Digital desire and recorded music: OiNK, mnemotechnics and the private BitTorrent architecture

Andrew Sockanathan

PhD Thesis

Goldsmiths College

Centre for Cultural Studies

I declare that the work presented in this thesis is my own

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Andrew Sockanathan

Abstract

This thesis centres on the P2P internet protocol BitTorrent, music filesharing, and nascent forms of collective action developing through private BitTorrent communities. The focus is on one of these communities, a music filesharing website called 'OiNK'. Founded in 2005, it was the first of its kind to garner membership in the hundreds of thousands, was emblematic of user-led movements to improve the quality, efficiency and availability of digital media online, and was very publically shut down in 2007.

Making critical use of Simondon's notion of 'individuation', two interrelated techno-historical impulses are identified as central to the 'in-formation' of both BitTorrent and OiNK. Firstly, through research into the development of the global music industry's 'productive circuit' of manufacturing, distribution, retail and radio, it is shown how consumers were gradually excluded from having a say in how, what and where they could consume. Secondly, a history of 'OiNK-style' filesharing is gleaned, not from P2P, but from research into small, decentralised 'online' communities that emerged throughout the 1980's and 1990's, where enthusiasts learned how to use software and hardware to manage the storage, reproduction, uploading and sharing of information.

This thesis shows how BitTorrent exposed these previously exclusive practices to masses of consumers who were dissatisfied with both retail/broadcasting and public P2P, through the new possibility of private BitTorrent communities. Through a case study of OiNK, encompassing in-depth interviews with ex-members, screenshots and technical analysis, this thesis shows how OiNK gathered a large and diverse online cache of 'archival grade' recorded music, bringing old and deleted music back into circulation and amassing a core of fanatically committed members. It accounts for a nascent form of online community, where large member-bases manage every aspect of the reproduction and circulation of digital artefacts, and at higher levels of quality/efficiency than legal alternatives.

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Introduction

Repetition is like a machine…If you can get aware of the life of a machine then you are definitely a master… [machines] have a heart and a soul…they are living beings.[1]

The above quotation is taken from Holgar Czukay, bass player and founding member of seminal 70's Krautrock band *Can*, talking about how the band interacted with machines when making music. Czukay's intention was to refer to the 'production' involved with making new music, and can be seen as part of a culture of optimism regarding the potential of a creative synthesis between music, musicians and machines brought about by developments in the synthesising, sampling and sequencing of recorded music that led to pivotal machinic developments such as the MOOG synthesiser and the MIDI standard of digital interface,[2] and which is intertwined with the birth and development of hip hop, dance music and electro-pop culture.[3] The 'life of a machine' was open to these musicians because learning how to use new electronic instruments - synthesisers, sequencers, turntables – gave them access to the *productive capacity* of music making. Through simply using the machines, they learned how the machine worked and how to change its functioning, which led to a chaotic flux of unintended consequences - scratching, sequencing, synthesising, remixing *ad infinitum* - which in turn led to seismic shifts in the production of music making.

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[1] Holger Czukay, cited in Simon Reynolds (2000) "Kosmik Dance: Krautrock and its legacy", in Peter Shapiro (ed) *Modulations: A History of Electronic Music: Throbbing Words on sound* (New York, NY: Caipirinha Productions), p. 33.

[2] Trevor Pinch and Frank Trocco (2002) *Analog days: The invention and impact of the Moog synthesizer* (Cambridge MA: Harvard University Press); Paul Theberge (1997) *Any Sound You Can Imagine: Making Music / Consuming Technology* (Hanover, NH: Wesleyan University Press: University Press of New England).

[3] Simon Reynolds (1999) *Generation ecstasy: Into the world of techno and rave culture* (London: Routledge); Jeff Chang (2007) *Can't stop won't stop: A history of the hip-hop generation* (London: Ebury); Timothy Warner (2003) *Pop music: Technology and creativity; Trevor Horn and the digital revolution* (Aldershot: Ashgate).

However, it will be contended here that the sort of assertion Czukay is making, the idea that there is some sort of non-linear *interrelation* between music, machines and people, has far more wide-reaching implications when considered as an indictment of rigid *consumption* processes that delineated how recorded music could be accessed before the internet. That is, of a history of recorded music in the 20th century, particularly after WWII, that was characterised by the invention of machines and mechanisms designed to close off the 'life of a machine'; to regulate consumer engagement with the storage, production, reproduction and distribution of recorded music, where most individuals were situated by the gatekeepers of the regulatory machines of production as 'end of the line' consumers of music.

The 'openness' of machinic functioning in music making can be contrasted with the marked inability for consumers to embark on a similar interrogation, whereby the 'production' of the conditions of music consumption might be affected by the consumers themselves through intimate knowledge of the 'machines' through which they consumed – the record, the cassette tape, the CD, radio, playback devices and the retail outlet. As we shall see in **Section II** of this thesis, the consumption of recorded music in the 20th century was marked by a growing tension between *technologies of production* – a highly stabilized production-manufacturing-storage-distribution circuit that churned out records, tapes and CD's, associated playback devices and broadcasting schedules, and which consumers were largely excluded from – and *technologies of consumption* - the modes of reflection, action and interaction that consumers could invest in the churned-out record/tape/CD artefacts, playback devices, retail outlets and broadcasting output. The recording studios, manufacturing plants, storage depots, distribution infrastructures, retail outlets and broadcasters were each themselves stable, regulatory machines, and together formed the predictable, machinic functioning of the over-arching global music industry. The manufacturing, distribution and sale of records and CD's relied on components that were geographically and technologically separated from each other, but together formed a tightly bound apparatus that produced accurate and repetitive results - it had a machinic functioning that was designed to stabilise the separation between producer and consumer, and thereby regulate the conditions through which recorded music could be sold.

This thesis is about how this regulatory machine of production has 'opened out' for interrogation to consumers, and what happens when the productive machine becomes less stable, less predictable and can be managed by the consumers themselves through an engagement with new constellations of machine, recorded music and consumers that have been made possible by developments in the P2P (Peer to Peer) filesharing of music on the internet. This work can be broadly considered as a meditation on the productive techniques of information storage, reproduction and distribution of artefacts brought together through sharing and interaction within private user-orientated filesharing communities. More precisely, it centres on the sharing of recorded music within a private 'digital community' that operated through the BitTorrent P2P protocol - a music filesharing website called 'OiNK' that existed between 2005 and 2007, which operated an 'invite-only' membership policy, and brought together a set of practices that had been latent in assemblages of specialist, hobbyist and stealth filesharing groups and which became manifest through OiNK's external functioning. These latent assemblages, beginning in earnest with BBS (Bulletin Board Systems) in the 1980s and developing through the 'Warez Scene' of software and music pirates that emerged in the 1990s alongside the popularity of the Web and the growth of internet communication protocols such as USENET, FTP and IRC, eventually leading to OiNK's filesharing system, are the focus of **Section III**. This section aims to properly situate BitTorrent within the history of such assemblages, rather than within the history of previous P2P protocols (Napster, Kazaa, Limewire etc) which, as we shall see, were detached from the tenets and techniques that private BitTorrent filesharing brought together.

Using the 'individuation' thesis of Gilbert Simondon as a theoretical starting point and building upon Bernard Stiegler's notion of *mnemotechnics* (written/audio/visual/binary *media* or *content*, theorised as recorded documents of memory) to develop a 'theory-driven method', this thesis conceives of the emergence of OiNK, and the BitTorrent architecture of which it was a part, in terms of a convergence between two techno-historical chains of development. On the one hand, it weaves a thread through some of the productive techniques of the post-war, pre-internet recording industry; on the other, it charts some developments in decentralised techniques of sharing, reproducing and storing information within private groups of enthusiasts that began in earnest

during the 1980's and which have been re-articulated through private BitTorrent P2P communities. These two techno-historical threads are traced back because this thesis endeavours to take the voices of ex-OiNK members seriously, and the two clearest messages they sent out following the shutdown of OiNK in 2007 was dissatisfaction with the system of production and consumption imposed by the global recording industry, and both a willingness to and adeptness at building and managing their own systems of reproduction, storage and distribution.

 Section I introduces OiNK, BitTorrent and the theory-driven method that is developed through the thesis. **Chapter 1** gives us an initial sense of why these two histories are vital in the becoming of OiNK by observing some of the responses that reverberated through the web in the aftermath following OiNK's shutdown. In view of a deeper technical analysis of the BitTorrent protocol and the functioning of OiNK in the later chapters of the thesis, this chapter also concentrates on the rudimentary operation of filesharing between BitTorrent and OiNK, providing an explanatory baseline that contextualises the later discussion. Theoretical justification for exploring these two interrelated histories is given in **chapter 2**, where Simondon's theory of individuation, and concepts such as 'transduction', 'disparation' and 'signification' are introduced in order to develop a theory-driven method that is used to interrogate both the history of the post-WWII music industry, and the development of decentralised 'user-led' groups through the continual reconditioning of communication and information technologies. The following two sections of the thesis ('**Section II**' **chapters 3-5**, and '**Section III**' **chapters 7-8**) are devoted to propounding each one respectively. **Chapter 6** is presented as an 'intermezzo' between the two historical threads, and endeavours to clarify how the parameters of organisational control have changed in the transition from physical systems of information distribution to the predominance of digital systems. The final section (**Section IV: OiNK I, II, III, IV**) constitutes the results of an investigation into OiNK through a four-year participant observation comprising analysis of its design, functioning and interviews with ex-members, and endeavours to open up a theory-driven approach to virtual methods that does not attempt to 'ground' findings within methodological objects, nor does it assume that there is a grounded 'place' from which these objects derive – 'the real', 'the virtual' or 'the digital'.

A concomitant aim is to cast the searchlight on how the material structures of, for instance, the LP, the post WWII standardised record player and the system of management that controlled reproduction, distribution, storage and retail of LP's in the 1950's came to structure the topological borders, or the limits at which people could experience recorded music at that time, and in turn provided a structure for the operation of personal engagement with recorded music. This thesis interrogates the rearticulation of these processes within the material infrastructure of CD distribution that dominated recorded music circulation in the late 80's and 90's, and endeavours to expound that the private BitTorrent filesharing of digital music is not only a way to get 'free music', but also constitutes an infrastructure of production, distribution, storage and communication that constitutes higher standards of quality and efficiency than both the previously dominant 'physical' system of production and also popular online digital media stores such as iTunes. OiNK was an early manifestation (of which there are now many hundreds) of private BitTorrent communities that are controlled and managed by those who desire to consume, rather than those who wish to profit from others consuming, and it is the combination of 'total user control' and higher standards than the 'legal' alternatives that provide the baseline for an investigation into the significance of OiNK and the organisational infrastructure of which it was a part, especially in terms of how individuals and groups interact with and relate to recorded music through new techniques of online consumption. That is not to say that incursions into 'the music itself'– into the structure and movement of melody, rhythm and sound - and into the youth subcultures and urban tensions[4] that were built around and came to define particular genres, aesthetics and music scenes[5] are inconsequential, but rather

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[4] See Mark Abrams (1959) *The Teenage Consumer* (London: Press Exchange); Bill Osgerby (1998) *Youth in Britain Since 1945* (Oxford: Blackwell); Simon Frith (1978) *The Sociology of Rock* (London: Constable); Simon Frith (1984) *The Sociology of Youth* (Ormskirk: Causeway); Charlie Gillett (1983) *The Sound of the City: The Rise of Rock and Roll* (London: Souvenir); Bill Osgerby (2004) *Youth Media* (London: Routledge); Gill Valentine, Tracy Skelton and Deborah Chambers (1998) "Cool Places: An Introduction to Youth and Youth Cultures", in T. Skelton and G. Valentine (eds.) *Cool Places: Geographies of Youth Cultures* (London: Routledge), pp. 1-32.

[5] Jeff Chang (2007) *Op Cit*; Simon Reynolds (1999) *Op Cit*; Simon Reynolds (2005) *Rip it up and start again: Post-punk 1978-84* (London: Faber); Simon Reynolds (2008) *Energy flash: A journey through rave music and dance culture* (London: Picador); David Toop (2000) *Rap attack: African*

that the vast array of scholarship and criticism that accompanies such assertions needs to be complimented by the same level of endeavour into the *systems* that define how recorded music reaches consumers and listeners, and also which broadly defined what types of genres, aesthetics and 'music scenes' would reach us through TV, radio, retail stores and latterly the internet. Before we embark on explicating these systems, it is necessary to briefly introduce OiNK.

rap to global hip hop. No.3 (London: Serpent's Tail); David Toop (2001) *Ocean of sound: Aether talk, ambient sound and imaginary worlds* (London: Serpent's Tail).

OiNK: A very brief overview

OiNK began on 30th May 2004 and was set up by 21 year old Alan Ellis from the basement of his house in Cleveland, England. He initially hosted it off the old, modified computer pictured below (**Figure 0.1**), and originally intended to use the site to share music between himself and his small group of friends.[6]

Figure 0.1: Original OiNK server (Private Music Tracker 1, 2008a)[7]

Although OiNK was strictly 'invite only' and maintained a very private profile, the reputation of Ellis's filesharing system spread rapidly across the internet and by late 2006, membership exceeded 110,000 users.[8] In August 2007, with membership hitting

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[6] OiNK specialised in music, but also allowed software, eBooks and eLearning videos. This thesis concentrates solely on the music, which is what OiNK was known for and constituted the vast majority of its filesharing traffic. This decision was taken following a year as an active participant observer of the site.

[7] Private Music Tracker 1 (2008a) "Original OiNK server", 23rd February [private URL].

[8] See **Figure 9.4** of this thesis.

around 175,000,[9] Ellis was named in Blender Magazine's '*The Powergeek 25 — the Most Influential People in Online Music'* list.[10]

OiNK's burgeoning reputation gathered pace around three broad areas of interest. Firstly, it was perceived to be secretive and exclusive, and invites were thought to be very hard to come by. You had to be invited by a current member, and the practice of 'OiNK invite begging' became commonplace on public web forums.[11] Its 'underground' status was enhanced by the blocking of repeated attempts to create an OiNK Wikipedia page.[12] Secondly, it had strict and seemingly bizarre rules, which were enforced with unremitting authority. The exhaustive list of rules and regulations is published here as **Appendix A**.[13] For example, the practice of invite selling was strictly prohibited.[14] The most famous rule was the requirement that all user avatars had to be 'cute', with staff even going as far as defining exactly what 'cute' meant and specifically what was not allowed. From the rules: "If you choose to use one, a cute avatar is a must (preferably a stuffed animal, pet, cartoon character, etc.). If you can't find one, ask in the forums. Things that are not acceptable: your favourite band, attractive women,

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[9] See **Figure 9.6** of this thesis.

