The tangled hydra: developments in transglobal peer-to-peer culture

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Abstract *Internet-enabled file sharing via peer-to-peer (P2P) systems is a transglobal activity involving millions of people circulating vast amounts of information. 'Anonymous peers' exchange data via autonomous networks that are simultaneously external to, and embedded within, market structures. A transnational alliance of technology and media industries and governments employs technological barriers, legal instruments and, belatedly, commercial alternatives to constrain the phenomenon. Such 'digital enclosures' trigger productive rebellious acts by programmers, intellectual property activists and file sharers inhabiting overlapping informal networks. Escalating cycles of retaliation and resistance spawn further disorder in the informational domain. The period 2009–12 has been a watershed for technological trends, landmark legal battles and supranational treaties. However, scant attention is paid to how 'digital piracy' disturbs the logic of capital by instituting material practices that tolerate contradictory positions on free culture and electronic freedom, creating new contexts for social experimentation and recomposition.*

Keywords BITTORRENT, DIGITAL PIRACY, FILE SHARING, IINET, MEGAUPLOAD, PEER-TO-PEER, TRANSNATIONAL CAPITALIST CLASS

Throughout history, piracy has been a self-organized affair, notwithstanding the role of the state in providing political and practical support for some of its iterations. According to Linebaugh and Rediker (2000: 145, 155), in their book *The many-headed hydra*, the evolution of England's 'imperial hydrarchy', or 'maritime state', in the seventeenth and eighteenth centuries saw some sailors exercise 'autonomous power to organize the ship and the miniature society they wanted'. By the early eighteenth century, piracy was a 'social movement' creating a 'major, and deliberate, disruption in capitalist trade', which in turn provoked harsh retaliation from the state (Dawdy and Bonni 2012). On occasions, the unconventional forms of horizontal organization practised on the high seas extended to land-based enclaves where pirates built anarchic 'intentional communities' (Lamborn Wilson 2003: 187–204). These ephemeral, spatially-disaggregated experiments in social reordering had an impact on, but failed to halt, the evolution of the dominant paradigm of expropriation, production

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and exchange. Nevertheless, pirates have inspired the social imagination within many cultures, as figures embodying freedom from elite power and its structures of control. When outlaws build social codes based on self-rule, cooperation and collectivism, they create utopian possibilities.

In a similar vein, 'digital piracy' disturbs dominant systems of economic power while also transmitting new ideas about social organization into collective imaginaries. While we might say that this form of contemporary piracy, and the social and economic currents that propel it, bears no comparison with what occurs off the Somalian coast (Dua and Menkhaus 2012), for example, we can argue that analogies exist. At the heart of both is the disruption of the capitalist order, whether intentional or incidental. One manifestation of digital piracy is the widespread practice of exchanging cultural material over the internet via peer-to-peer (P2P) file sharing. File sharing is a complex phenomenon, constituted by technological layers, social actions and informational controls that reflect and generate regimes of ordering and disordering within info-capitalism, propelling innovation and sporadic disorganized resistances. P2P produces transglobal networks of millions of strangers sharing common, or complementary, ideas about cultural decommodification.

These strangers engage in habits of online exchange, providing access to material that is either not commercially available (at all, or in a timely fashion), or not in the desired formats. Certain ideologies around 'free culture' suggest that both expediency and passionately-argued principles motivate these actions. For example, as an anonymous poster on the TorrentFreak file-sharing news portal declared, if the copyright industry becomes 'the law' then 'torrenting [P2P] becomes civil disobedience'.[1] Another, referring to the seizure of the domain names of the United States Department of Homeland Security's file-sharing sites, asserted that 'you can take our domain names … But you can't take our Culture' (Sisario 2010).[2]

The cooperative social compositions arising from aggregated individual actions might prefigure more profound shifts in social organization and political agency within informational capitalism. To test this proposition, I focus on three fields of practice – file-sharing participants who demand unconstrained digital exchange; corporate and state elites who demand network monitoring and regulation; and academic, legal and media workers who critique and at times influence developments in the first two fields. From my analysis of data gathered from technical news portals, online P2P fora, mainstream reportage, position papers, industry-commissioned reports, academic research and legal judgements I conclude that clear evidence exists of P2P's socially generative potential. However, the forms of these disorderly, software-enabled social recompositions are not yet certain and perhaps are inevitably changeable, adaptive, responsive and generative.

File sharing: well-defined class war or messy social recomposition?

In an information economy in which social norms about ownership of both ideas and property have changed, profit can no longer depend on scarcity. Notwithstanding the continued circulation of rare and precious objects, ranging from stolen antiquities to

haute couture, much property has dematerialized into forms such as brands, reputations, networks, patents and insider rumours. Other forms of property have become digital and inherently infinitely reproducible. These paradigm shifts have propelled capitalists to find new ways to maintain their power. One major development has been the commodification of the informational domain. In an 'information society' this includes much of social life. Hence, the powerful react aggressively to perceived threats from below, from the social field they are attempting to enclose. Herein lies a vital clue to P2P's disordering potential.

