meet EverQuest: Social Networks in Massively Multiplayer Online Games', paper presented at 5th International Digital Arts and Culture Conference, Melbourne, 19–23 May. URL (consulted May 23, 2006): <http://hypertext.rmit.edu.au/dac/papers/Jakobsson.pdf>
- Jenkins, H. (1992) *Textual Poachers: Television Fans and Participatory Culture*. New York: Routledge.
- Jenkins, H. (2002) 'Interactive Audiences?', pp. 157–70 in D. Harries (ed.) *The New Media Book*. London: British Film Institute.
- Kahless (2001) 'The Foxing of Mods', Homepage of 3DActionPlanet, 28 April. URL (consulted May 2006): <http://www.3dactionplanet.com/features/editorials/foxed-mods>
- Kahney, L. (2003) 'Games Invade Hollywood's Turf', *Wired News*, 9 July. URL (consulted May 2006): <http://wired-vig.wired.com/news/technology/0,1282,59566,00.html>

- Kidd, D. (2003) 'Indymedia.org: A New Communication Commons', pp. 47–70 in M. McCaughey and M. Ayers (eds) *Cyberactivism: Online Activism in Theory and Practice*. New York: Routledge.
- King, B. (2002) 'Pirates Rule the Seize', *Wired News*, 28 June. URL (consulted May 2006): [http://www.wired.com/news/games/0,53454-1.html?tw=wn\\_story\\_page\\_next1](http://www.wired.com/news/games/0,53454-1.html?tw=wn_story_page_next1)
- Kline, S., N. Dyer-Witheford and G. de Peuter (2003) *Digital Play: The Interaction of Culture, Technology and Marketing*. Montreal: McGill-Queen's University Press.
- Koster, R. (2000) 'Declaring the Rights of Players', 27 August. URL (consulted May 2006): <http://www.raphkoster.com/gaming/playerrights.shtml>
- Kushner, D. (2003) *Masters of Doom*. New York: Random House.
- Lastowka, G. (2005) 'You Will Rule the Planes of Power', Homepage of *Terra Nova: Exploring Virtual Worlds*. URL (consulted May 2006): [http://terranova.blogs.com/terra\\_nova/WWR-PoP.pdf](http://terranova.blogs.com/terra_nova/WWR-PoP.pdf)
- Law, C. (2002) 'Mod Science', *Computer Games* 106 (March): 30–47.
- Lessig, L. (2001) *The Future of Ideas: The Fate of the Commons in a Connected World*. New York: Random House.
- Levy, S. (1984) *Hackers: Unsung Heroes of the Computer Revolution*. Garden City, NJ: Anchor Press/Doubleday.
- Lindenschmidt, J. (2004) 'From Virtual Commons to Virtual Enclosures: Revolution and Counter-revolution in the Information Age', *The Commoner: A Web Journal for Other Values* 9. URL (consulted January 2006): <http://www.commoner.org.uk/09lindenschmidt.pdf>
- Linebaugh, P. and M. Rediker (2000) *The Many-headed Hydra: Sailors, Slaves, Commoners and the Hidden History of the Revolutionary Atlantic*. Boston, MA: Beacon Press.
- Loughrey, P. (2006) 'UbiSoft drops Starforce Protection from its Titles', *Games Industry Biz*, 18 April. URL (consulted May 2006): [http://www.gamesindustry.biz/content\\_page.php?aid=16155](http://www.gamesindustry.biz/content_page.php?aid=16155)
- Lowood, H. (2005) 'Real-time Performance: Machinima and Game Studies', *International Digital Media Arts Association Journal* 1(3): 10–18.
- McMurtry, J. (1999) *The Cancer Stage of Capitalism*. London: Pluto.
- Midnight Notes (1992) *Midnight Oil: Work, Energy, War, 1973–1992*. New York: Autonomedia.
- Miller, E. (2002) 'Analysis of Blizzard vs BnetD', *LawMeme*, 26 February. URL (consulted May 2006): <http://research.yale.edu/lawmeme/modules.php?name=News&file=article&sid=149>
- Mosco, V. (1996) *The Political Economy of Communication*. London: Sage.
- Mulligan, J. (2002) 'I 0Wn Y0u, d00d! Part Deux', Homepage of Skotos.net. URL (consulted May 2006): <http://www.skotos.net/articles/bth.html>
- Myles, G. (2005) 'Preventing Piracy within the Video Game Industry', *International Digital Media Arts Association Journal* 1(3): 75–80.
- Neesan, J.M. (1993) *Commoners, Common Right, Enclosures, and Social Change in England 1700–1820*. Cambridge: Cambridge University Press.
- Nichols, B. (2000) 'The Work of Culture in the Age of Cybernetic Systems', pp. 90–116 in J.T. Caldwell (ed.) *Electronic Media and Technoculture*. New Brunswick, NJ: Rutgers University Press.
- Perelman, M. (2000) *The Invention of Capitalism: Classical Political Economy and the Secret History of Primitive Accumulation*. Durham, NC: Duke University Press.
- Postigo, H. (2003) 'From Pong to Planet Quake: Post-industrial Transitions from Leisure to Work', *Information, Communication and Society* 6(4): 593–607.