[10] Jon Dolan, Rob Levine, Ben Sisario and Douglas Wolk (2007) "The Powergeek 25 — the Most Influential People in Online Music", *Blender*, August,
http://www.blender.com/lists/68786/powergeek-25-151-most-influential-people-in-online-music.html?p=6

[11] Some examples of OiNK invite begging:
CrossX.com (2006) "OiNK Invite Begging Thread", 18th August, http://www.cross-x.com/vb/showthread.php?s=aaeff6504dda1505b2cd48d543ba5903&t=965305
MindofBen (2006) "oink.me.uk", 19th September,
http://mindofben.wordpress.com/2006/09/19/oinkmeuk/
43Things (2007) "Get and Invite to Oink", 4th August,
http://www.43things.com/things/view/550603/get-an-invite-to-oink-oinkmeuk

[12] Due to the priority of keeping a low profile, the OiNK staff did not want a Wikipedia page. See:
Wikipedia (2007) "Absurdity of Wikipedia", 27th October,
http://en.wikipedia.org/wiki/Talk:Oink%27s_Pink_Palace#Absurdity_of_Wikipedia

[13]

[14] Jared Moya (2010) "OiNK Admin Accused of 'Ripping Off' Users", *Zeropaid*, 11th January,
http://www.zeropaid.com/news/87651/oink-admin-accused-of-ripping-off-users/

band/sporting/product logos, pictures of you and/or your partner. It's far better to not have an avatar than one that breaks the above rule."

 The third aspect of OiNK's reputation was the one most closely intertwined with the intense clamour for invites – it was considered by many to have the largest and highest quality selection of music on the internet, and also very fast download speeds.[15] Although seemingly cosmetic rules such as the 'cute' avatars created interest in OiNK as a kind of kitsch, novelty phenomenon, the lion's share of the rules related to upholding quality standards of digital music and ensuring efficient download/upload speeds, and this gave the site an almost mythical status amongst audiophiles and those who felt they weren't getting what they wanted from a mainstream music industry that was still suspicious of the internet. The tech magazine *Wired* likened OiNK to a "…persnickety record store clerk"[16] with the painstaking rules requiring all music to have an average bitrate of at least 192kbps (most music on OiNK had a higher bitrate), which was higher quality than the standard iTunes music files at that time, which was 128kbps,[17] and strongly encouraging members to make sure that all music was correctly labelled (i.e. 001.mp3, 002.mp3 was not allowed), and that it came complete with all cover artwork. OiNK also outlined what software should be used to rip and encode music from CD to digital file in order to ensure the highest standards of quality, and provided extensive online tutorials to guide users through the set up and use of the software. Only 'releases' could be shared on the site, that is, full albums, singles or EP's that had been

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[15] See: Jon (2007) "OiNK's Pink Palace", *The Big City*, 23rd October, http://www.ditdotdat.org/bigcity/2007/10/oinks-pink-palace/; Jared Moya (2007) "What to Use Instead of OiNK", *Zeropaid*, 29th October, http://www.zeropaid.com/news/9076/what_to_use_instead_of_oink/; Nicholas Deleon (2008) "One year later: Remembering OiNK's Pink Palace", *Crunch Gear*, 23rd October, http://www.crunchgear.com/2008/10/23/one-year-later-remembering-oinks-pink-palace/

[16] Monty Phan (2007) "OiNK Users Recall Defunct Song-Swap Site's Strange, Stringent Rules", *Wired*, 26th October, http://www.wired.com/entertainment/music/news/2007/10/oink

[17] From May 2007 iTunes began offering 256kbps 'iTunes plus' files for an extra cost, but its standard file offering remained at 128kbps, which was the highest quality option it offered prior to this date. See: Charlie White (2007) "Listening Test Compares iTunes Plus to iTunes 128kbps", *Gizmodo*, 30th May, http://gizmodo.com/264617/listening-test-compares-itunes-plus-to-itunes-128kbps

fully mastered and were available on CD or record; individual songs could not be shared, nor could bootlegs or incomplete/unfinished releases. As we shall see in the last section of this thesis, this gave OiNK the feel of a well maintained library, directly opposed the sort of 'wild west' virus-filled, low-quality individual song trading that, as we shall see in chapter 7, permeated previous generations of online music filesharing such as Kazaa and Limewire.

 The site also had a 'ratio system', where users had to share a proportion of what they had downloaded with other users. If this ratio dropped too low, the user would be banned from the site. If a user maintained a good ratio for a long time they could become a 'power user', giving them access to encrypted areas of the site, new features and functionality, and the ability to invite new members. The focus was on creating a community of active music sharers who took the responsibility to share back the music that they took from the site. This system, combined with the quality of the music releases and an awareness of how strictly the rules would be enforced, led to a situation where huge numbers of users had an incentive to allow other users to access their computers and download from them. Popular album releases on OiNK would have hundreds of people willing to share, sometimes thousands. **Figure 0.2** shows the 'top ten' most popular files shared on OiNK on 5th April 2007. The vast amount of data on show will be accounted for as the thesis develops, but for now we shall focus on the 6th column (left-to-right: 'Se.') which tells us that the most popular file was being made available for download by 3,963 OiNK members. The rest of the top ten files all have well over 1,000 users sharing them.

Type	Rank	Name	Sna.	Data	Se.	Le.	To.	Ratio
indie	1	**Modest Mouse - We Were Dead Before The Ship Even Sank [2007/MP3/192]** 2007-02-15 21:41:51 (7 weeks ago) (New) 91.45 MB	19,361	1.69 TB	3,963	29	3992	136.66
Industrial	2	**Nine Inch Nails - Year Zero [2007/MP3/256]** 2007-04-04 20:37:24 (1 day ago) (New) 116.98 MB	4,355	497.97 GB	2,482	70	2552	35.46
indie	3	**The Arcade Fire - Neon Bible [2007/MP3/V0 (VBR)]** 2007-02-09 21:57:18 (7 weeks ago) (New) 82.92 MB	11,090	898.04 GB	2,182	49	2231	44.53
indie	4	**The Shins - Wincing the Night Away [2006/MP3/320]** 2006-10-27 23:45:28 (22 weeks ago) (New) 96.90 MB	19,158	1.77 TB	2,059	49	2108	42.02
indie	5	**Bright Eyes - Cassadaga [2007/MP3/192]** 2007-03-28 21:09:40 (1 week ago) (New) 85.43 MB	4,964	414.19 GB	1,822	23	1845	79.22
electronic	6	**Air - Pocket Symphony [2007/MP3/V0 (VBR)]** 2007-02-26 03:03:52 (5 weeks ago) (New) 80.08 MB	7,668	599.68 GB	1,754	11	1765	159.45
indie	7	**The Arcade Fire - Neon Bible [2007/MP3/320]** 2007-02-09 15:59:55 (8 weeks ago) (New) 107.76 MB	9,485	998.17 GB	1,683	11	1694	153.00
indie	8	**LCD Soundsystem - Sound Of Silver [2007/MP3/320]** 2006-12-04 09:18:10 (17 weeks ago) (New) 128.20 MB	12,786	1.56 TB	1,655	7	1662	236.43
hiphop	9	**Timbaland - Presents: Shock Value [2007/MP3/APS (VBR)/(scene)]** 2007-03-23 02:24:46 (2 weeks ago) (New) 98.98 MB	5,026	485.83 GB	1,515	14	1529	108.21
indie	10	**Feist - The Reminder [2007/MP3/V2 (VBR)/(scene)]** 2007-03-01 20:40:34 (5 weeks ago) (New) 60.65 MB	5,680	336.43 GB	1,396	8	1404	174.50

Figure 0.2: The OiNK 'Top Ten' 5th April 2007 (OiNK.cd 2007a)[18]

 This had the consequence, aligned with the technical functioning of the OiNK filesharing system than we shall focus on later, of a combination between very fast download speeds and high quality, virus-free digital music that up until that point had not been widely available. You could now get an album in less than 5 minutes, and because of the strict quality rules (which are dissected in **OiNK III** of this thesis) you could also have almost 100% confidence that it would sound good, be well presented and have no viruses attached to it. Users could also improve their ratio by uploading releases that were currently not available on OiNK and sharing them with the community. This had another key consequence that is the focus of **OiNK IV** – because users were so keen to get a good ratio, they would raid their CD collections, their parents and grandparents collections, to find something they could upload that wasn't already available in OiNK's massive library. Thus, OiNK contained a diversity of digital music that was not available on other legal or illegal alternatives. It was responsible for bringing back deleted and out-of-print albums back into circulation, it had a large selection of pre-release albums and singles (which would eventually lead to its demise), and it had everything in

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[18] OiNK.cd (2007a) "The OiNK 'Top Ten' 5th April 2007", 5th April [private URL].

between. Trent Reznor, the man behind Nine Inch Nails (NIN) with whom he has sold well over 20 million records,[19] was a member of OiNK and a vocal supporter of it following its forced shut down. He recalled his time using it as follows:

> I'll admit I had an account there and frequented it quite often. At the end of the day, what made OiNK a great place was that it was like the world's greatest record store. Pretty much anything you could ever imagine, it was there, and it was there in the format you wanted. If OiNK cost anything, I would certainly have paid, but there isn't the equivalent of that in the retail space right now.[20]

OiNK changed the parameters of free music filesharing and redefined the associated experience, from a relatively narrow selection of largely poor quality individual music files downloaded from anonymous filesharing applications that had unreliable speeds, to the community sharing of a massive selection of music, most of which had either not been digitally available before or had only been available at lower quality, and which could be downloaded quickly, efficiently and with almost zero risk of viruses.

OiNK and this thesis

The results of the participant observation in the last section of this thesis show that a disparate band of internet users were able to come together through OiNK and make an extensive, high quality online digital music library available, at a level of quality and breadth of availability not to be found in the recording industry-backed legal online alternatives or in any previous popular free filesharing community. Why was it left to an interconnected but disparate group of committed filesharers to bring this library to the internet? Why was this level of quality and availability not available before, and what

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[19] Charlie Amter (2005) "Reznor Bares Teeth in Court", *Yahoo! Music*, 17th May, http://music.yahoo.com/read/news/19364126

[20] Ben Westoff (2007) "Trent Reznor and Saul Williams Discuss Their New Collaboration, Mourn OiNK", *New York Magazine*, http://nymag.com/daily/entertainment/2007/10/trent_reznor_and_saul_williams.html, 30th October

was it about OiNK that made it possible for its relatively small community to make it happen? Specifically in relation to OiNK, the primary aim of this thesis is to investigate *how* and *why* OiNK was able to happen; to look into the elements that were drawn together to enable its emergence; to consider why people turned away from the traditional outposts of retail and radio and became motivated in such a way as to *desire* OiNK's very particular organisation of digital music sharing.

Furthermore, OiNK required that members put in a relatively large amount of work in order to learn how to engage in specific techniques of sharing, storing and creating digital music. It also made 'giving back' compulsory, which necessitated members keeping their computers on and connections open for long periods of time. Why were users attracted to using software and the internet in this way? A few inventive Google searches would have enabled most users to find and download the music they wanted. In light of this, why reject the easy-search 'front-pages' of the internet of which Google is the monopoliser[21] and the free lists of individual songs offered by earlier P2P protocols such as Kazaa and Limewire? The second OiNK-related aim of this thesis focuses on the dimensions of OiNK that gave members something they were not getting from 'point-and-click' search sites; something that transcended just 'getting' music and which entered into deeper notions of how users wanted to interact with each other, how they wanted to interact with their hardware, software and internet protocols, and how they wanted to experience their own interaction with music. A concomitant focus will be cast on why the public web did not deliver the experience desired by OiNK members, and why it was (and still is) a root cause of music consumers seeking alternatives to satisfy their desire for recorded music.

The third focus on OiNK is to examine the extent to which the type of community that OiNK instantiated was indicative of a new politics of organisation within popular culture; of an emergent linkage between humans, the technical objects they use, and the textual/audio/visual culture they consume. The aim here is not to characterise OiNK as redolent of a new form of 'individualism' or as an example of a new relationship

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[21] See Chapter six of this thesis: p. 132.

between the individual and the collective which will somehow lead us to an experience of culture beyond Capital. Rather, it is to explore forms of organisation that are no longer subject to the productive capacity and strategic intentions of the particular 'culture industry' they are trying to engage with, but where the members of those collectives themselves constitute its productive capacity; where they themselves manage, modulate and convene the production processes of storage, reproduction, distribution and access.

This thesis and OiNK

The above three aims work to provide a link between the micro-specific endeavours that are embroidered into the approach to OiNK, and the more general, overarching empirical, methodological and theoretical arguments made through focussing on the strands of techno-history that are drawn together through the thesis.

This thesis situates OiNK and the architecture of humans, software, hardware and communication protocols that it brought together within a wider methodological and theoretical framework, developed through a close empirical analysis of the relationship between humans and the technical systems of production they encounter, as they tend towards what is 'produced' through shifting communication and information technologies. This framework rearticulates questions regarding the status of 'users' in contemporary currents of technological change and within emergent groups forming around technology through an empirical investigation of the technical standards, methods of circulation and structures of organisation inherent within the private BitTorrent architecture and its antecedents, and also within the interrelated productive components of the music industry. It reconsiders the contested space between the 'virtual' and the 'digital', not only in methodological accounts of the internet, but in those that also focus on the history of digital communication between users and user groups, through focusing on the energetic processes that 'move through' constellations of technology, rather than positioning technical objects and technical processes as final solutions. The framework develops this strategy of 'looking through' by interrogating individuation as a theoretical concept, focusing sharply on the rearticulation of individuation as constellations of material, micro-material and immaterial processes converge through the two techno-historical chains of developed that are investigated,

and as the cynosure of material culture shifts ever closer to an overarching 'digital culture'. Our first endeavour will be to outline the theoretical and methodological environment from which this framework emerged.

Section 1: The OiNK-BitTorrent architecture and individuation

Chapter 1 – The basic operation of OiNK and BitTorrent.

Virtual methods – Removing the ground

This thesis interrogates the 'online' music filesharing community 'OiNK' that existed between 2004-2007, and the private filesharing infrastructure of which it was a part – how it came to be, how it sustained itself, and the vicissitudes of interaction between hardware, software, its members and communication protocols that moved through it. As Richard Rogers has outlined, the cynosure of recent methodological debate regarding the study of 'online' communities, networks, and 'user studies' of the internet in general, has been located between 'virtual methods' and the nascent paradigm of 'digital methods'.[22] Coming to prominence largely through the 'Virtual Society?' research program in the UK during the late 1990s,[23] studies using virtual methods deploy analytical tools derived from the 'offline' world – interviews, content analysis, surveys amongst others – to explore 'digital culture', an impulse which questioned the anthropological traditions of ethnography, leading to the formation of new methods and rules for 'virtual ethnography' in the early 2000s.[24] The focus here is typically on how 'online identities' are created, how they augment or undermine, rather than replace, 'real' identities, and that the objects of study are 'grounded' in both the online and offline worlds.[25] The digital methods thesis problematises the notion of observing

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[22] Richard Rogers (2009a) *The End of the Virtual: Digital Methods* (Amsterdam: Amsterdam University Press).