In particular, file sharing intensely aggravates a specific segment – the convergent major telecommunications carriers, as well as the entertainment and media industries – within a transnational capitalist class (TCC), which argues that the phenomenon causes massive profit losses.[3] The TCC in general comprises 'transnational corporations and financial institutions', the elites who manage the 'supranational economic planning agencies, major forces in the dominant political parties, media conglomerates, and technocratic elites and state managers in both North and South' (Robinson and Harris 2000: 12). The TCC arose in the 1970s out of capital's 'profound restructuring', when TCC members began to manage 'global rather than national circuits of accumulation' (Robinson and Harris 2000: 11). Understandably, many smaller-scale capitalists oppose the TCC's monopolizing power and a vast gulf exists between locally-emplaced entrepreneurs and these 'citizens of the world' (Sklair 2005: 5–6). Within the post-industrial paradigm, the telecommunication behemoths who steamrolled over the earlier 'cottage industry' internet service providers (ISPs) exemplify this tension (Kleiner 2010: 14).

File sharing also angers creative workers in the entertainment industries who believe that appropriation or 'stealing' damages their livelihoods. This is despite research demonstrating that artists/creators have 'little to gain' financially from 'exclusivity' (see Martin Kretschmer's study cited in Kleiner 2010: 41). When mutually-suspicious classes (moguls and musicians) unite, traditional hierarchies and boundaries become unstable.

Confronted by a multitude of file sharers, the TCC must wage battles on multiple technological, legal, social, regional and supranational fronts. TCC members augment their power by networking, attempting to control an informational field in constant flux. The G8's (2011) declaration entitled *Renewed Commitment for Freedom and Democracy* highlights this intention. The document identified the internet as a 'major driver for the global economy, its growth and innovation', noting that 'openness, transparency and freedom' had been key to its evolution. However, it also confirmed the G8's commitment to 'ensuring effective action against violations of intellectual property rights in the digital arena'. This required 'international cooperation of relevant stakeholders, including with the private sector', implying unequivocal support for major copyright holders. Those who file share are generally unacknowledged as 'stakeholders' in such high-level discussions. Although the G8 expounded what might be a contrary position by affirming 'greater access and openness to knowledge, education and culture', it linked this goal to 'continued innovation in legal online trade in goods and

content … respectful of intellectual property rights', ignoring the histories of technological and commercial innovation rooted in unsanctioned forms of exchange.

File sharing and intellectual property activists are interconnected in that they both want to defend and extend a global cultural commons in opposition to the 'digital enclosures'. Software opens new forms of exchange and these, in turn, affect the social field. Some parallels and links also exist between the peer-to-peer phenomenon and other software-enabled 'informal communities', communication and sharing contexts, and internet activism (or hacktivism). Some examples of these are Usenet, Freenet, slashdot, 4chan, Wikipedia, Vimeo, Pastebin, and Anonymous. Emergent anarchic forms evolve out of 'software social' practices as (in the case of file sharing specifically) the downloading masses risk potential punishment and the code-adept develop or utilize technical circumventions. Escalating cycles of conflict offer more evidence to the broader proposition that capitalism's globally-integrated, locally-differentiated system of extreme virtualization is in crisis (Marazzi 2008).

Strangers with benefits

From the outset, the internet was an immersive environment in which academic, military, hacker, commercial, popular and folk cultures intersected to produce technological and social innovation (Gillies and Cailliau 2000; Leiner et al. 2009; Levy 1984). It is only more recently that the internet has been treated as a territory for commercial exploitation, as evidenced by 'dot.com' boom and bust cycles, and the stratospheric acquisitions and mergers of the 'Web 2.0' era. Even so, some of the early internet's uninhibited spirit remains, as the P2P phenomenon reveals. The BitTorrent (BT) protocol, enabling distributed 'peer-to-peer' (P2P) file exchange has joined other 'killer Internet applications', including email and web browsers, which have democratized and popularized online participation (Cuevas et al. 2010: 1).

Much unpaid cognitive and affective labour animates P2P. Labours of love include digitizing personal media archives to share, maintaining specialist search engines and servers, moderating discussion forums on P2P community sites, coordinating LAN events (embodied gatherings for game playing and file swapping) and 'sneakernet' activities (schlepping across cities with digital material to exchange with friends physically). Furthermore, creative artists worldwide sample, remix and repurpose pirated material to produce new content and new artistic forms, including fan fiction and machinima.

A collective imaginary arises from this material ground that tolerates contradictory political and ideological positions on free culture, knowledge enclosures, digital privacy and network neutrality. Sometimes the participants' self-reflexive discourses reveal a nuanced understanding of the internet's social potential, as the following explication by TorrentFreak forum commentator 'Really' demonstrates:

> The whole idea of copying and sharing is not to create an imaginary economy around one's self, friends or family. The idea is that one can provide a commons, a vault of information if you like, to those that interact with them … digital works are works of art and are informative, I can learn from the works so that I can create something better. I am not going to go to a gas station and give them my copied song, Friday, by Miss R. Black. That would be going against the spirit of sharing, I would be trading. The act of sharing is that the sharing is not in exchange for anything else. The guy who cams [records] a movie [in a cinema] does not get paid, nor the guy who seeds [shares online via P2P].[4]

The demand for digital freedom does not emanate exclusively from the political left. Social historian Robert Manne (2011) asserts that the influential 'cypherpunk' culture promoted since the late 1980s by a self-appointed Anglophone, almost exclusively male hacker elite has right-wing anarchistic/libertarian roots. An influential 'digerati' via publications such as *Wired*, along with activist organizations like the Electronic Frontier Foundation and the Free Software Foundation, replicated various strains of cypherpunk technolibertarian philosophy. Although file sharers might disagree on other issues, they purchase bandwidth from the same companies, inhabit the same communicative networks, exchange similar artifacts and fiercely argue their rights to do so, producing a commonality of purpose that makes political differences less important. Can we conceive of a transnational anticopyright class (TAC), a TAC on the attack producing strange netfellows in the net flows and an intercontinental populism?