- Poulsen, K. (2005) 'Game Over for Modders?', *Wired News*, 1 August. URL (consulted August 2005): <http://www.wired.com/news/games/0,2101,68284,00.html>
- Raessens, J. (2005) 'Computer Games as Participatory Media Culture', pp. 373–88 in J. Raessens and J. Goldstein (eds) *Handbook of Computer Game Studies*. Cambridge, MA: MIT Press.
- Raymond, E. (2001) *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*. New York: O'Reilly Media.
- Rheingold, H. (2002) *Smart Mobs: The Next Social Revolution*. Cambridge, MA: Perseus.
- Schiesel, S. (2005) 'Conqueror in a War of Virtual Worlds', *New York Times*, 6 September. URL (consulted May 2006): <http://www.nytimes.com/2005/09/06/arts/design/06worl.html?ex=1283659200&en=7053c2e95380c600&ei=5088&partner=rssnyt&emc=rss>
- Schleiner, A. (2005) 'Game Reconstruction Workshop: Demolishing and Evolving PC Games and Gamer Culture', pp. 405–14 in J. Raessens and J. Goldstein (eds) *Handbook of Computer Game Studies*. Cambridge, MA: MIT Press.
- Scott, J. (1990) *Domination and the Arts of Resistance: The Hidden Transcript*. New Haven, CT: Yale University Press.
- Shiva, V. (2005) *Earth Democracy*. Cambridge, MA: South End Press.
- Smith, A. (2001) 'Realms Fences in Foxing Fans', Homepage of *The Register* 12 February. URL (consulted August 2005): [http://www.theregister.co.uk/2001/02/12/3d\\_realms\\_fences\\_in\\_foxing/](http://www.theregister.co.uk/2001/02/12/3d_realms_fences_in_foxing/)
- Strangelove, M. (2005) *The Empire of Mind: Digital Piracy and the Anti-capitalist Movement*. Toronto: University of Toronto Press.
- Taylor, T.L. (2006) *Play between Worlds: Exploring Online Game Culture*. Cambridge, MA: MIT Press.
- Terdiman, D. (2004) 'Playing Games with a Conscience', 22 April, URL (consulted April 2004): <http://wired.com/news/print/0,1294,63165,00.html>
- Terra Nova: Exploring Virtual Worlds* (2003). URL (consulted May 2006): <http://terranova.blogs.com/>
- Terranova, T. (2000) 'Free Labor: Producing Culture for the Digital Economy', *Social Text* 18(2): 35–58.
- Tetzlaff, D. (2000) 'Yo-ho-ho and a Server of Warez: Internet Software Piracy and the New Global Information Economy', pp. 77–99 in A. Herman and T. Swiss (eds) *The World Wide Web and Contemporary Cultural Theory*. New York: Routledge.
- Thomas, D. (2002) 'Innovation, Piracy and the Ethos of New Media', pp. 82–91 in D. Harries (ed.) *The New Media Book*. London: British Film Institute.
- Thompson, E. (1991) *Customs in Common*. London: Merlin.
- Thompson, T. (2005) 'All Work and No Play in Virtual Sweatshops', *Guardian Weekly*, 25–31 March: 17.
- Todd, B. (2003) 'Million Dollar Mods', *Computer Games*, September: 24–25.
- US Department of Justice (2002) 'Operation Buccaneer: Illegal "Warez" Organizations and Internet Piracy', Computer Crime and Intellectual Property Section – Department of Justice. URL (consulted May 2006): <http://www.cyber-crime.gov/ob/OBorg&pr.htm>
- Wark, M. (2004) *A Hacker Manifesto*. Cambridge, MA: Harvard University Press.
- Wen, H. (2002) 'Battle.Net Goes to War', *Salon* 18 April. URL (consulted April 2004): <http://www.salon.com/tech/feature/2002/04/18/bnetd/index.html>
- Williams, R. (1976) *Keywords: A Vocabulary of Culture and Society*. Oxford: Oxford University Press.
- Woodcock, B. (2005) 'Mogchart.com Version 18.0.' URL (consulted January 2006): <http://mmogchart.com/>

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