[23] Steve Woolgar (2002) "Five Rules of Virtuality", in Steve Woolgar (Ed) *Virtual Society? Technology, Cyberbole, Reality* (Oxford: Oxford University Press), pp. 1-22.

[24] Daniel Miller and Don Slater (2001) *The Internet: An Ethnographic Approach* (Oxford: Berg); Christine Hine (2005) "Virtual Methods and the Study of Cyber-Social-Scientific Knowledge", in Christine Hine (Ed) *Virtual Methods: Issues in Social Research on the Internet* (Oxford: Berg), pp. 1-16.

[25] Axel Bruns (2008) *Blogs, Wikipedia, Second Life, and Beyond: From Production to Produsage* (New York: Peter Lang); Andrew Keen (2007) *The Cult of the Amateur: How Today's Internet is Killing Our Culture* (London: Nicholas Brealey).

the online world and then 'returning' to the offline world to make 'over the shoulder' assertions through interviews, surveys etc. It emphasises an exploration of the 'medium' – computing techniques and 'native' digital objects (those that were 'born' in the digital world, rather than 'migrated' to it from the offline world) – as a grounding for the analytical study of the internet. For example, Sabine Niederer and Jose van Dijck's use of a tool called 'WikiScanner' to geographically locate the position of Wikipedia contributors, and Richard Rogers account of how to use the Internet Archive's Wayback Machine to chart the evolution of websites.[26] Digital methods attempts to look beyond 'online culture', using digital artefacts to probe the socio-technical proximity between humans and the digital, and to expound the notion that such relationships are now part of global, national and local cultures, rather than part of a digital culture 'apart'.

The primary focus of this thesis is the role of the user in the development of new techniques of digital recorded music consumption, reproduction, storage and distribution through private filesharing communities, rather than solely on the workings of native digital artefacts that partially make this possible. Therefore, the methodological approach to the part of the thesis that focuses directly on OiNK is closer to that of virtual methods. It focuses on structured email and private message interviews, and semi-structured instant messaging interviews conducted with ex-OiNK members, which aimed to generate data regarding how they deployed their computers, modems, hard drives, encoding software, ripping software and P2P applications through OiNK, and how they interacted with the application layers of the internet, other members and with recorded music through the processes of deployment. The work was conducted through a 4 year participant observation of OiNK and related filesharing sites, in which I actively participated in filesharing and the social/communal interactions such processes implied. This thesis does not, however, consider OiNK's community to be 'virtual' – a digital recapitulation of 'real world' functioning – nor does it consider it to be expressly 'online', as a shrouded community that cannot be refracted back onto the offline world to elucidate meaning. Whilst accepting the digital methods critique that

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[26] Sabine Niederer and Jose van Dijck (2010) "Wisdom of the Crowd or Technicity of Content? Wikipedia as Socio-technical System", *New Media & Society*, Vol. 12, No. 8, pp. 1368-1387.

studying the digital needs 'to move beyond the study of online culture alone'[27] and explore the proximity between human and technological processes and entities, it is also critical of the digital methods assumption that digital culture is grounded in 'the digital', where meaning is primarily gleaned through a 'digitally grounded' analysis of its 'natively digital' components, such as website, links, search engine and demographics.

This thesis strives to show that the pulsating community activity on OiNK incorporated both online and offline modes of reflection and action on behalf of its members, and encompassed an engagement with the natively digital – linking, search engine usage, encoding, ripping, uploading – and that which could be considered 'digitised' or offline behaviour, such as friendship, collecting, archiving and listening to music. Moreover, these disparate elements each had the potential to recondition the functioning of the others within the context of filesharing and interaction on OiNK. This approach focuses on how these interactive practices can lead to the social integration of new technical standards in which the user plays a pivotal role.[28] It aims to situate virtual methods within a theoretical framework that does not seek a methodological ground in the online/offline worlds or in native digital artefacts, but instead rejects the notion of 'ground' and interrogates the *operational dynamism* of processes and entities that *move through* online/offline worlds and digital artefacts, and which coiled and recoiled through the disparate processes of filesharing and interaction that took place through OiNK. That is, it does not recognise a distinction between a 'foreground', or a series of stable objects around which all analysis is framed (WikiScanner, Wayback Machine or interviews, surveys etc) and to which all conclusions must be returned, and a

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[27] Rogers (2009a) *Op Cit*, p. 5.

[28] There is a research tradition stemming from the 'pre-internet' era that accounts for the role of 'users' in technological change. Whilst this thesis does not follow the theory or method imbued within this tradition, it seeks to develop a theory-driven method to account for how these processes come to fruition within private filesharing communities. See: Ronald Kline and Trevor Pinch (1996) "Users as Agents of Technological Change", *Technology and Culture, Vol.* 37, pp.763–795; Christina Lindsay (2003) "From the Shadows: Users as Designers, Producers, Marketers, Distributors, and Technical Support", in Nelly Oudshoorn and Trevor Pinch (eds), *How Users Matter* (Cambridge, MA: MIT Press), pp. 29–50; Ruth S. Cowan (1987) "The Consumption Junction", in Wiebe E. Bijker, Thomas P. Hughes & Trevor Pinch (eds), *The Social Construction of Technological Systems* (Cambridge, MA: MIT Press), pp. 261–280.

'background' - an unstable, ever-changing digital stratosphere from which the stable figurated objects can 'harvest' or 'excavate' the results from.[29]

Through a review and critique of the 'individuation' thesis found within the work of Gilbert Simondon, this thesis considers both the objects of study and the objects used to study them as *metastable*. This term refers to an entity or a system that is not permanently 'stable' or 'unstable', but open to change due to its sensitivity to other entities and systems, and because the elements of which it is comprised are not *seamlessly compatible* with each other. These elements of the research are not considered to be 'containers', 'fields' or 'mines' from which data can be opened, harvested or excavated, but metastable sites of proximity between the interview participants (including the author of this thesis), internet protocols, hardware and software through which data is *generated* according to the opportunities and constraints afforded by the dynamic infrastructural relationship between the elements.[30]

There will be a further consideration of this 'metastable' articulation of virtual methods in the final section, which focuses directly on OiNK. For now, and given the fact that this thesis does not conceive of OiNK as a seamless 'object', it follows that questions regarding how the external components that constituted OiNK's dynamic functioning came together; or on the 'becoming' of OiNK, take on a similar level of importance to those that deal with its internal functioning. This widens the locus of enquiry to include not just an analysis of how OiNK's infrastructure and the software, hardware and human agents it negotiated with 'fitted together' through its operation, but also questions regarding *how* they were drawn together, and of the techno-historical traditions from which its components were brought to bear on each other through the development of

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[29] The background-foreground distinction, although articulated in much a different way through virtual/digital methods, comes out of Gestalt theory. See: Kurt Koffka (1935) *Principles of Gestalt Theory* (London: Kegan Paul).

[30] This perspective accepts that the researcher is not an impartial observer who can collect data without changing the dynamics of the research environment, and focuses on the active construction of data derived from a clear theoretical, analytical and interpretive position. See: Jennifer Mason (2002) *Qualitative Researching* (London: Sage), 2nd Edition, pp. 49-62.

the intricate music filesharing environment of which it became the fulcrum. Was its becoming in some way a *reaction against* something else, and could it be considered the fulfilment of a desire not catered for elsewhere?

We can situate these questions within a methodological frame that enables us to position OiNK within the vigorous discussion that emerged following its demise, which underlined its dual status as, on the one hand, an organisational form of sharing digital information in which the *users themselves generated the topological borders of organisation*; and on the other, an expression of dissatisfaction with the techniques of production, distribution and consumption replete within the recording industry, to the point where the standardised pathways of retail and broadcasting that attempt to direct consumers towards particular genres of music and 'new' artists, and around specific spatio-temporal structures of listening, held little or no sway with OiNK's members. We shall begin by looking at how this post-shutdown clamour developed, through an emerging disjuncture between attempts by the legal arm of the global music industry to justify the shutdown of OiNK, and both the views and activities of ex-OiNK users, who quickly put a new OiNK-like system in place.

The long death of OiNK

On 23rd October 2007, with membership reaching nearly 190,000,[31] OiNK was shut down following a two-year joint investigation by the International Federation of the Phonographic Industry (IFPI) and the British Phonographic Industry (BPI). The OiNK frontpage was changed from this:

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[31] See 'OiNK statistics' section of this thesis: p. 230.

Figure 1.1: OiNK.cd frontpage 18/10/07 (OiNK.cd 2007b)[32]

…to the below message from the IFPI AND BPI, claiming that the site had been closed for 'suspected illegal music distribution', pending a 'criminal investigation' into the site's members:

This site has been closed as a result of a criminal investigation by IFPI, BPI, Cleveland Police and the Fiscal Investigation Unit of the Dutch Police (FIOD ECD) into suspected illegal music distribution.

A criminal investigation continues into the identities and activities of the site's users

Figure 1.2: OiNK.cd frontpage just after shutdown 23/10/07 (OiNK.cd 2007c)[33]

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[32] OiNK.cd (2007b) "OiNK.cd frontpage 18/10/07", 18th October, www.oink.cd

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In a series of raids masterminded by Interpol, the site's servers, based in Amsterdam, were seized by Dutch Police and TV cameras were invited along by British Police to witness 'Operation Ark Royal' – a set of concurrent 'dawn raids' on the house of Alan Ellis (OiNK's owner), his father's house and his place of work. Ellis was arrested and eventually charged with conspiracy to defraud the recording industry.[34]

As the days following the raid turned into weeks and the more tech-focused news sites delved deeper into the functioning of OiNK, there developed a general agreement that it was not something set up by web professionals in order to 'attract' members, as the IFPI and BPI had stated in their press releases,[35] but an entire system set up and managed by members, based on the desires of the members themselves. Furthermore, those members had taken it upon themselves to design and code replacement websites, two of which are still thriving in 2011, and which now have a combined total of over 200,000 members, working in almost exactly the same way as OiNK.[36] Two blogs were set up that became vigils for ex-users and OiNK supporters: the 'OiNK Memorial' blog[37] and another blog set up by 'Paine', an ex OiNK staff member.[38] These blogs contained news on Alan Ellis (the arrested owner of OiNK), attempts to put together a fund for his legal defence and combined attempts to start a replacement filesharing site, amongst other things. They also became a focal point for expressions of how important OiNK was to its users, and contained a plethora of fan art, which can be seen in **Appendix B** of this thesis.[39] As

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[33] OiNK.cd (2007c) "OiNK.cd frontpage just after shutdown 23/10/07", 23rd October, www.oink.cd

[34] Enigmax (2008a) "OiNK Pre-Releasers Accused of Conspiracy To Defraud Music Industry", *TorrentFreak*, 1st June, http://torrentfreak.com/oink-pre-releasers-accused-of-conspiracy-to-defraud-music-industry-080601/

[35] The IFPI and BPI press releases have been removed from the web, following the conclusion of criminal proceedings against Alan Ellis and OiNK.

[36] sharky (2008) "Waffles.fm versus What.cd - Is There Really a Winner?" *FileshareFreak*, 19th May, http://filesharefreak.com/2008/05/19/wafflesfm-versus-whatcd-is-there-really-a-winner/

[37] OiNK Memorial Blog (2007a) "OiNK: Never Forget", 12th November, http://oinkmemorial.blogspot.com/

[38] Paine (2010) "Paine's Blog", 16th January, http://tehpaine.blogspot.com

[39] See p. 319 of this thesis.

Ars Technica reported, the recording industry had made a mistake in assuming that the owners of OiNK were creating demand to share music in this way:

> The closure of OiNK has led directly or indirectly to the establishment
> of nearly half a dozen new file-sharing sites…it's not the supply of
> "P2P sites" that drives this, it's the demand from users online, across
> the globe…the story is one of cooperation and recovery. It's not
> professional site admins who really make any of this possible. It's the
> throng of users who will, at a moment's notice, become site admins
> or contribute in other ways to rapidly bring up not one, but a handful
> of potential replacements in a time of "need."[40]

Moreover, it was not filesharing sites that presented the main obstacle for the authorities, but a nascent desire and concomitant realisation amongst a large number of internet users that sites like OiNK could be designed, coded, moderated and managed *by* those users, and that this was their preferred method of interacting with recorded music, regardless of the legal alternatives. Indeed, one of the biggest public filesharing sites on the Internet, *The Pirate Bay*, had offered to host all of the old OiNK files on a new site called *BOINK*, but rescinded the offer when it realised that ex-members had already put better systems in place, based upon their productive knowledge of, and desire for, an OiNK-like solution: As Pirate Bay admin 'brokep' stated on his blog: "There are so many people opening up new music trackers right now so there's no need for us to go and do that as well…It's simply better for us not to interfere with the music lovers that want their special ratio trackers…That's not our specialty! Each to do what they're best at and what they love the most."[41]

OiNK became emblematic of an emerging group of internet users who felt they knew enough about the related technology to successfully *organise themselves* into a robust

[40] Ken Fisher (2007a) "OiNK's new piglets proof positive that Big Content's efforts often backfire", *ars technica*, 5th Nov, http://arstechnica.com/tech-policy/news/2007/11/oinks-new-piglets-proof-positive-that-big-contents-efforts-often-backfire.ars

[41] Brokep in Ernesto (2007) "The Pirate Bay Cancels OiNK replacement", *TorrentFreak*, 24th November, http://torrentfreak.com/the-pirate-bay-cancels-oink-replacement-071124/

and dynamic digital community. For many of those users, some of whom are interviewed in the final section of this thesis, it came to symbolise the point at which music consumers, not just 'hackers' or 'geeks' or those with expert levels technical knowledge, had finally worked out a way of sharing, listening to and interacting with recorded music that was *better* in every way than anything the organisational infrastructures of the recording industry could offer them. A number of blogs began to appear that sought to capture the general feeling that OiNK was redolent of, on the one hand, years of neglect and poor treatment of consumers by the recording industry – price fixing, lack of choice, failure to listen to consumers – and on the other, the result of over 10 years of user-led interactions into techniques of sharing music through the internet, stemming from a commensurate failure of the recording industry to provide an elegant digital music solution and its overt policy to criminalise filesharing. All of the most influential blogs came from either music industry insiders or musicians. The OiNK obituary-blog of Jace Clayton aka 'DJ Rupture' gave an insight into the sympathy that many artists, the vast majority of whom had no chance of getting a major label deal, had for distribution systems like OiNK. He defended OiNK on the basis that it enabled him to get his music heard more widely than ever before, and likened OiNK to a library; to a commons that all can share in due to the fact that the system is largely liberated from the economic constraints of scarcity:

> My library metaphor for OiNK makes more sense than economic analogies: for digital music & data, there's lots of demand *but no scarcity at all*, which either requires that we rebuild an economic model not based on supply & demand, or start embracing commons analogies. I like living from my music but I also like libraries, the ideas behind libraries…[42]

By a similar token, the solo artist Benn Jordan aka 'The Flashbulb' underlined the tiny amount of royalties he was receiving from legal online sites such as iTunes and how they were selling his music without permission, which eventually drove him to distribute his

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[42] Jace Clayton (2007) "Defending the Pig: OiNK Croaks", *Mudd up!*, 23rd October, http://www.negrophonic.com/2007/defending-the-pig-oink-croaks/

own music freely on one of the two websites that came to replace OiNK. He emphasised the community spirit and the notion that OiNK was a haven for rare and deleted recorded music, which he contributed to by uploading some of his own harder to find albums:

> OiNK was an amazing network. As an avid-collector of ultra-rare old jazz records, I'll tell you right now that it was the most complete and diverse library of music the world has ever seen. I filled some requests by uploading some of my rarer albums there.[43]

Ex recording industry employee Rob Sheridan's blog post was the most popular port of call for bloggers wishing to express their feelings about OiNK, garnering over 500 comments in under two weeks. It charted his growing disillusionment at the techniques of the recording industry, which he had observed whilst working at a major label as a designer in the 1990s. He discussed how in the interim period, internet users had moved in to control the reproduction and distribution of music to the extent that: "…freely-available music in large quantities *is* the new cultural norm, and the industry has given consumers no fair alternative." For Rob, OiNK represented, firstly, the apex of music consumers' unwillingness to accept the previous recording industry hegemony:

> If the music industry had found a way to capitalize on the power, devotion, and innovation of its own fans the way OiNK did, it would be thriving right now instead of withering. I would have gladly paid a large monthly fee for a legal service as good as OiNK - but none existed, because the music industry could never set aside their own greed.