Or perhaps we can simply accept that a more ambiguous social recomposition is afoot. The mass uptake of P2P has created a new form of online relationship. We engage in a type of social reproduction directly born from the nexus between software code and network form. My own engaged experiences with file sharing have led me to see this relationship as 'strangers with benefits'. P2P software forces us into a 'swarm' environment to share with people about whom we know nothing apart from (perhaps) their ISP's geographical location and that they are willing to flaunt local copyright laws to which they might be subject.

Social analysis of other kinds of networks often emphasizes qualities such as stability, resilience and endurance. Indeed, P2P networks have proven resilient, with attacks on single nodes usually producing negligible impact on users, as proxy or new sites spring up in their wake, as 'the Napster Effect' demonstrates (Fisher 2007; Sembrat 2009). While these networks are also unstable, elastic and, by definition, impermanent, the tenacity of the network form, users' persistent behaviours and the ad hoc nature of software swarms counter the fragility of individual nodes. Here perhaps is a key to P2P's generative potential, those messy and incoherent networks resulting from automated pragmatic connections and continual software innovations. 'Strength in instability' could be the slogan. Like the predicted post-nuclear cockroaches, the constellations of P2P networks are survivors, although more Lamarckian (inheritance of acquired traits) than Darwinian (natural selection) ones.

Polymorphous P2P: from centralized server/client systems to distributed peer swarms

Early incarnations of software-enabled file sharing rested on a centralized model, with the short-lived, hugely popular Napster (1999–2001) being the most well-known example. Informing Napster's evolutionary path were online communications platforms such as Usenet and Internet Relay Chat, as well as the dedicated file-sharing client/server Hotline (Menn 2003). Its servers maintained a central registry displaying private computers logged onto the system and their shareable MP3 music files, with the main users being United States college students enjoying institutional internet access (Bridy 2011). Eventually, a series of legal challenges bankrupted Napster and so the transnational capitalist class scored a major victory. However, by then the platform had generated around 25 million users, which eventually forced the recording industry to develop business models for digital music delivery (Merriden 2001). Hence, file sharers were also victorious.

Napster was legally vulnerable because it relied on a centralized system of data aggregation. Thus, a new file exchange paradigm based on disaggregation was needed for unofficial circulation to continue. Consequently, programmer Bram Cohen developed the BitTorrent (BT) software application and communication protocol. BitTorrent facilitated 'file transfers among multiple peers across unreliable networks' (Wikipedia contributors/BitTorrent community 2012). On 2 July 2001, Cohen (2001) announced the software's release on Yahoo's *Decentralisation: implications of the end-to-end principle* internet group, saying the 'new app, BitTorrent, is now in working order, check it out here – http://bitconjurer.org/BitTorrent.' Within weeks, Cohen had released BitTorrent 2.0 incorporating a new hyperlink-based interface. Some years earlier the World Wide Web's developer, Tim Berners-Lee, had similarly announced the WWW via a special-interest news group. This method of net-casting enables members of unstructured global networks centred on specific technologies to follow and beta-test protocols and platforms.

Before examining the software itself, it is worth noting another example of how P2P challenges traditional class and social assumptions. As the hacker cohort is comprised of workers within the corporate, military-industrial and, increasingly, entertainment sectors, it is integral to info-capitalism. In 2005 *Time* magazine named Cohen in their annual top 100 people list, along with other 'builders and titans' such as Rupert Murdoch, 'the Google guys' and 'the Blackberry guys' (Fonda 2005). Cohen continues to operate within the corporate world, building search engines and BT tools to 'convince content publishers and enterprise businesses that … BitTorrent is a legitimate and incredibly powerful tool for content delivery' (Ernesto 2007). Paradoxically, millions of users exploit BT tools for arguably illegitimate exchange.

How does BitTorrent work? Each computer connected to the internet is identifiable by its unique internet protocol (IP) address. BitTorrent can be regarded as an 'ecosystem' consisting of 'torrent indexing sites, trackers, and peers' (Le Blond et al. 2010: 2). The file sharers or 'peers' are 'anonymous' in the sense that P2P software displays the IP address of computers connected to a swarm around a specific digital file, but no other information. All torrent swarm members from the original file

uploader to the subsequent downloaders or 'seeders' are thus 'anonymous peers'. Moreover, some file sharers hijack unsecured wireless connections to join a swarm and hence they are completely anonymous, a defence used in some legal cases. A peer uses a BT software application or 'client' to 'announce' that he or she is 'seeding' (distributing) a particular file stored locally or on a 'seed box' on the Cloud (on the web).

These announcements are aggregated via specialist torrent indexing sites (search engines) such as The Pirate Bay and isoHunt, and tracker sites. Torrent indexing websites 'maintain a database of meta data on torrents including for each torrent the torrent name, a link to the .torrent file, the login of the user who inserted the meta data on the torrent indexing site, comments on the torrents, etc.' (Le Blond et al. 2010: 2). Such sites can be public or private (requiring 'credentials' or formal membership). Trackers are 'dedicated servers maintaining a list of active peers for each torrent registered to those trackers'. The Pirate Bay (2012a) is the most infamous file-sharing site, supporting over ten million peers, one million torrents and, more recently, utilizing the newer mode of trackerless magnet links (Le Blond et al. 2010: 2).

P2P software enforces user cooperation at a code level. The BT protocol enables software clients to break a file into small data chunks not stored contiguously in any location. As swarm participants incrementally acquire file chunks, they automatically 'seed' them to others connected to the same swarm. This removes the bandwidth pressure from the original seeder as the software makes it 'architecturally impossible' for any peer to leech (to take without giving back), unlike the Napster model, which allowed freeloading (Bridy 2011).

Digital goods can be infinitely reproduced at no cost and with little or no quality degradation. Unlike Napster the BT protocol handles large files effortlessly, enabling films, computer games, television series and bundled software applications to be exchanged. Whereas a music track compressed in the MP3 format might weigh in at 3 Mb, a film might be 700 Mb and an entire television series 8 Gb. High-resolution formats such as Blu-ray have further increased file sizes. Archiving downloaded files is increasingly affordable due to hardware developments such as USB flash drives, miniaturized external drives and iPods, all technologies driven by the desire for portable digital media. Moreover, broadband has become more affordable, with some internet service providers (ISPs) offering customers high-speed, 100+ or unlimited Gb monthly plans tailored to online gaming, file sharing and streaming.

Furthermore, the internet's expansion and diversification in terms of its users' ages, ethnicities, genders, spatial localities and socio-economic class has widened potential participation in P2P. According to the meta-research site World Internet Usage Statistics News and World Population (Miniwatts Marketing Group 2010), in the period 2000–10 internet usage in the African continent increased by 2357.3 per cent as compared with North America's growth rate of 146.3 per cent, a growth trend replicated across Asia, the Middle East and South America. If we consider P2P as not only a system of file exchange but as a generator of messy networks and unstable yet persistent social compositions, then what new forms of networked sociality and cooperation might emerge from an increasingly pluralistic internet?

Big Content vs The Swarm: ordering attempts in the informational domain

BitTorrent is the 'most used file sharing protocol worldwide with over 8 million simultaneous users and 100 million regular users' the authors of *Technical report: an estimate of infringing use of the internet* (Envisional 2011: 4) concluded, adding that almost two-thirds of all content shared via BT is copyright and therefore 'shared illegitimately'. The same report noted that 'video streaming traffic is the fastest growing area of the Internet and is currently believed to account for more than one quarter of all Internet traffic, compared to the 17.9% of BitTorrent traffic and 7% of cyberlocker [web-based file-hosting] traffic.' While other recent surveys confirm that 'Real-Time Entertainment' is growing, especially through legitimate channels such as Netflix (for film and television) and Spotify (for music), along with an 'emergence of an "on-demand" mentality', the conclusion is that 'P2P networks have maintained a relatively consistent share of Internet traffic, and absolute volumes continue to increase' (Sandvine Incorporated 2011).

However, as copyright law expert Annemarie Bridy (2011: 705–7) observes, estimations of both P2P traffic and the proportion of copyright infringements within this vary according to the research source. Likewise, Oberholzer-Gee and Strumpf (2009: 15–19) report that findings of some major studies on the relationship between P2P and sales have been 'decidedly mixed' and 'inconclusive' and they recommend 'increased collaboration between industry and academia' plus the use of 'representative samples' to produce a 'more complete understanding'. A study commissioned by the British government, *Digital opportunity: a review of intellectual property and growth*, concluded that 'reliable data' on piracy were 'surprisingly thin on the ground', finding no 'demonstrably statistically robust' UK surveys (Hargreaves 2011: 69). The study cited wildly divergent industry estimates of illegal music downloads that ranged between 13 to 65 per cent, confirming an 'impression of unstable research conditions'. Arguably, the ephemeral, unstructured quality of P2P network dynamics presents specific challenges for data collection and analysis.

So-called unauthorized media sharing across all modalities – P2P, streaming and cyberlockers (although this latter option perhaps less so following the Megaupload bust in 2012) – continues to flourish, propelling more aggressive attempts to constrain it. Rights holders have attacked individual file sharers and facilitating entities, including torrent- and file-hosting websites via existing national and international industry organizations such as the Recording Industry Association of America (RIAA) and the Motion Picture Association of America (MPAA). A major industry player, the International Federation of the Phonographic Industry or IFPI (2010: 18–19), contends that legitimate businesses must build their online business in a 'rigged market deluged by unauthorized free content'. IFPI does not acknowledge that 'unauthorised music-sharing' has by and large created this same market. Bearing in mind the caveats about questionable research findings, in their 2010 annual survey, IFPI (2010: 19) identified the 'sharp rise in non-P2P piracy' over the past two years, a trend covering 'downloading from hosting sites, mobile piracy, stream ripping, instant message sharing, and downloading from forums and blogs'. Although IFPI (2010: 10) blames file