Secondly, it was the first example of a music distribution system that was modelled and managed entirely by the activities, interactions and modes of reflection of music consumers themselves:

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[43] Benn Jordan, in Enigmax (2008b) "Pirated by iTunes, Artist turns to BitTorrent", *TorrentFreak*, 6th February, http://torrentfreak.com/pirated-by-itunes-artist-turns-to-bittorrent-080206/

OiNK was not only an absolute paradise for music fans, but it was unquestionably **the most complete and most efficient music distribution model the world has ever known**. I say that safely without exaggeration. It was like the world's largest music store, whose vastly superior selection and distribution was entirely stocked, supplied, organized, and expanded upon by its own consumers.[44]

Following the arrest of Allan Ellis, it took over two years to bring him to trial, as the date was continually postponed while the prosecution attempted to find evidence linking him to either profiting from the sharing of music on OiNK or hosting the music on his servers.[45] The case finally came to trial in January 2010, and on the 16th January Ellis was unanimously declared not guilty by the jury. Over the course of the trial, the defence lawyers showed that major record labels actually used OiNK to promote their artists, and that the IFPI had been watching OiNK for three years and been in contact with Ellis, and at no point did they ask him to change or shut down the website before Operation Ark Royal.[46] When asked if he would revive OiNK, Ellis stated "…absolutely not,"[47] although as we shall see towards the end of this thesis, the type of invite-only, ratio-ruled filesharing that Ellis's website popularised continues to grow exponentially despite the demise of OiNK.

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[44] Rob Sheridan (2007) "When Pigs Fly: The Death of OiNK, the Birth of Dissent, and a Brief History of Record Industry Suicide", *Demonbaby*, 24th October, http://www.demonbaby.com/blog/2007/10/when-pigs-fly-death-of-oink-birth-of.html Original emphasis.

[45] Ross Riley (2008) "OiNK Charges Postponed", *Strange Glue*, 8th May, http://static4.strangeglue.com/news/oink-charges-postponed/10001830; Ernesto (2009a) "Trial of OiNK BitTorrent Site Admin Delayed Until 2010", *TorrentFreak*, 15th May, http://torrentfreak.com/oink-trial-delayed-till-2010-090515/

[46] Alex Stein, in Gary Lightfoot (2010) "OiNK website owner cleared by jury at Teesside Crown Court", *Teesside Evening Gazette*, 15th January, http://www.gazettelive.co.uk/news/teesside-news/2010/01/16/oink-website-owner-cleared-by-jury-at-teesside-crown-court-84229-25615291/3/

[47] Alan Ellis, in Ian McNeal (2010) "OiNK owner Alan Ellis facing fresh legal action", 26th January, http://www.gazettelive.co.uk/news/teesside-news/2010/01/26/oink-owner-alan-ellis-facing-fresh-legal-action-84229-25682568/

How OiNK and BitTorrent 'work'

How does one go about developing the 'metastable' methodological frame we identified earlier? Before we expound OiNK and the debate that emerged in the wake of its shutdown in theoretical and methodological terms, it is imperative to discuss the basic structure of filesharing that OiNK implied and to make some introductory comments on the filesharing architecture of which it was a part. This infrastructure was built around the internet protocol that has dominated global P2P (peer-to-peer) filesharing since around 2005: **BitTorrent**.[48] A P2P (Peer to Peer) network is one that relies upon the bandwidth and computing power of network participants in order to share files, as opposed to the server/client method of relying upon a relatively low number of centralised servers to cope with the download requests. This enables the sharing of content files containing audio, video, data, or anything in a digital format between personal computers, rather than between centralised servers and computers. The notion of 'filesharing' first penetrated the public consciousness through the free sharing of mp3 music files through the internet on P2P networks,[49] specifically Napster, which managed to garner 70 million users in just 6 months during 1999 and 2000.[50] There were a number of previous generations of P2P protocols that came before BitTorrent, including the early, centralised network of Napster, and the later, more decentralised networks of FastTrack (Kazaa) and Gnutella (Limewire).[51]

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[48] This thesis will embark on a much more detailed analysis regarding the technical functioning of BitTorrent in chapter 8 (p. 187) and into the dynamic relational catalysis between OiNK, BitTorrent and the software, hardware and communication protocols it brought together in the final section on OiNK (p. 218).

[49] See Patrick Burkart and Tom McCourt (2006) *Digital Music Wars: Ownership and Control of the Celestial Jukebox* (Oxford: Rowman and Littlefield) and David Kusek (2005) *The Future of Music: Manifesto for the Digital Revolution* (Boston, MA: Berklee Press).

[50] Cory Doctorow (2008) "Illegal Filesharing: A suicide note from the music industry", *The Guardian*, 29th July, http://www.guardian.co.uk/technology/2008/jul/29/internet.digitalmusic

[51] As outlined in the introduction, this thesis does not locate the OiNK-BitTorrent infrastructure in the lineage of earlier P2P systems. For a detailed look at the origins of P2P and the workings of early P2P protocols, see Andrew Oram (2001) *Peer to Peer: Harnessing the Power of Disruptive technologies* (Sebastopol, CA: O'Reilly) and Michael Miller (2001) *Discovering P2P* (New York, NY: John Wiley & Sons).

BitTorrent differs from its P2P predecessors in a number of ways. The clearest difference is that whereas Napster, Kazaa and Limewire had relatively short stints as the most popular P2P protocol, each dominating filesharing culture for no longer than 2 years, BitTorrent has been by far the most popular P2P method of filesharing since 2004. Although the popularity of P2P filesharing in general has shown recent signs of tailing off, with other types of internet traffic such as internet music and video streaming (YouTube, Spotify) and one-click file hosting sites (rapidshare, megaupload) on the increase,[52] it still constitutes a massive share of global internet traffic and BitTorrent is firmly the most popular P2P protocol. According to a global study of internet traffic conducted by bandwidth management company *Ipoque* in 2009, depending on geographical area, BitTorrent is responsible for 45-78% of all P2P traffic, and roughly 27-55% of all Internet traffic.[53]

Another major difference is that BitTorrent splits the filesharing process between a *client function* – a desktop software application that manages the download/upload process for each user – and a *browser function* – a website, known as a 'tracker', from which all downloads/uploads are initiated. OiNK was one of these tracker websites, of which there are many thousands. OiNK was a 'private tracker' that kept its community relatively small through enforcing an 'invite only' membership policy. Many will be more familiar with the 'public trackers' that garner millions of users and that do not require an invite or registration to be used, such as The Pirate Bay, Mininova, isoHunt and Torrentz. This distinction between 'public' and 'private' tracker websites and the wider architecture that these different status' imply will be explored more deeply later on in the thesis, for now we shall restrict ourselves to a general introduction of the relationship between 'client' and 'browser', in order to understand how music was shared using BitTorrent and OiNK.

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[52] Ernesto (2009b) "BitTorrent Still King of P2P Traffic", *TorrentFreak*, 18th February, http://torrentfreak.com/bittorrent-still-king-of-p2p-traffic-090218/; Jeremy Kirk (2009) "Study: Other network traffic surpassing P2P growth", *IT World*, 18th February, http://www.itworld.com/internet/62869/study-other-network-traffic-surpassing-p2p-growth

[53] Ipoque (2009) *Internet Study 2008/09*, 18th November, http://www.ipoque.com/resources/internet-studies/internet-study-2008_2009

The client software

The client software application is usually freeware which users have to download to their desktops, and most users tend to stick to the same client for all BitTorrent sharing due to priority of having a single, reliable interface that can manage all information distribution. By far the most popular clients are μTorrent and Azureus (Vuze) for Windows, and Transmission for the Mac.[54] The clients are simple, typically lightweight applications that manage the transfer of files, and have a basic desktop window layout which allows the user to observe statistics regarding the progress of uploading and downloading. That is, the client is the 'back end' of the filesharing process that manages the movement of files between computers, whereas tracker websites like OiNK are the 'front end' from which users choose the files they want to download. μTorrent is the most commonly used client for Windows due to the very small amount of memory in utilizes, meaning that it can run in the background without slowing down other programs.[55]

The popularity and ubiquity of BitTorrent rests in no small part on the capability of the client software to perform three functions that were not possible with the previous generations of P2P. Firstly, it breaks down the file into small 'pieces' that are typically 256kb, 512kb or 1MB in size, so that different parts of a file can be shared with different users simultaneously. The larger the original file, the larger the piece size will be, with most 'torrent files' (see below) averaging around 1000-1500 pieces. Each piece is made up of 256 or more 16kb 'blocks', which are the smallest transmission units in the BitTorrent protocol.[56] The client enables each user to keep track of torrents that are currently 'leeching' (downloading), torrents that are currently 'seeding' (uploading) and torrents that are leeching and seeding simultaneously. Secondly, these pieces do not

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[54] Paul Gill (2010) "The Best BitTorrent P2P Software – 2010", *About.com*, November, http://netforbeginners.about.com/od/peersharing/tp/best_torrent_software.htm

[55] Arvid Norberg (2010) "μTorrent transport protocol", *BitTorrent.org*, 22nd January, http://www.bittorrent.org/beps/bep_0029.html

[56] Vuze (2010) "Torrent Piece Size", *Vuze Wiki*, 2nd March, http://wiki.vuze.com/w/Torrent_Piece_Size

have to be downloaded/uploaded in the 'correct' order (i.e. 1st piece, then 2nd, then 3rd etc); they can be downloaded/uploaded in any order because the client software contains an algorithm that positions the pieces into the correct place (see below).[57] Thirdly, users do not have to wait until their download has finished before they can start sharing the file pieces with others; they can share the pieces of the file they've already downloaded with others, whilst simultaneously downloading the pieces they still need from others. These three aspects of technical functioning combine to enable the rapid transfer of very large files without incurring large bandwidth costs for those who wish to share the file, through utilising the bandwidth capacity of all the computers or 'peers' that are sharing the file. The decentralised co-operation that is inherent in this process had led to BitTorrent networks becoming commonly known as 'swarms' – large, decentralised networks coordinating small tasks between peers in order to complete a larger task. The idea is that as more people join the network, the faster the uploading and downloading process becomes for all involved. Thereby, each 'swarm' does not have to exist for very long until all members have the file, thus mimicking the notion of the swarm in nature; the rapid coming together of individuals to 'attack' followed by dispersal once the goal has been achieved.

We can get an initial sense of how this works by looking at the picture below (**Figure 1.3**), which shows the basic difference between the earlier filesharing protocols such as Napster, where the downloading of music was oriented through a large central server (the top picture) and BitTorrent, where the peers download small parts of the file from all the peers in the swarm (bottom picture). In the bottom picture, all the peers in the swarm have become 'servers'.

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[57] Also, see chapter 8 of this thesis: p. 188.

**The Problem with Publishing:
More customers require more
bandwidth**

**The BitTorrent Solution:
Users cooperate in the distribution**
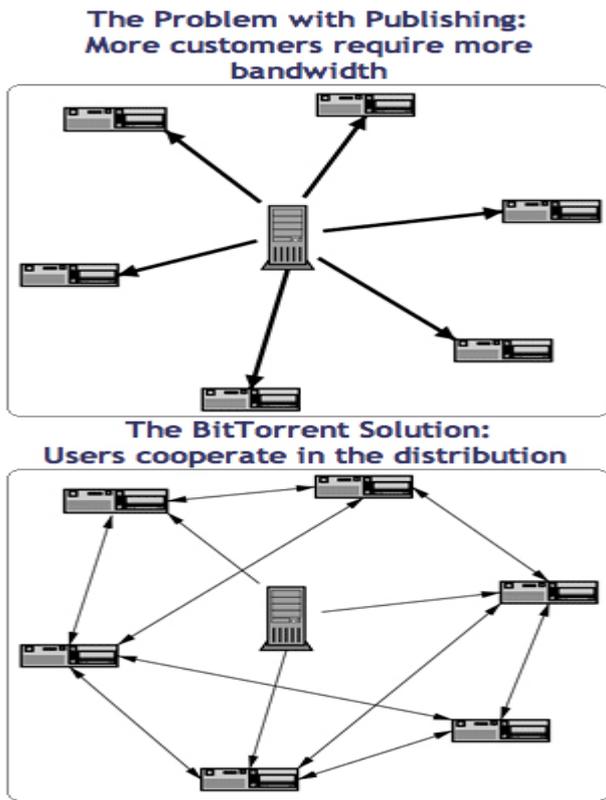
Figure 1.3: How BitTorrent turns all peers in the swarm into 'servers' (Bruce Wagner 2007)[58]

Tracker websites: Interaction with the client

We can add some context to this by describing the process of filesharing common to BitTorrent, and how websites like OiNK fit into it. The client manages the breaking down of the file into tiny pieces using a 'hashing' algorithm, which creates a much smaller file ending with the filename '.torrent'. Contained with the torrent files are tiny bits of data, or 'hashes', that correspond to each piece, but only contain information regarding which part of the file the piece is and where on that users' computer it can be found. OiNK's place in this technical architecture is as a 'tracker website' – it is an example of the 'browser' function of the BitTorrent filesharing process. Tracker websites contain a

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[58] Bruce Wagner(2007) "How BitTorrent turns all peers in the swarm into 'servers'", *Bruce's Journal*, 13th February, http://brucewagner.wordpress.com/2007/02/13/how-to-download-everything-you-want-for-free/

library of the small torrent files that have been uploaded to the website by users. Sites like OiNK do not contain the audio/video/text files that the users desire to download, they merely catalogue and make available the small torrent file, which enables the user to find and connect to other users who have the desired file stored on their hard drives.