sharing for the decline in sales of non-digital products (vinyl and CDs), the market itself increasingly prefers digital products as demonstrated by the 12 per cent growth in 2009 of 'global digital revenues … totalling US$ 4.2 billion' and with digital channels now accounting for '27 per cent of music sales, up from 21 per cent in 2008'. Furthermore, IFPI (2010: 18) ignores studies that show file sharers more likely than non-sharers to purchase digital entertainment media and services (for example, Andersen and Frenz's (2007) survey of Canadian file-sharers' purchasing habits and research by Huygen et al. (2009) identifying the 'strongly positive' economic implications of file sharing for 'welfare' in the Netherlands). IFPI (2010: 18) highlights one study of young British online consumers, which revealed that almost one in four file sharers 'typically spend nothing on music'; the flip side is that three in four file sharers also purchase music, a tendency evinced in P2P forums where some people liken downloaded or streamed tracks to radio, enabling people to try before they buy. This pattern is replicated in a recent large-scale study analysing how Americans and Germans share and consume media. US P2P users had significantly larger digital music collections than non-P2P users, with 'most of the difference' attributed to 'higher levels of "downloading for free" and "copying from friends/family"' (Karaganis 2012). Significantly, this cohort also had 'significantly *higher legal purchases* of digital music than their non-P2P using peers – around 30% higher among US P2P users' (emphasis in original).

Technology news media frequently refer to 'Big Content' as shorthand for convergent corporate interests in the entertainment, media and broadcasting fields. A 'Big Content' key word search at the Arstechnica technology news portal produces a composite picture of an elite alliance trying to control a globally-interconnected informational realm differentiated by region and sector. In 2003 it is announced that the 'FBI may be tapped as Big Content's muscle'; in 2006 that 'Big Content would like to outlaw things no one has even thought of yet'; in 2009 that 'Big Content to FCC: don't kill our ISP filtering dream!'; and in 2011 'Big Content's latest antipiracy weapon: extradition'.[5]

Faced with a profusion of national laws and cultural attitudes, and lacking a planetary panopticon from which to observe infringements, Big Content employs many sticks and some carrots to claw back a semblance of order. First, it fights battles on legal fronts spanning national and intra-national jurisdictions, with the United States in particular ferociously pursuing individual file sharers (Oberholzer-Gee and Strumpf 2009: 7–10). Second, it implements technological barriers to the material reproduction or capture of digital artifacts, including differentiated forms of encoding DVDs according to region of distribution, 'Geo Locking' live streaming material and making content playable only on specified hardware formats (Anderson 2006). Third, it develops and employs software to 'detect illegal downloaders' (*EMI Records & Ors* v. *Eircom Ltd* 2010: para. 9). Fourth, it infiltrates global file-sharing communities and networks, seeding virus-infected files, corrupted content and some paranoia (Anderson 2007). Fifth, it sponsors school-based educational campaigns and public awareness programmes via advertisements and anti-piracy trailers (Intellectual Property Awareness Foundation 2011). Finally, it develops commercial products such as subscription-

based streaming television and online music stores (Choi and Perez 2006; IFPI 2010: 8–9, 12–17; IFPI 2012: 10–13).

Such control mechanisms produce cascading effects – socially, politically and technologically, highlighting again P2P's generative potential. For example, in 2003 the RIAA led the world in the attempt to re-establish info-order via legal means (Bridy 2011). Because the 1998 Digital Millennium Copyright Act (DCMA) had not foreseen distributed file sharing, it had not granted copyright owners the automatic right to force ISPs (increasingly providers of transmission rather than web storage) to disclose customer details. Consequently, the RIAA conducted a five-year 'coordinated legal campaign' described by Bridy (2011: 729–30) as a 'class action in reverse, with the aggregation occurring on the defendants' side'; they filed 30,000 John Doe law suits against fictitious defendants (whose real identities subsequent investigations might reveal). Out of the actual cases that proceeded, the majority settled out of court for around US$ 3000 (Sandoval 2010).

The highest profile case and first file-sharing copyright infringement lawsuit to be tried before a US jury was that of Capitol Records et al. versus Jammie Thomas-Rasset. Thomas-Rasset, a young Native American single mother, initially was fined more than US$ 1.92 million for downloading 24 songs, punitive damages strongly disproportionate to the 'crime' representing a commercial value 'the equivalent of approximately three CDs, costing less than $54' (Yu 2010: 1389). Upon appeal this fine dropped to US$ 54,000, but in a third trial in November 2010 the jury awarded the record companies US$ 1.5 million (equivalent to US$ 62,500 per song). The subsequent appeal would focus on the unconstitutionality of the damage awards (Sandoval 2010). In September 2012 the US States District Court for the District of Minnesota awarded in the litigants' favour 'damages in the amount of $222,000 along with a broadened injunction that forbids Thomas-Rasset to make available sound recordings for distribution' (*Capitol Records, Inc. et al.* v. *Thomas-Rasset* 2012). P2P forum commentary suggests that such disproportionate penalties induce even more determined file sharing as a form of solidarity with the persecuted. In the latest appeal the judge noted that for 'tactical reasons' the companies were not seeking 'reinstatement of the third jury's award of $1,500,000' (*Capitol Records, Inc. et al.* v. *Thomas-Rasset* 2012: 3). As the entertainment industry had lost the public relations battle around copyright years earlier, another excessive damages award would inevitably be decried via social media, further miring corporate reputations.

Overall, the constellation of ordering attempts have been less than successful, as evidenced by the loss of some important legal battles (Brennan 2010; Cheng 2010) as well as wins (Giblin and Davison 2006); the reverse engineering of technological barriers including hardware and software encryption (Anderson 2006; Doom9's Forum 2011; Touretzky 2000); the growing adoption of online anonymity services such as Virtual Private Networks (VPN) and TOR (Larsson and Svensson 2010); increased use of 'trusted user' recommendations on tracker sites along with the growth of private trackers and (before the Megaupload bust at least) cyber locker sites (Envisional 2011: 15–16); the failure of educational campaigns to change behaviours (see Peukert 2010 on 'moral disengagement'); and frustration with the lack and

limitations of commercial services (see comments on iiNet Whirlpool forum 2011). Although millions use commercial download sites such as the iTunes store, industry has ignored user demands for very high definition downloads, multi-platform playability and simultaneous broadcast/online releases. Consequently, P2P continues to expand, although growth has slightly slowed as commercial digital video services increased (Cisco 2012).

An example of a failure from the legal field demonstrates how apparently localized cases are in reality spatialized instances of a globalized contestation. In 2010, 34 film industry companies represented by the Australian Federation Against Copyright Theft (AFACT) had argued that the major Australian ISP iiNet 'by failing to take any steps to stop infringing conduct, authorized the copyright infringement of certain iiNet users'. The applicants (which included Paramount, Warner Bros., Disney, Columbia Twentieth Century Fox and Sony) used Australia as the staging ground in a transglobal battle. The judgment by the Full Court of Australia (later upheld in the first appeal), determined that the ISP was not responsible for their customers' actions (*AFACT* v. *iiNet* 2011). Instead, broadband internet access sold by iiNet was deemed to be 'merely a "precondition to infringement" and not the "means". The "means" was found to be the BitTorrent protocol itself' (Brennan 2010: 14). According to iiNet chief executive Michael Malone, the legal action failed to stop even 'one customer from downloading in Australia' (Grubb and Moses 2011). Meanwhile, anticipating the final appeal (to the High Court), iiNet devised a less adversarial industry model of digital copyright protection, generating a mixed response from file sharers (iiNet 2011; iiNet Whirlpool forum 2011). In April 2012 the High Court unanimously found in iiNet's favour, effectively ending this case (*AFACT* v. *iiNet* 2012).

It has been claimed that AFACT had 'pursued the litigation in order to demonstrate that amendments to US copyright laws adopted here as part of free trade agreements with … Washington were unworkable in Australia', which, if true, again reveals the globalized nature of this contestation (Colley 2012). For instance, when Australia signed the free trade agreement with the USA it forced amendments to Australia's Copyright Act 1968. Copyright protection for most material that was either protected at 1 January 2005 or created afterwards was lengthened by 20 years. This 'copyright maximalism' or 'copyright creep', which saw all manner of cultural works now locked up for the life of the author (or date of publication/release) plus 70 years, happened with little public debate (in contrast to the vociferous opposition to proposed internet filtering laws in Australia). Yet, it has many consequences, not least the capacity of creative producers to build freely on the works of others, which in turn nurtures cultural innovation. However, this topic lies beyond the scope of this article.

After a brief hiatus Big Content has resumed legal attacks on individual file sharers and facilitating entities. The US Federal Bureau of Investigation's (FBI) takedown of the Megaupload cyberlocker (and its affiliated sites) in January 2012 for alleged criminal copyright infringement offences played out in a series of dramatic raids, arrests involving police helicopters and armed strike teams, domain name seizures, asset forfeitures and extradition orders spanning multiple countries (Anderson

2012). Yet, not only did millions of its customers use Megaupload to circulate copyright-infringing materials, but music producers and others in the corporate world also used it as 'legitimate' Cloud-based storage. Revealingly, a leaked IFPI report on anti-piracy strategies revealed that Megaupload's statistics for hosting copyright-infringing URLs 'paled into insignificance' when compared with the 236 other cyber-lockers monitored, with filesonic.com and wupload.com accounting for the lion's share of hosted unauthorized media content (Enigmax 2012a). Hence, it is plausible that the FBI targeted Megaluploaded for other reasons, not least of which might have been Dotcom's spirited public statements (including a 2011 video clip populated by music superstars avowing support for the cyberlocker). Although the company leased 525 servers in Virginia (along with 630 in the Netherlands), its corporate base is in Hong Kong and its customer base worldwide, bringing into question whether the USA can legally serve such an indictment (Lee 2012).

Once again, as in the Thomas-Rasset case, the question arises of proportionality in the administration of 'justice' in file-sharing cases. In their essay 'Towards a general theory of piracy', anthropologists Shannon Dawdy and Joe Bonni liken the recent 'heightened, exemplary prosecution of media piracy cases' to early eighteenth-century pirate hunts when 'states collaborated with monopoly companies to root out pirate havens and send hundreds of suspected pirates to the gallows' (Dawdy and Bonni 2012: 693). Certainly, the game-shifting Megaupload law suit had an immediate deterrent effect, driving many other cyberlockers to change their business models. Major sites now forbid users from downloading content they did not upload themselves, and some almost immediately rebranded themselves as reputable Cloud storage services (Enigmax 2012b).