Let's say I wanted to share the album 'Trout Mask Replica' by Captain Beefheart on OiNK. Assuming that a digital copy of this album already exists on my hard drive, I would begin by clicking on 'make torrent' in my BitTorrent client and choosing the 'Trout Mask Replica – Captain Beefheart' folder. The client would then create the much smaller torrent file. I then upload my torrent file to OiNK, and it would now appear as a link in results lists when searched for using the OiNK search function, much like the list of links that is generated when a Google search is performed. The screenshot of search results below[59] (**Figure 1.4**) shows that there are 6 results for the search "beefheart trout mask replica'. Each result represents a torrent that links to a particular digital version of the same album. Each version is unique because it has been converted to digital from a particular source (vinyl, first-pressing vinyl, CD), using a particular standard of mp3 encoding (192, V0, V2), or by using 'lossless' FLAC encoding.[60]

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[59] The following 5 screenshots are not taken from OiNK, but from one of its two successors that followed on where OiNK had left off. I was unable to take the required screenshots before OiNK was shut down. Suffice to say that although significant changes and improvements have been made on the newer sites, the processes described using these screenshots are identical in almost every respect to OiNK, aside from some very slight aesthetic differences.

[60] See p. 183 of this thesis for the difference between 'lossy' and 'lossless' encoding, and p. 255 + pp.257-258 for a discussion of the FLAC, V0 and V2 digital audio formats.

Figure 1.4: Search results for 'Trout Mask Replica' (Private Music Tracker 1, 2010a)[61]

Members of OiNK can then view the information contained within each torrent by clicking on the relevant link under the 'Name year' column. OiNK displays the information for each torrent as a web page; sections of the web page for one of the torrents are pictured in four parts below. The ability to allocate each torrent a web page is another factor that distinguishes BitTorrent filesharing from previous generations of P2P, and enables users to access a much greater amount of information regarding the files they are downloading.

This first screenshot (**Figure 1.5**) shows the top of the webpage. Here we can see the link to download the torrent at the very top, followed by links to see more music from Captain Beefheart, the opportunity to 'bookmark' the torrent (meaning that a note of it can be stored in a list that can be used for future reference, if the member does not

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[61] Private Music Tracker 1 (2010a) "Search results for 'Trout Mask Replica'", 14th Dec [private URL].

wish to download it now), and tags that are associated with the torrent which members can search within to find similar music. Below that, there is a picture of the cover art and full details of the release: year, genre, length, label, producer, a short description of the album and the full tracklisting.

Figure 1.5: Torrent page for 'Trout Mask Replica' (Private Music Tracker 1, 2010b)[62]

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[62] Private Music Tracker 1 (2010b) "Torrent page for 'Trout Mask Replica'", 14th Dec [private URL].

Just below the tracklisting is the full list of files that are contained within the torrent, along with the file sizes (**Figure 1.6**). As well as the music files, a .log file is included which gives precise technical data on the quality of the ripping and encoding process, and also .jpg scans of the CD booklet and the front and back covers.

File list
[Hide list]

Path	Size
01 - Frownland.mp3	3.03 MB
02 - The Dust Blows Forward 'n The Dust Blows Back.mp3	2.73 MB
03 - Dachau Blues.mp3	4.10 MB
04 - Ella Guru.mp3	4.26 MB
05 - Hair Pie - Bake 1.mp3	8.13 MB
06 - Moonlight On Vermont.mp3	6.92 MB
07 - Pachuco Cadaver.mp3	8.26 MB
08 - Bills Corpse.mp3	3.17 MB
09 - Sweet Sweet Bulbs.mp3	4.18 MB
10 - Neon Meate Dream Of A Octafish.mp3	4.19 MB
11 - China Pig.mp3	6.35 MB
12 - My Human Gets Me Blues.mp3	5.17 MB
13 - Dali's Car.mp3	2.38 MB
14 - Hair Pie - Bake 2.mp3	4.26 MB
15 - Pena.mp3	4.44 MB
16 - Well.mp3	3.07 MB
17 - When Big Joan Sets Up.mp3	9.14 MB
18 - Fallin' Ditch.mp3	3.79 MB
19 - Sugar 'n Spikes.mp3	4.37 MB
20 - Ant Man Bee.mp3	6.90 MB
21 - Orange Claw Hammer.mp3	5.37 MB
22 - Wild Life.mp3	5.52 MB
23 - She's Too Much For My Mirror.mp3	2.98 MB
24 - Hobo Chang Ba.mp3	3.53 MB
25 - The Blimp (Mousetrapreplica).mp3	3.21 MB
26 - Steal Softly Thru Snow.mp3	4.14 MB
27 - Old Fart At Play.mp3	3.14 MB
28 - Veteran's Day Poppy.mp3	7.69 MB
Captain Beefheart & His Magic Band (1970) Trout Mask Replica.log	5.91 kB
Cover Art/captain beefheart - trout mask replica back.jpg	1.47 MB
Cover Art/captain beefheart - trout mask replica booklet.jpg	2.41 MB
Cover Art/captain beefheart - trout mask replica front.jpg	1.25 MB

Figure 1.6: File list for contents of 'Trout Mask Replica' torrent (Private Music Tracker 1, 2010c)[63]

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[63] Private Music Tracker 1 (2010c) "File list for contents of 'Trout Mask Replica' torrent", 14th Dec [private URL].

Below the file information is the 'OiNKPlus' detail (**Figure 1.7**). OiNKPlus is an example of a Greasemonkey script, which are small applications that can be added into the web browser Mozilla Firefox. They allow members to customise the information that is displayed to them on web pages. The OiNKPlus application was designed by an OiNK member, and once added into Firefox it makes the following information appear in the individual torrent pages on OiNK by default.[64] OiNK Plus was optional – not all members utilised it - but it hints at how the actions of its members were integrated into OiNK, how OiNK served as an interface between members, hardware, software and external parts of the internet, and the sheer amount of catalogued information about recorded music that OiNK gave its members access to. If we look down the left hand side we can see that the application has added in a long list of links to similar artists. Each link takes you to that artist's page on OiNK. On the right there is an embedded search function that allows you to search for other artists within OiNKPlus and a photo of the artist. 'External links' has thumbnails which link to places that contain further information about the artist on the web, such as last.fm, Wikipedia, Google, Amazon, YouTube and Spotify. 'Elsewhere' is another list of thumbnails, this time linking the member to other torrent tracker sites that contain Captain Beefheart torrents. The middle section contains a biography of the artist in question, and embedded last.fm and MySpace players if available, so the member can listen to the music before downloading.

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[64] OiNKPlus (2009) "OiNKPlus – artists discovery for music torrent sites", 28th January
http://oinkplus.blogspot.com/

Figure 1.7: OiNKPlus information integrated into torrent page for 'Trout Mask Replica' (Private Music Tracker 1, 2010d)[65]

At the bottom of the page is the comments section (**Figure 1.8**), where members typically thank the uploader, discuss the quality of the files in the torrent and talk about the music contained therein. Below we can observe a mix of 'thank you' messages for making the music available, the quality of the rip and for including the artwork, with one comment about Captain Beefheart's music.

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[65] Private Music Tracker 1 (2010d) "OiNKPlus information integrated into torrent page for 'Trout Mask Replica'", 14th December [private URL].

Figure 1.8: Comments section on the torrent page for 'Trout Mask Replica' (Private Music Tracker 1, 2010e)[66]

When a member clicks on the link at the top of the OiNK web page to download the torrent file, it then appears in the list of torrents in their client software. Once they have the torrent and the download has started, they begin to receive the pieces of the file. The hash data contained within the torrent tells the peers where to find the pieces on my computer, and how to order the pieces. As more and more peers join in by downloading the torrent, the hash data in the torrent tells all the peers where they can find the data they are missing on all the other computers.

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[66] Private Music Tracker 1 (2010e) "Comments section on the torrent page for 'Trout Mask Replica'", 14th December [private URL].

Look at the visualisation below (**Figure 1.9)** and imagine the computer at the bottom of the picture is your computer, currently being used to download the Beefheart album from OiNK using a BitTorrent client. The computers in the middle are the other computers in the swarm. Some already have 100% of the file and are seeding it, but notice that the computers that are still leeching (those at 74%, 23%, 19% and 54%, as well as your computer at 37%) can also seed the parts of the file they already have with my computer and vice versa. The computer at the top represents OiNK's tracker software, which connects all the clients, and enables each member's client to locate and leech pieces of the music file from the other computers, and to seed pieces that the other computers require. The bar at the bottom represents the progress of your download. The blue sections represent the pieces of the file you have downloaded. Notice that you don't have to download the files 'in order', as the blue sections are dispersed along the bar – the BitTorrent algorithms organise the order of the files for us.

BitTorrent tracker identifies the swarm and
help the client software trade pieces
of the file you want with other computers.

Computer with BitTorrent
client software receives and sends
multiple pieces of the file simultaneously.

©2005 HowStuffWorks
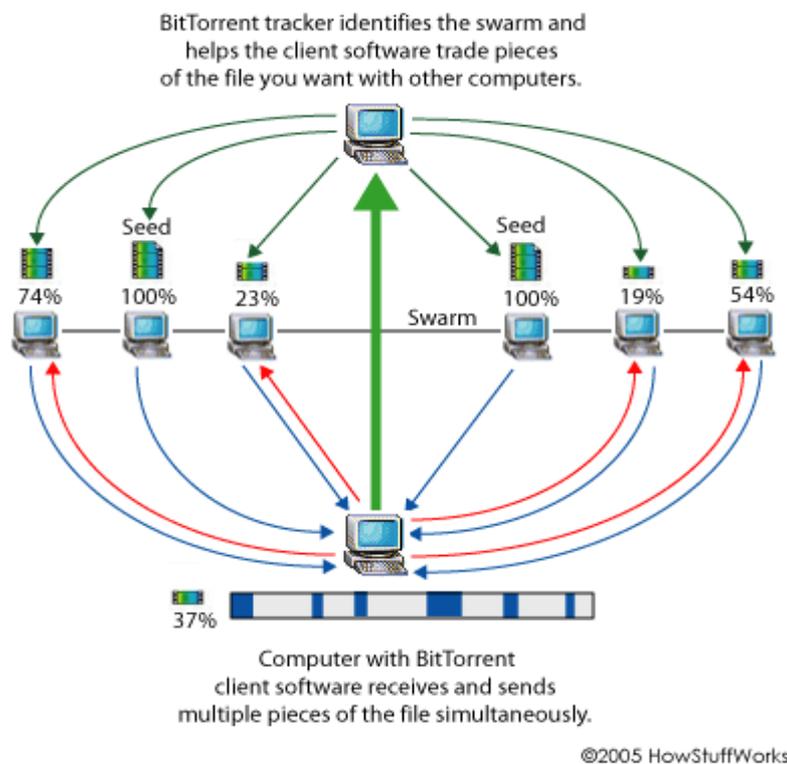
Figure 1.9: Visualisation of cooperation between peers in a BitTorrent swarm and the distribution of file pieces (HowStuffWorks 2005)[67]

There are another two algorithms in the BitTorrent client that make this possible. How the pieces are selected and what order they are downloaded in is governed by the *'rarest first' algorithm*. It makes sure that when communicating with the other peers to find pieces of the file, the 'rarest' pieces (the pieces which are the least common in the swarm) are downloaded first, and the more commonly available pieces are downloaded later. This algorithm endeavours to maintain an equal balance between file pieces in the swarm, so that single pieces do not get lost and so that all peers have parts of the file that are of upload interest to the other peers. There is also a *choking algorithm* that is designed to ensure that each peer in the swarm maximizes their own download speed. It does this by stopping uploading to peers (or 'choking' peers) that are not uploading any of the file to you, but are still trying to download from you. This situation would

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[67] HowStuffWorks (2010) "Visualisation of cooperation between peers in a BitTorrent swarm and the distribution of file pieces", 14th December, http://static.howstuffworks.com/gif/bittorrent-6.gif

occur if, for example, another peer had no parts of the file I needed, but I had part of the file they needed, or if a peer's upload speed was significantly slower than mine. BitTorrent prioritises, or 'unchokes' other peers that have good upload rates, and 'rewards' them by letting them download from me. This is known as the 'tit-for-tat' method.[68]We shall interrogate these algorithms in more detail in chapter 8, but the analysis here gives us an initial idea of why OiNK was able to offer such an efficient solution to its members: *the more people that join a BitTorrent swarm, the faster, stronger and more efficient it becomes*.

 Bearing this in mind, what does the basic technical functioning of the BitTorrent filesharing architecture tell us about OiNK and the relationships it inhered between its community of members? Does this basic technical linkage between OiNK and BitTorrent elucidate anything meaningful regarding the three aims we outlined at the end of the introduction, in terms of how OiNK came to be, how it sustained itself, and how it influenced future entities? More specifically, what does the 'swarming' enabled by the connection between the BitTorrent client and the OiNK website tell us about how individuals, software, hardware and internet protocols come together to share music as part of a dynamic community? When considering the low level operations occurring with the system implied by overlapping BitTorrent swarms, and the user-led, anti-hierarchical notions attached to OiNK by its members, the obvious metaphor to reach for is that of 'organism'; of small jobs being completed by equal nodes for the good of the overall system. Indeed, the internet signalled a surge in cultural theory accounts of online behaviour that emphasised the low-level operations of nodes in networks rather than the hierarchical dominance of static, centralised institutions. The next endeavour will be to consider the BitTorrent and OiNK against this backdrop.

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[68] See: Arnaud Legout, Guillaume Urvoy-Keller and Pietro Michiardi (2006) "Rarest First and Choke algorithms are enough", Technical Report (inria-00001111, version 3 - 6 September 2006), *INRIA*, Sophia Antipolis, September 2006, http://hal.inria.fr/docs/00/09/14/93/PDF/bt_experiments_techRepINRIA-00001111_VERSION3_6SEPTEMBER2006.pdf; Tiejun Wu, Maozhen Li and Man Qi (2010) "Optimizing peer selection in BitTorrent networks with genetic algorithms", *Future Generation Computer Systems*, October, Vol. 26, Issue 8, pp. 1151-1156.