Although some anti-piracy dramas in the legal domain appear to capture public attention immediately, other attempts to exert control have been slow burners, sometimes due to their deliberately clandestine nature. A case in point is the secretive supranational machinations to develop multilateral treaties and agreements (Anderson 2011; Knowledge Ecology International 2011). Leaked ACTA negotiating documents confirmed that the United States had the upper hand, insisting among other things that participating nations change 'substantive copyright law' accordingly and imposing 'mandatory obligations on states party to ACTA to encourage enforcement of intellectual property law by ISPs', contrary to the European Commission's position (European Digital Rights 2012). Region-specific leaks were instrumental in building the anti-ACTA movement globally and they provide more evidence of the impossibility of controlling information flows in info society as everywhere lurks a mole or two with the means to disseminate secrets instantly. The movement gained momentum, especially in Europe, through massive street protests, grassroots campaigns and high-level political lobbying. The mobilization eventually forced the European Parliament to refuse overwhelmingly to ratify the treaty, leaving it dead in the water (Meyer 2012). Nevertheless, the 'harmonization' of sovereign laws proposed under ACTA and its successor, the Trans-Pacific Partnership, propelled some governments to introduce 'graduated response' or 'three strikes' legislation. These laws require ISPs to monitor P2P activities and deliver repeat copyright infringers to the judicial

system, a burden to which many ISPs have objected (Bridy 2011; Yu 2010). Where restrictive (if watered-down) laws have been passed, software SNAFUs have caused some implementation failures, as happened with France's *Hadopi* legislation (Sayer 2011), itself possibly facing repeal since the incoming Socialist government in 2012 declared it to be an expensive failure. Bureaucratic incompetence has also hindered implementation as in New Zealand, further suggesting that incipient disorder lurks within info-capitalism's ordering regimes (Enigmax 2012c).

Torrent index and tracker sites are the final focus of this article because they exemplify the transglobal nature of P2P networks and the sense of belonging they can engender. The generation of affects within and by P2P systems might be a significant "missing link" in our understanding of the phenomenon's evolution.

Ring cycles: the rises and falls of torrent trackers

Tracker sites store searchable metadata indices of downloadable material accessible via the internet. Unlike cyberlockers that web-host digitized materials, trackers behave more like search engines performing a broad ordering function; they indicate where specific artifacts can be located from seeds scattered across a mesh of elec‿ tronic nets. They also offer varying degrees of granular ordering by categorizing materials according to genre.

Tracker sites are bifurcated into public (or 'open') trackers and private trackers, with each model presenting its own inherent problems (Sembrat 2009). Public trackers can be accessed by anyone and impose no download limits or 'ratios' (balance between files downloaded and seeded). Some well-regarded public trackers such as the (currently offline) Demonoid are theoretically open to all, but only during periods when they open membership to avoid server overload. Public trackers reflect the internet's disorganized, sprawling nature, with only user-comments reliably indicating seeded material's technical quality (audio and video compression, subtitles). Some public trackers have attracted substantial user bases only subsequently to disappear entirely (suprNova) or shift to a commercial model removing copyright-infringing materials and/or monetizing exchanges (Mininova) in response to legal action (Wolchok and Halderman 2010: 1). Others such as The Pirate Bay (TPB) have fought back, despite losing a major court case (the so-called Spectrial) and appeal (Manner et al. 2009). TPB has countered legal attacks with a mixture of sarcastic humour and strategic technological measures; over time it has stopped running its own tracker, replaced torrents with magnet links and, in October 2012, moved from physical servers to cloud-based storage. Their blog announced that 'our data flows [sic.] around in thousands of clouds, in deeply encrypted forms. … All attempts to attack The Pirate Bay from now on is an attack on everything and nothing' (The Pirate Bay 2012b).

Increased surveillance and legal challenges have driven software innovation although copyright owners also bolster legal cases with technology-derived evidence, further escalating the 'BitTorrent arms race' (Wolchok and Halderman 2010: 1). Technological ordering/disordering processes within P2P trackers produce almost

simultaneous social ordering/disordering processes, adding to the general messiness. For example, in 2001 the 'BitTorrent community' responded to surveillance by copyright owners by deploying 'decentralising tracking systems based on distributed hash tables (DHTs)' (Wolchok and Halderman 2010: 1). In just two hours, computer scientists Wolchok and Halderman built a BitTorrent search engine indexing over one million torrents using only one computer, proving that DHT crawling could rapidly 'bootstrap' torrent discovery sites to enable new sites to be created 'almost immediately' when existing ones were shut down. However, their experiments also demonstrated that BitTorrent user activity can be monitored by 'crawling only the DHTs and not the centralized tracker infrastructure or torrent discovery sites'. Thus, over 16 days of monitoring they observed '1.5 million torrents downloaded by 7.9 million IP addresses' and measured 'what content each user is sharing', data benefiting litigious copyright owners.

In contrast to public trackers, private tracker sites exclude most who wish to join them. New users are admitted by recommendations from existing members, conditional invitations (requiring proof of being a superlative uploader), or via the 'illegal' (banned) purchase of memberships. Due to imminent legal threats exclusive private trackers are secretive, imposing strict controls such as forbidding mention of their names on P2P forums.

As evidenced by forum commentary and news items, one of the most revered private trackers was Oink's Pink Palace (or OiNK), a site dedicated to the creation of a community of music lovers sharing their passions (Sembrat 2009). OiNK captured the enthusiasm of an estimated 180,000 people (some themselves musicians) plus access to their music collections and/or creations; users regarded its meticulously-organized repository files formatted in lossless formats as a gold standard. The site was active between 2004 and 2007 until an international coalition of copyright holders (aided by the Dutch and Cleveland Police) charged its creator, software engineer Alan Ellis, with conspiracy to defraud. Ellis was the first Briton to stand trial for file sharing and his defence argued that 'his involvement was akin to providing a service like Google – OiNK merely allowed users to find what they were looking for from other users' (Cheng 2010). In January 2010 a British jury unanimously found Ellis not guilty on the basis that OiNK was a search engine. Soon after the Crown Prosecution Service dropped copyright infringement charges against a handful of OiNK users.

Although Ellis chose not to revive OiNK, some other 'quality' music-oriented sites and communities soon stepped into the breach (Fisher 2007; Jones 2007). Nevertheless, although it might be a trivial technical process to replicate tracker sites, the reinvention of specialized online P2P communities is a more complex social process (Dejean et al. 2010). P2P is more than the sum of its software and connections, although researchers rarely acknowledge its affective dimension. For instance, OiNK users could only represent themselves via 'cute' avatars, engendering a distinctive atmosphere throughout the site's web interface. Many other qualities had distinguished OiNK, as forum contributor 'Franco Cozzo' on the Australian IT-focused Whirlpool (2010) site points out, including:

> a very knowledgeable audio & music loving community …, a very active and fertile forum covering a very wide range of subjects …, a high level of artist promotion and recommendation by peers – priceless marketing and promotion here for artists, comprehensive information on artists and coupled with user made greasemonkey extensions access to a whole range of related sites for artist info, discog, last fm etc, an incredibly broad & high standard of digital music available in as many formats as you could desire – blows any digital store out of the water, [and] an archive of all the great music that has increasingly become harder to find as it is no longer in press or has not been re-issued.

Such specialized file-sharing sites encourage users to share their own media back catalogues and their expertise. This produces rich communicative spaces coalescing people with common interests who otherwise might be differentiated by nationality, political affiliations, cultural identity, gender, age and so forth. In this sense, P2P sites resemble the enthusiastic 'amateur' production of websites following the launch of the WWW. From such social ground communities emerge, flourish and, in time, disintegrate, sometimes becoming legend.

Closing reflections

As we produce and use software, it in turn produces us. File-sharing networks extend beyond the technological to the social domain, as every day millions engage in a prefigurative politics that rejects info-capitalism's enclosure of common cultural wealth. Media commentary typically reduces this to a binary matter – order pitted against disorder in an information-driven world. Despite the tenuous position of individual nodes and networks within the P2P metaverse, this non-system relies on collapses, failures and assaults to ensure its continuance and evolution. In this sense, piracy requires its shadow – Big Content, two vibrations creating the one field. Although the powerful have formed alliances to achieve hegemonic control over the informational field, victories have been few and many innovations short-lived because technology captured by patents is doomed to wither. Meanwhile, activist programmers release open technical and social hacks into the networks, refreshing codes and subcultures.

We know little about the internal social organization of these loosely interdependent global networks. Perhaps Big Content's networks are relatively ordered in comparison with the more elastic, ephemeral networks of the Swarm, but what evidence do we have? Where do these networks intersect and how do the interstitial dynamics evolve the networks themselves? More qualitative evidence drawn from parties across the spectrum might provide some answers.

Informal networks, subcultures and loose forms of community have arisen around P2P software development projects, torrent tracker sites, court cases and the political campaigns that encompass larger issues of internet freedom, electronic privacy, knowledge and property. These disparate social groupings temporarily order small parts of a field characterized by messiness, heterogeneity and ephemerality. How might such formations translate into domains beyond the digital? If we spend days

digitizing our record collections, scanning books, writing subtitles for loved films and compiling software installation suites for people whom we will never meet, might this in some small way be preparing us for another way of being? Can the embodied actions of millions worldwide collectively create a different world order? As the planet is beset by more tangible problems, perhaps such questions seem unimportant. Yet, if we accept that the old ordering that privileged unfettered individualism and private profit beyond all else has caused enormous social and environmental damage, then perhaps it is worth attending to this vast experiment. From the chaos, new translocal forms of being and working together might be being constituted.

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Notes

1. Sourced from the comments thread at http://torrentfreak.com/why-the-copyright-industry-isnt-a-legitimate-stakeholder-in-copyright-110430./.
2. See http://torrentfreak.com/us-govt-uses-seized-domains-for-anti-piracy-video-110427. In April 2011 US Immigration and Customs Enforcement (2011) placed a 'piracy is not a victimless crime'-themed video on 65 seized websites.
3. Here I am referring to major telecommunications carriers, rather than smaller Internet Service Providers (ISPs) and providers of ancillary services such as Virtual Private Networks. Many ISPs in particular have argued that their interests are not identical to those of the entertainment industry, as the ensuing discussion of the iiNet court case demonstrates.
4. Quote (with spelling adjusted) sourced from comments thread at http://torrentfreak.com/how-i-learned-to-stop-worrying-and-love-the-copy-110426.
5. A chronology of other *ArsTechnica* headlines returned from the same search string illustrates the struggle's multi-fronted nature spanning different countries and informational fields:
   2007: Big Content asks presidential candidates for more restrictive copyright laws.
   2008: Big Content in worldwide 'whisper campaign' against Fair Use.
   2009: UK caves to Big Content, backs 'Net cutoffs for P2P use.
   2010: Big Content condemns foreign governments that endorse FOSS.
   2011: Big Content to ICANN: make it easier for us to challenge domain suffixes.
   2012: Big Content wants to bring SOPA-style policies to Canada.

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