Chapter 2 – Theory, methodology and the 'operation' of OiNK and BitTorrent

Given our preceding observation of the basic workings of BitTorrent and OiNK, this chapter outlines some possible theoretical approaches that could be used to encapsulate the techniques of sharing and communication that moved through them. It considers, and then rejects, the idea that the related metaphors of 'swarming' and 'organism' can be used as mirrors for the interactions between hardware, software and humans that occurred through BitTorrent and OiNK. The majority of the chapter expounds the 'individuation' thesis found within the work of Gilbert Simondon, which is put forward as a durable framework through which to explore how the elements of theBitTorrent-OiNK infrastructure came to be operationalised within the same technical system, how these elements sustained their recursive operation, and what the consequences of this operation were. This approach avoids a relapse into the assumption that new entities are a 'reflection' of pre-existing natural or technical systems.

'Swarming' theories

The operation of BitTorrent filesharing immediately implies one way in which we could frame an investigation into OiNK and BitTorrent – by using the 'swarm' analogy that permeates BitTorrent culture. The extensive and pervasive circulation of unlicensed mp3 files through early P2P protocols such as Napster and Kazaa, and the rapid rate at which they infiltrated the music consumption practices of individuals, has led a number of cultural theorists to approach the first waves of music filesharing as a phenomenon that engendered a new relationship between the body organism and the digital, with the generative capacity of the organism being placed back at the centre of information sharing. Tellingly, many have not been slow in attaching the buzz word 'swarming' to the situation, in order to capture the zeitgeist. In *Smart Mobs*, Howard Rheingold discusses how the swarming of computers to share music constitutes the channelling of digital flows in order to create 'output' in the real world. Participation is dependent upon individuals feeling as though their decision to join a swarm of downloaders will have a

tangible and beneficial effect on their subsequent 'real world' experience. This allows individuals to integrate computers into their reality, rather than being systematised by virtual reality.[69] Mark Katz as explored the consequences of the interface between mp3 and P2P, arguing that the commensurate circulation of music has had a profound effect on the concept of the 'listener'. The listening subject is now enmeshed within a whole series of online social networks – web forums, blogs, P2P-related websites, instant messaging, Bluetooth etc – where information is exchanged regarding the latest downloads, new music and artists and download reliability. This interface also calls into question the musical authenticity of previously dominant artists and genres, and the legitimacy of non-digital circulation of music and playback methods.[70]

It is worth noting that a loosely connected group of cultural theorists have been quick to point towards the link between military intelligence and swarm intelligence, using Arquilla and Ronfeldt's idea of 'Netwar' as a starting point. Ronfeldt et al define the swarm as such: "Swarming occurs when the dispersed units of a network of small (and perhaps some large) forces converge on a target from multiple directions. The overall aim is sustainable pulsing—swarm networks must be able to coalesce rapidly and stealthily on a target, then dissever and re-disperse, immediately ready to recombine for a new pulse."[71] Brian Holmes has pointed out that the US military has used swarm intelligence to target bombs in the Middle East. He sees P2P filesharing as a 'bottom up' or to stick with the military analogy, 'on the ground' example of how millions of individuals are engaging in non-militarised conflict with global hierarchies, demanding to receive information on their terms, outside of the information flows of the corporate machine.[72] Steve Goodman has looked at the relationship between swarms on the web and the emergence of sonic swarms grouping around new polyrthythms, where old

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[69] Howard Rheingold (2003) *Smart Mobs: The Next Social Revolution* (Cambridge MA: Basic) p. 82.

[70] Mark Katz (2004) *Capturing Sound: How Technology has Changed Music* (Berkeley, CA: University of California Press) p. 158-188.

[71] David F. Ronfeldt, John Arquilla, Graham E. Fuller, Melissa Fuller (1998) *The Zapatista Social Netwar in Mexico* (Santa Monica, CA: RAND), p. 15.

[72] Brian Holmes (2007) "Crisis Cartographies: Stratified Power and the Dynamics of the Swarm", 26th September, ut.yt.t0.or.at/site/index.html (follow Meteors link).

rhythms and sounds are continually 'hacked' by "…groups communicating, co-coordinating and operating in a networked manner, without central control and command,"[73] signalling an 'affective war' on sonic hierarchies and the stability of dominant sonic assemblages.

Indeed, due to the dominance of P2P in the upstream and downstream digital pathways of the internet, it has been observed many times before that the P2P filesharing of mp3 signals a profound change in the constitution of the music industry, and the music consumer's relationship to it. The line of enquiry most often followed is that of 'intellectual property' and the emancipatory, creative potential associated with the action of breaching copyright.[74] Here, P2P is most often understood in terms of a confrontation between renegade groups of filesharers and monolithic, corporate institutions. In the work of Haupt (2008) this is conceived of as between vibrant groups of teenage hip hop fans and corporations theorised using Hardt and Negri's notion of Empire; Laurence Lessig's body of work pitches 'Big Media' and its stifling use of the law against the potential for innovation and found within filesharing technologies;[75] Charles Fairchild has deemed P2P filesharing indicative of a phoney 'war' against piracy, which the global recording industry does not hope to win, but uses to minimise the numbers of those using filesharing applications by any means possible.[76]

As fruitful as explorations of these confrontations are, if we consider our previous introductory look at OiNK's short life and ongoing death, it is clear that it cannot be fully

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[73] Steve Goodman (2005) "Speed Tribes: Netwar, affective hacking and the audio social", in Franz Liebl and Thomas Dullo (eds) *Cultural Hacking: Die Kunst des Strategischen Handelns* (New York: SpringerWien), p.150.

[74] See Adam Haupt (2008) *Stealing Empire: P2P, intellectual property and hip hop subversion* (Cape Town SA: HSRC Press) and Joanna T. Demers (2006) *Steal this music: how intellectual property law affects musical creativity* (Athens: University of Georgia Press).

[75] Laurence Lessig (1999) *Code and Other Laws of Cyberspace* (New York: Basic Books); Laurence Lessig (2001) *The Future of Ideas: The Fate of the Commons in a Connected World* (New York: Random House); Laurence Lessig (2004) *Free Culture: How Big Media uses Technology and the Law to Lock Down Culture and Control Creativity* (New York: Penguin Press).

[76] Charles Fairchild (2008) *Pop Idols and Pirates: Mechanisms of Consumption and the Global Circulation of Popular Music* (Aldershot: Ashgate), pp. 66-67.

encapsulated by recourse to its 'conflict' with the recording industry – as we have seen, it was used by that industry to promote its artists and both musicians and industry insiders leapt to its defence following its shutdown. We shall see, from the data generated by the participant observation in **section 4,** that as well as conflicting with the industry by providing links to music that was being commercially sold, it went further than conflict by offering thousands of releases that were no longer available, all at a higher quality and with greater efficiency than the industry. The system of filesharing instantiated by OiNK and BitTorrent was a leap in the utilization of P2P that transcended the battleground between corporations and individuals where the music consumer is cast as a 'service user' of an infrastructure provided by an overarching organisation, whether that be the recording industry or previously generations of P2P applications, signalling a shift towards a willingness amongst many internet users to learn how to manage all elements of that infrastructure between themselves. Thus, we can conceive of OiNK as a system that is clearly related to the machinations of capital, but not primarily defined by its opposition to it, nor by its operation solely in relation to it.

Georges Canguilhem and the 'self-organising' organism

Let us briefly consider the idea of organism more directly, in terms of what the concept means when applied to the contemporary constellation of human and information technology relations, and more specifically, to nascent forms of P2P organisation through BitTorrent and OiNK. As we have seen previously, the popularity of sharing music through P2P protocols had not only led those writing at the time of the mid-late 90's internet boom to eulogise the potentiality of these new web-based forms of information sharing, but also to assert that low-level organisation was changing both the actual content being shared on music making and music listening plateaus, and also sparking off a whole series of interrelated complex organisations in the 'real' world.[77]

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[77] Rob Young (1995) "Worlds Collide: The global electronic network", *The Wire*, December, Issue 142, http://www.thewire.co.uk/articles/215/; Kristen Philipkoski (2000) "Gene Research, Meet Napster", *Wired*, 5th April, http://www.wired.com/science/discoveries/news/2000/04/35404

A theorist whose work can enable us to accurately render the frame of this recent pre-occupation with the 'self-organising' aspects of organism in studies of technology and popular culture is George Canguilhem. At the spine of his extensive body of work is a detailed and deeply researched history of biology, the nature of the organism, the machine, and the philosophical implications thereof. In a book entitled *La Connaissance de la vie* (1952), Canguilhem rejects the Cartesian notion of a mechanistic conception of the organism. He proposes a "…reversal of the relationship between the machine and the organism, brought about by a systematic understanding of technical inventions as if they were extensions of human behaviour or life processes."[78] For example, he draws attention to the work of Leroi-Gourhan[79] by stating that inventions such as the steam engine required an understanding of elemental processes and how to harness them (specifically, how to pump water out of mines). Understanding these cyclical, elemental processes is to understand the workings of the inventions that the industrial revolution was predicated upon; namely the crank, the pedal and the drive belt. Having placed organic or 'life processes' at the centre of the generative capacity for the formation of new entities, Canguilhem moves the definition of organism beyond a mere concern with 'self-organisation' and proposes that the organism is concerned with four phenomena. The organism is capable of *autoconstruction, automaintenance, autoregulation, and autorepair*.[80] A crucial observation to make is that BitTorrent swarms imply a great degree of *control* as well as the potential for the free play of information exchange. In fact, the more complex the organisation becomes, the more stringent the levels of control are, and even further than this, we shall see later in the thesis that the torrent trackers which exhibit the highest levels of control are the ones that attract the most committed followings and the most clamour for membership.

We can observe how people will join and thereby 'construct' BitTorrent swarms and the OiNK membership because they perceive that the grouping's vitality will increase as its

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[78] George Canguilhem (1992) "Machine and Organism", in Jonathan Crary and Sanford Kwinter (eds) *Incorporations* (New York: MIT Press), p. 61.

[79] André Leroi-Gourhan (1945) *Milieu et Techniques* (Paris: Albin Michel).

[80] Canguilhem (1992) *Op Cit*, p. 56.

size becomes greater, thus increasing the efficiency with which each member receives the information they need. We have briefly seen how the algorithms and data structure in BitTorrent work to maintain and regulate each swarm. The algorithms in BitTorrent also ensure the 'health' of each swarm by 'choking' inactive members. Additionally, the OiNK website is in a constant state of repair, with patches, amendments and improvements constantly being made, such as the greasemonkey scripts we discussed earlier, and servers being moved round the world in order to evade prosecution and ensure high quality downloading and uploading speeds.[81] If we were to adopt Canguilhem's analysis as a metaphor for the interior and exterior workings of a BitTorrent swarm and the OiNK community, we would be able to conceptualise the structure of information distribution neatly as an extension of the natural (biological/physical/chemical) environment. We could compartmentalise the relationship between BitTorrent and OiNK as something that exists because of a complex, four-fold embryonic process that serves to constitute, regulate and generate it both in terms of its inner workings and outer relationships with other phenomena.

It would be a mistake, however, to assume that anything outside of the realm of the purely biological develops along purely organismic lines. Canguilhem eruditely points this out towards the end of *The Normal and the Pathological* (1966). In attempting to distinguish the organism from the society, Canguilhem cites the observations of G. K. Chesterton[82] and claims that the major difference between the two is found within the ability to conceive of a 'normal' state within the organism, that it must return to in order to be 'healthy' and a converse inability to find any such 'normal' state within society. In society, the normative is always a site for contestation and change, for development beyond the current settlement. As Canguilhem puts it: "If social norms could be perceived as clearly as organic norms, men would be mad not to conform to them. As

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[81] Ernesto (2010a) "Avoiding US Censorship, Torrent Sites May Flee To China", *TorrentFreak*, 2nd December, http://torrentfreak.com/avoiding-us-censorship-torrent-sites-may-flee-to-china-101202/ ; sharky (2010) "ThePirateSociety Is Back on a New Domain, New Server", *FileshareFreak*, 17th October, http://filesharefreak.com/2010/10/17/thepiratesociety-is-back-on-a-new-domain-new-server/

[82] Gilbert K. Chesterton (1910) "The Medical Mistake", in Gilbert K. Chesterton, *What's Wrong With the World*, (San Francisco, CA: Dodd, Mead & Company), pp. 15-18.

men are not mad and as there are no Wise Men, social norms are to be invented and not observed."[83] Both BitTorrent filesharing environments and the workings of the OiNK community are imbued with a pathological, entropic urge to change their morphology, and also a tendency for humans to continually propose amendments and replacements for parts of it they deem outmoded or useless. This is not the case with the organism. As Chesterton points out: "…no doctor proposes to produce a new kind of man, with a new arrangement of eyes and limbs."[84]

The body organism has a vitality that seeks to return to a homeostatic equilibrium. The BitTorrent swarm orients its generative capacity towards a dynamism that attempts to ensure constant growth and eventual destruction and reformation. OiNK was born from a small community of friends, expanded rapidly, destroyed itself by growing too large to maintain its existence in the face of pressure from opposing institutions, and then reformed its principles of operation in the 'bodies' of two new private music trackers. Filesharing environments work to replicate and expand beyond their functionality; to break free of the morphology that brought them together and to propagate in a wider and ever more complex web of groupings. As they auto-construct, auto-maintain, auto-regulate and auto-repair they continually destroy their form and re-emerge in a new constellation. The human body organism battles to hold onto its form until inevitable death. Here we must depart from Canguilhem for the simple reason that it is not always *self-control* that is exhibited in the relationship between BitTorrent and the OiNK community. In this sense, the 'automatic' theoretical palette of self-organisation provides a theory of enaction, but not one of dynamic morphological change. With Canguilhem's account, we cannot grasp the non-automatic, indeterminate and unstable processes by which complex groupings and individuals in filesharing and music come into being, nor a sense of how these groupings and individuals transcend their topological boundaries, dissipate and go on to play a part in the formation of new and interrelated entities and groupings.

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[83] George Canguilhem (1966) *The Normal and the Pathological* (New York: Zone Books) p. 259.

[84] G. K. Chesterton, in Canguilhem, *Ibid*, p. 258.

OiNK is best understood not as a standalone entity, which would limit the discussion to its efficacy as a 'music filesharing website', or ensnare any conceptualisation within the restrictive boundaries of current notions of technical functioning – whether that be of BitTorrent or of the website itself. Nor can its vitality be found within the 'self organisation' of its content, for its primary function was as an interface providing a connection between protocols and external storage systems - most of the content consisted of meta-data that enabled external linkage. Furthermore, OiNK could not 'self-condition' to the extent that it could preserve its existence, and BitTorrent swarms have an inherent transience. Neither the *form* (the network 'shape' of the lines linking peers together in the functioning of BitTorrent swarms or the OiNK community) nor the function of *matter* (how the content is ordered or organised within the limits of such forms) can provide seamless resolutions to the aims we outlined in the introduction; nor can they encapsulate the key role of OiNK's members in bringing together different internet protocols, software and hardware in the constellation of OiNK filesharing.

For that purpose, we shall formulate a conception of what I would like to call, after Gilbert Simondon, the *operation* of entities. That is, we shall conceptualise BitTorrent and OiNK by considering the series of energetic processes that gave rise to the matter and form of their particular functioning, rather than as seamless wholes of static forms and inert matter from which processes can be accounted for. This would allow us to reject the question: Who or what is doing the information circulation and distribution? In favour of: How does information circulation and distribution occur between humans, machines and the associated environment? We can theorise individuals, technology and groups as always-incomplete *operations* rather than *foundations* or *outcomes*. The most articulate expression of this 'reversal' of the question of information sharing in complex environments is found in Simondon's work on *individuation*. The *modus operandi* for Simondon's kaleidoscopic investigations of living and technical beings was "…*to understand the individual from the perspective of the process of individuation, rather than the process of individuation by means of the individual*."[85] For Simondon, to explain the emergence of a living being or a technological artefact by reference to fundamental

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[85] Gilbert Simondon (1992) "The Genesis of the Individual", in Crary and Kwinter (eds) *Op Cit*, p. 300. Original emphasis.

content of the matter and the definite contours of the form ignores the reality that both matter and form are *processes of individuation*, rather than constituted individuals.

The first phase of Simondon's oeuvre, in which he wrote his first major work *Du mode d'existence des objets techniques* (1958, here after abbrv. *Du Mode*) concentrates upon the relationship between humans, nature and technology in the 'mode of existence' of technical objects; and also upon the particular role that humans play in the coming into being of technical objects, or their status in the 'individuation' of technical objects. The second and final phase, in which he wrote two more major books, *L'individu et sa genèse physico-biologique (l'individuation à la lumière des notions de forme et d'information)* (1964, here after abbrv. *IGB*) and *L'individuation psychique et collective* (1989, here after abbrv. *IPC*), focuses on the 'process' or 'operation' of individuation itself – on how entities come into being, how they sustain or reproduce the status of being, and how they become part of the individuations of future entities.[86]

The separate status of the human and the technical

We have seen that we cannot accord BitTorrent swarms or OiNK the status of 'organism', nor can we claim that the technical emerges and develops along the same lines as the biological. We have also seen that we need to be able to account for how BitTorrent swarms come into being, sustain themselves and then dissipate, and also how OiNK came to be, how it sustained its complex relationships, and how these linkages were recapitulated into diverse forms of organisation. This being so, we need to theorise these movements whilst also acknowledging the separate, albeit interrelated status of technology and humanity in these environments. In his discussion of the status of living beings, Simondon comments: "*The living individual is a system of individuation, an individuating system and also a system that individuates itself.*"[87] In other words, the

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[86] *Du mode d'existence des objets techniques* (Méot, 1958; second ed. Paris: Aubier, 1989); *L'individu et sa genèse physico-biologique (l'individuation à la lumière des notions de forme et d'information)* (Paris: PUF, 1964; second ed. J. Millon, coll. Krisis, 1995); *L'individuation psychique et collective* (Paris: Aubier, 1989; thesis).

[87] Simondon (1992) *Op Cit,* p. 305. Original emphasis.

individual occupies three 'states of being' at the same time – it has been individuated (it has come into being); it individuates itself (it sustains itself) and it plays a part in further individuations.

 The technological system, usually referred to by Simondon as 'the technical object', also exists on these three levels, but the crucial difference between the human system and the machinic system is how they individuate, or 'sustain' themselves. Simondon's ontology allows us to say that the status of the technical object can be reproduced in two ways. Firstly, by adapting itself to its 'associated milieu' – a term Simondon uses to refer to the external geographical and technical environment that constitutes the energetic functioning of an entity. The process of adaption occurs through changes to the technical objects 'internal milieu'. For example, some modern desktop computers have water cooling systems that regulate the temperature of the hardware components, and processing units that consist of four sub-processors that are each used at differential capacities depending on the processing power the user requires at that time.[88] Secondly, the machine can be sustained through 'external' modifications enacted by the inventive and productive processes of living beings.

 Humans, on the other hand, have the capacity to constantly change from within. That is, their initial individuation (birth) does not exhaust the potential for further individuations. Simondon refers to these 'internal' individuations within living beings as 'individualization'. They can change their internal milieu not only to adapt to their external environment, but to recondition their internal structure of individuation. There is a constant transfer of potential energy into information going on within the human body, both on a purely physical level in the respiratory, reproductive, digestive and circulatory systems that maintain homeostasis, and also on a neurological, or psychic level, where the human constantly creates new internal structures of conscious and unconscious thought. Put simply, for Simondon, humans have an 'interiority' and technical systems, despite possessing the capacity to change, do not:

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[88] Ben Harwidge (2006) *Building Extreme PCs: The Complete Guide to Modding and Custom PCs* (Sebastopol, CA: O'Reilly Media), pp. 66-70.

The living being is also the being that results from an initial individuation and amplifies this individuation, not at all the machine to which it is assimilated functionally ay the model of cybernetic mechanism. In the living being, *individuation is brought about by the individual itself*, and is not simply a functioning object that results from an individuation previously accomplished, comparable to the product of a manufacturing process.[89]

Given this separate status of the human and the technical, what role does each play in the coming into being of new entities, or individuation? Once human systems and technical systems become 'individuals', how might they be drawn together in the creation and sharing of information in a digital environment? More directly, how did the individuation of BitTorrent and the individuation of internet users come together to individuate something like OiNK? We can begin to approach these issues by interrogating Simondon's scrutiny of the three 'phases' of being that all individuals pass through. We have already identified that for Simondon, all entities are individuated, they individuate themselves and they play a role in further individuations. Simondon further defines these phases as *the preindividual, the individual and the transindividual* that each relate to different concept; *nature, the individual and spirituality*:

The entity-subject can be conceived as a more or less perfectly coherent system of three successive phases of the entity: pre-individual, individual, transindividual, partially but not completely corresponding to what the concepts of nature, individual and spirituality designate.[90]

[89] Simondon (1992) *Op Cit*, p. 305.

[90] *IPC*, p. 205.

The preindividual: Metastability and techno-historical development

Simondon uses the term 'preindividual' to denote all the currently incompatible elements of nature, held in a delicate proximity to each other, that have yet to be actualized together through the process of individuation. He defines the preindividual state as *metastable.* A metastable system, as we briefly noted in the opening chapter, is one that is momentarily stable, but is always-already capable of changing if subjected to some form of perturbation, due to the fact that the elements in its make-up are not wholly compatible. Individuation then, is the perturbative operation that draws these previously incompatible potentials together in the form of an 'individual', and resolves a tension that existed within the pre-individual. Simondon refers to how communication is established between these hitherto disassociated domains as *disparation*. He defines the term in *IGB* as such:

> There is disparation when two twin sets that cannot be entirely superimposed, such as the left retinal image and the right retinal image, are grasped together as a system, allowing for the formation of a single set of a higher degree which integrates their elements thanks to a new dimension.[91]

Disparation occurs when two or more disparate dimensions of reality are brought into connection with each other through the operation of individuation. Critical to Simondon's thesis on disparation is his radical insistence upon the *metastability of being*, and the concomitant rejection of a substantial totality from which the becoming of all individuals originates. In *IGB* he sets his operational thesis against, on the one hand, any theoretical framework that purports to explain the emergence of new entities through prioritising constituted individuals or terms, particularly that of Aristotelian hylemorphism - the approach that explains the individual through the imposition of a substantial, transcendental form onto inert matter – and Platonic substantialism, which endows entities with a singular essence. On the other, against the immaterial notion of

[91] *IGB*, p. 203f. Also, Gilles Deleuze (2001) "Review of Gilbert Simondon's L'indivu et sa genese physico-biologique", in *Pli*, Vol. 12, pp.43-49.

information common to the use of cybernetics in 1950's industry, which sought to fabricate the formation of entities by measuring information in quantifiable 'bits', as a unitary 'signal', which then becomes the sum-total of individuation.[92]

The simple technical "in-formation" of clay being placed into mould to make a brick is used by Simondon both to expose the shortcomings of hylemorphism and to outline the operation of what Simondon calls *transduction*. We can bring this example into the 21st century by explicating the same process of disparation in the technical operation of a CD being placed into a CDRW drive on a computer to make a folder of mp3 music using encoding software.

Simondon concerns himself with the processes that have drawn the clay and the mould into close proximity to each other, and dismisses any notion that a common operation could occur due to the abstract matter and abstract form alone. The hylemorphic method postulates that the brick results from the coupling of the inherent plasticity of the clay and the shape of the mould, conceived of as the final brick form. On the contrary, the clay has been mined from a quarry, purified, dried, crushed and kneaded in order to achieve the correct consistency for successful brick making. The mould has been manufactured using particular materials and prepared with a coating and powdering that stops the wet clay from sticking to the walls of the mould.

Similarly, it would be difficult to hold that digital music files were constituted by a 'pure' interaction between the polycarbonate plastic, aluminium layer and lacquer film that make up the 'matter' of a CD, and the 780nm wavelength semi-conductor laser and optical lens that model the 'form' of the music files through reading the optical signal of the CD from the optical drive of a computer. The CD is manufactured to contain a 1.2mm disc of polycarbonate plastic and aluminium. The polycarbonate layer is indented with a series of tiny gaps that are encoded in a spiral pack which is moulded into the top of it, without which the CD cannot be read. Within the optical drive, the lens and the laser

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[92] Barthelemy notes in *Penser l'individuation: Simondon et la philosophie de la nature* (Paris: L'Harmattan, 2005, p. 37-48) that this tendency to move away from ontology itself indicates a homology with Bergson, insofar as a 'first philosophy' of origins is indicative of 'a return to becoming' (p. 41).

have to be integrated with both photodiodes, which detect the light reflection on the surface of the disc, and also two servomechanisms that allow the laser to detect the appropriate distance from the disc and make sure the laser follows the correct path.[93] Furthermore the mp3 encoding software will have been programmed on the basis of a particular psychoacoustic model, ensuring a particular level of audio quality and compression size in the process of encoding the music.[94]

To add a third layer to this, if I were to share those digital music files through BitTorrent and OiNK, the process would not occur through an unmediated, linear connection between the client software and the internet protocols actualised through the tracker website. We shall see that most OiNK members, at the behest of OiNK, set up their clients in a particular way to encrypt their filesharing activity so that it was more difficult to trace, and to ensure that their internet connection could handle multiple incoming and outgoing connections. Following OiNK's strict rules, I would have chosen an appropriate method of encoding the music, made sure it was correctly labelled, found a high resolution copy of the album artwork and included in the upload proof that the music had been ripped from CD to high quality standards.

These preparatory operations bring the disparate technical systems into a delicate proximity with each other and propose: "…an encounter between two realities of heterogeneous domains,"[95] each with a specific history and developmental trajectory. The operations of each domain prepare both the matter and the form in such a way that they both converge towards a common operation. Key to this preliminary convergence or 'disparation' is that it involves the communication of two or more types of order, one encompassing the unique community or environment that prepared the clay and the mould, and the other the internal workings of each:

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[93] Sorin G. Stan (1998) *The CD-ROM Drive: A brief System description* (New York: Springer) p.12-13

[94] See John Alderman (2001) *Sonic Boom: Napster, MP3 and the New Pioneers of Music* (London: 4th Estate) and Mark Coleman (2003) *Playback: from the Victrola to MP3, 100 years of music, machines, and money* (New York: Da Capo).

[95] *IGB*, p. 29.

If one divides the two ends of the technological chains, the parallelpiped [brick mould] and the clay in the quarry, one…institutes a mediation, by communication, between an inter-elementary order, macro-physical, larger than the individual, and an intra-elementary order, micro-physical, smaller than the individual[96]

It is the 'macro-physical, larger than the individual' meeting of orders that instantiates the initial communication. That is, the dynamic environment of external forces that led to the individuation of the clay in its prepared form, and the separate set of external forces that individuated the specific definition of the brick mould. Simondon uses the phrase 'two ends of the technological chains' to indicate that the individuation of the brick is partially a consequence of the culmination of two separate processes of techno-historical development, that have enabled both the mould and the clay to each express a very specific set of potentials, and which has commensurately drawn the clay and the mould towards each other in the instantiation of a technical operation that solves a specific problematic.

Thus, the individuation of huge amounts of high quality digital music through the relationship between BitTorrent client and the OiNK website is not only the coming together of the specific 'internal workings' of the technical operation between the client and the browser (the 'micro-physical' layer), but the process through which the 'two ends of the technological chains' came into disparate contact, one that led to the development of BitTorrent and its actualisation in the particular context of sharing music in conjunction with OiNK, and another that led to the development of OiNK and its actualisation in the context of sharing music through utilising BitTorrent in a particular way. Of course, in relation to BitTorrent and OiNK, it is not as straightforward to isolate these techno-historical chains of development compared to the simple dichotomy between the brick and the mould, or the CD and the CD burner. I would like to suggest that the technological chains become clear when one considers the debate that emerged in the aftermath of OiNK's shutdown; one that underlined that the website was both the culmination of years of user-led activity and dedication through which users have

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[96] *Ibid.*

developed and learned how to use software and hardware to manage the storage, reproduction and sharing of information outside of the parameters of large organisations and conglomerates, and also exposed the decline in the power of the global recording industry to herd large amounts of people into purchasing music from them, and its inability to provide an efficient, cost-effective and high quality method to access and share the full history of recorded music online. The subsequent chapters shall unpick and explicate these two interweaving historical threads.

The individual qua individual: Signification and 'theory driven' virtual method

Thus, we can posit that the individuations that occurred through the disparation between OiNK and BitTorrent can be accounted for by charting the gradual development of two or more domains of potential energy – on the one hand the decline of the interrelated techniques of production and consumption traditionally used by recording industry, and on the other the development of decentralised techniques of sharing, reproducing and storing information through communication and information technology - that pass through a series of internal and external structuring procedures in a shared tendency towards a particular operation of individuation. The particularity of this operation is the reason that Simondon states, as we pointed out earlier, that the individuation of the individual corresponds to the individual. Each individuation implies a system that is a freestanding individual entity, which is neither subsumed by where it came from, nor does it subsume the elements of its system that allow it to operate; it is *unique*: an *individual qua individual.* That is, each individual has a *metastable* relationship both to those elements that came together to create it, and to those elements that constitute its dynamic internal functioning. It is this process that Simondon refers to when he uses the term *transduction:*

> This term [transduction] denotes a process – be it physical, biological,
>
> mental or social – in which an activity gradually sets itself in motion,
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> propagating within a given domain, by basing this propagation on a

structuration carried out in different zones of the domain…The transductive operation is an individuation in progress.[97]

This being so, Simondon replaces the notions of form and matter with *information* and *potential energy* respectively. Individuation is the *immanent* development of two or more dimensions of potential energy that find collective expression in a unique formulation of information, which can be defined as a specific 'signification' rather than a generic signal: "…information, unlike form, is never a single term, but the signification that emerges from a disparation."[98] It follows that the 'micro-physical' energy transfer process of the encoding algorithm, CDRW drive and CD that occurred in the in-formation of the mp3 file was not the result of the actualisation of a unitary signal-source emanating from each of the three elements. Furthermore, the processes involved in the decline of the standardised methods of the recording industry did not all lead to online filesharing, nor did the upsurge in decentralised methods of information circulation have the unitary consequence of BitTorrent and OiNK. In both cases, each element that played a role in the in-formation process was able to express a specific 'signification' of its potential energy defined by the context of the event. Manuel Delanda's discussion of the *exterior relations* of *assemblages* in *A New Philosophy of Society* (2006)[99] can elucidate the context-dependence of information.

The idea of *relations of exteriority* is taken from Deleuze's theory of assemblages, which DeLanda constructs from key terms in *A Thousand Plateaus*.[100] In is worth noting that Deleuze's notion of 'exterior relations' is heavily influenced by his reading of Simondon. An 'assemblage' can be broadly defined as a context within which given entities can express certain properties, but the assemblage is defined by 'exterior' relations, rather than 'interior' relations. Key to understanding exterior relations is the distinction

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[97] *Ibid,* p. 30-31.

[98] *Ibid,* p.34.

[99] Manuel Delanda (2006) *A New Philosophy of Society: Assemblage Theory and Social Complexity* (London: Continuum), esp. 47-67.

[100] Gilles Deleuze and Felix Guattari (1987) *A thousand plateaus: capitalism and schizophrenia* (Minneapolis: University of Minnesota Press).

between *properties* and *capacities*. Properties are merely an expression of a particular set of an entity's capacities. That is, instead of an entity emitting one particular 'signal', it is capable of emitting a number of different signals depending on what properties of its potential energy have been actualized. These capacities are innumerable and unpredictable because they emerge from interactions *between* different domains of potential energy that are part of a myriad of different assemblages at any one time. The properties of an assemblage, then, are the sum total of how a set of heterogeneous domains have come to be expressed in a particular context. They are consequences of interactions between things-in-the-world, rather than fundamental causes of the functioning of a whole.

For example, if I were to choose to rip, encode and upload an album to the internet and share it using OiNK, then the album would become part of a wider OiNK and BitTorrent assemblage and a yet wider one involving the techno-historical chains that chart the decline of the productive techniques of the recording industry and the emergence of new processes of sharing information through decentralised, user-led collectives. Its interactions with my computer, the internet, CD burning software and my hands, and the re-coding of the information embedded within it into mp3 format would enable it to express yet a new set of properties – the origin of a torrent file; the origin of an act of piracy; an element of the BitTorrent hydra; the source of an archived digital file; an object from which data has been extracted from.

Positing seamless relations between properties of a given entity negates the ability, in DeLanda's view, to explore its immanent *capacity* to interact with other entities. Furthermore, it presumes that each component part of the entity can be reduced to its behaviour as part of that entity, when in reality the component is embedded in a series of *exterior* relations with other component parts that come to form different entities, or assemblages. This chimes in with the critique of virtual and digital methods introduced in the first chapter of this thesis – rather than an individual or a set of relations corresponding to a seamless set of components that together express a unitary 'sign' or a stable 'ground', the individual or set of relations *correspond to its own metastability*. In the context of the work under consideration here, the articulation of virtual methods - the interviews with OiNK members, the technical analysis of both OiNK and BitTorrent,

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and focus on the external elements of internet protocol, software and humans that they brought together – is considered *part* of the continual metastable rearticulation of the preindividual environment disparated through the dynamic architectural relationship between all the elements under consideration, rather than as a ground from which results can be collected. That is, the target of study is not considered to be the 'objects' of interviews, P2P protocols, websites, communication protocols and users, but the metastable state of the set of properties that come to delineate the internal and external relationship within and between these entities. As intimated in chapter 1, this method rejects the notion of an ontological ground, common to both virtual methods (online/offline ground) and digital methods ('natively digital' ground), seeking to locate modes of reflection, action and interaction in the operation of internal/external individuation within and between disparate entities.

 By the same token, the method used in **Section II** and **Section III** of this thesis to account for the history of productive techniques of the music industry, and also those amongst private groups of filesharers, is driven by this dynamic theory of operation. If we consider the notions of transduction and disparation in relation to the preindividual environment that catalysed the individuation of OiNK and BitTorrent, we can isolate the specific capacities that led the disparation between the two techno-historical chains we have identified. This sharpens the focus of the thesis beyond charting the full history of the decline of music industry in order to understand its role in the individuation of OiNK and BitTorrent, and enables it to concentrate on the specific vicissitudes of organisational development that were actualised in ways that, on the one hand, eventually undermined the consumer adherence to the techniques of production and consumption that the music industry standardised after WWII; and on the other, propagated the potentials of decentralisation, efficiency, quality and encryption in the widespread sharing of digital artefacts between individuals – the growth of hacking culture between the 1950s and 1970s, the emergence of the Warez or 'pirate' culture of sharing through Bulletin Board Systems (BBS) in the 80s, and the movement of the Warez scene onto the internet in the 90s.[101]

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[101] See chapter seven of this thesis: p. 156.

Approaching the disparation between BitTorrent and OiNK as a specific 'signification' also allows us to explore both the particular constellation of external elements that they brought together, and conversely the vital aspects of their functioning that depended on different actualisations of their properties as part of other intertwined and separate assemblages. For example, the processes that occurred when filesharing was taking place between OiNK and BitTorrent involved complex, interwoven processes of disparation and transduction that actualised certain capacities of computer hardware, software, internet protocols and human agency. On the other hand, they were both also part of a much wider filesharing infrastructure, stretching from millions of people downloading from public websites and P2P protocols to just a few users sharing files in the most private and exclusive plateaus of the internet. The BitTorrent protocol was used by many other different tracker websites, instantiating numerous manifestations of its properties. A thesis with a more general aim to chart an 'overview' of all BitTorrent filesharing could focus on BitTorrent's growing deployment in the commercial and business sectors.[102] That is, the technical system that links OiNK and BitTorrent has a genesis all of its own that, although guided by the initial perturbation that caused its individuation, is not constrained by it and which will develop along unknowable and unforeseeable pathways as perturbative process of individuation causes it to change its relationship to both its preindividual environment and its internal functioning.

Moreover, when an entity is individuated it connotes an entirely new constellation of elements derived from different dimensions of being. This new individual is at once a new dimension of being that, although actualised in the 'real world', also acts as a potential energy source for new individuations, thereby altering the potential energy of the preindividual by adding another dimension of being to its already metastable admixture. The individuation of a new entity, whilst resolving one problematic,

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[102] An interesting field of study in this respect would be investigations into the deployment of BitTorrent software in the server management systems of some of the big social networking sites, such as Facebook and Twitter. See Ernesto (2010b) "Facebook Uses BitTorrent, and They Love it", *TorrentFreak*, 25th June, http://torrentfreak.com/facebook-uses-bittorrent-and-they-love-it-100625/ ; Ernesto (2010c) "BitTorrent Makes Twitter's Server Deployment 75x Faster", *TorrentFreak*, 16th July, http://torrentfreak.com/bittorrent-makes-twitters-server-deployment-75-faster-100716/

immediately creates a new problematic by causing the very existence of 'another individual'. As Alberto Toscano puts it, writing on Simondon: "Being is thus said to be *more-than-one* to the extent that all of its potentials cannot be actualized at once."[103] Just as the preindividual solves its conundrum of over-determination, it becomes over-determined once again by the very conditions of its own functioning. This is what Simondon is referring to when he states that individuation is: "…a relative resolution manifested in a system that contains latent potentials and harbours a *certain incompatibility with itself*, an incompatibility due at once to forces in tension as well as to the impossibility of interaction between terms of extremely disparate dimensions."[104]

When considering this, we can see that the preindividual can never resolve itself as a totality. The very existence of the technical system of filesharing through OiNK within the BitTorrent architecture, and the culture that it is immersed in, changes the genesis of both the techniques of production and consumption actualised by the recording industry and development of decentralised techniques of information sharing from whence it came. The changes in these preindividual elements then create a further perturbation that again alters the internal functioning of the OiNK/BitTorrent technical system. This presents us with a lens through which to view the *dynamic* individuative relationship between the shifting registers of production and consumption in the mainstream recording industry, and how changes within the different components of production – manufacturing, distribution, retail, broadcasting, advertising – concentrated and reified the experiences of the music consumers subject to it, due to the fact that the 'incompatibility' inherent within the system's functioning was not controlled or managed by those consumers. Conversely, we can contrast this with how the systemic excess of incompatibility is managed within private filesharing groups where the members preside over the management and deployment of all the components in the system.

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[103] Alberto Toscano (2006) *The Theatre of Production: Philosophy and Individuation Between Kant and Deleuze* (Basingstoke: Palgrave), p. 138.

[104] Simondon (1992) *Op Cit*, p. 300.

The OiNK community as a 'transindividual collective'

We have looked at how 'human systems' and 'technical systems' can individuate and be individuated, and also at how the operation of technical systems can work in the individuation of new entities, but we have yet to account for groups or *collectives* of humans coming together to individuate new entities, how these collectives are individuated, or how technical systems interact with these collectives. To put it another way, at one level of magnitude we have individual users presiding over a relational catalysis between the OiNK tracker website and the BitTorrent client that individuates files of digital music, but at a higher level of magnitude we have connections and interactions between thousands of internet, hardware and software constellations that come together under the rubric of a collective, one that can be broadly defined by the membership of the OiNK community.

Simondon develops the notion of the 'transindividual' to account for the individuation of collectives. The transindividual phase refers to how the psychic individual expresses individuation socially, or 'collective individuation'. Moreover, when a living being is individuated through the process of disparation, it inherits the seed of all the preindividual potential from whence it came. Thus, the individual is constantly 'falling out of step' with itself because it cannot hope to individuate fully the sum-total of potential it contains. The individual is a supersaturated system that continually becomes overdetermined through the expression of its excess potential. The burden of this 'excess' is not managed by the dimension of the individual *qua* individual, but by the *transindividual* dimension of the living being. This is why Simondon equates the transindividual with the 'spiritual' - the psychic problematic of the overdetermined individual is resolved through its connection to the transindividual status of other individuals, and the spiritual connection they share due to the inheritance of a preindividual reality. There is a *transcendenc*e from individual to collective through the transindividual dimension:

> It is not as a living being that man brings with him what is spiritually
> individuated, but as a being that contains in it the preindividual and
> the prevital…The individual has not individuated the preceding being

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without remainder; it has not been totally resolved in the individual and the milieu; the individual has conserved the preindividual within itself, and all individual ensembles have thus a sort of non-structured ground from which a new individuation can be produced. The psycho-social is the transindividual: it is this reality that the individuated being transports with itself, this load of being for future individuations.[105]

If this transindividual dimension is manifested collectively, how are these 'transindividual collectives' of human beings brought together? How are 'disparate' human beings drawn together through individuation? Simondon deals with this expressly in *Du Mode* and his answer lies squarely in technology, or the 'technical object':

> The technical object … becomes the support and the symbol of this relation we wish to name *transindividual*.[106]

What does Simondon mean by 'technical object' here? As de Vries has pointed out, by 'technical object' Simondon does not mean to refer to a technical artefact, but to the result of a series of ongoing processes, the current result of which takes a particular technical form. Thus, when Simondon is referring to the engine in a car as a technical object, he is referring to a series of engine designs that have a particular technical sequence, which have led to the current engine design.[107] The point here is that for Simondon, the *genesis* of a technical object is what provides the individual with the means to express the transindividual dimension of their being. The technical object is not a symbol of the brain, the body, or the homeostatic functioning of the human organism, and the relationship between the human and the technical object is not the mirror image of low-level operations found in the natural world. Technology *mediates* nature and humanity through the harnessing of disparation and transduction in

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[105] *IPC*, p. 193.

[106] *Du Mode*, p. 247.

[107] Mark J. De Vries (2008) "Gilbert Simondon and the Duel Nature of Technical Artefacts", in *Techne*, Vol. 12, No. 1, http://scholar.lib.vt.edu/ejournals/SPT/v12n1/devries.html#28back

transindividual collectives. It is the transindividual link between the preindividual and the individual. Specifically, it is through craftsmanship and engineering that humanity and nature are brought together in the form of the individuation of technical objects: "…reality is the world of technical objects, the mediators between man and nature."[108] Thus, *transindividual collectives* are groups of individuals that interact with each other through shared use of technical objects, and in doing so express their shared inheritance of a preindividual reality that is hard-coded into the technical object, which itself is a historical testament to how human endeavour continually reconditions the preindividual.

Rendering the OiNK community in this way enables us to view it as serving a *mediating* function, operating as a conduit for the collective expression of the elements of the preindividual that drew it together. Moreover, the transindividual dimension enables us to view it not just as a manifestation of a particular dynamic form of shared technical functioning, but as the 'supersaturation' of an excess collective interest created by the disparation between new forms of decentralised information sharing and growing frustration with standardised and immutable structures of production and circulation in the global recording industry. However, and as we shall see, the growing frustration with the recording industry and growth of interest in new forms of interaction and information sharing that disparated to individuate OiNK was not simply indicative of a 'mediation between man and nature', as Simondon would have it. That is, the 'excess' collective interest that individuated the OiNK community and its technical system was not necessarily a disparation between an *unmediated* or 'spiritual' collective interest/frustration and the development of a technical system that can find some sort of 'ground' or resolution in 'natural' elements.

If we follow Simondon to the letter in *Du Mode* we shall see that what Simondon would class a 'pure' spiritual transindividual connection is dependent on a specific constellation of individual 'invention' in the mediation of 'nature' and 'individual' – one which does not necessarily hold when we consider it against the backdrop of the two chains of techno-historical development we have identified. The relational catalysis that

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[108] *Du Mode*, p. 1.

instantiated the disparation between humans and technicity in the individuation of OiNK, both as a technical system and a transindividual collective, was not primarily a relationship between the decline in power of the recording industry to sell its 'raw materials' – Records, tapes, CD's – and a concomitant ascent in power of other raw materials to which music consumers developed a 'spiritual' relationship – computers, software, mp3. Rather, the grounds for a durable and thoroughgoing investigation into the individuation of OiNK and BitTorrent lie within, on the one hand, the relationship between humans and technicity delineated by the monolithic and highly specific *organisational infrastructure* of the global recording industry, based on standardised processes of manufacturing, distribution, retail and broadcasting, instantiated after WWII and which dominated recorded music circulation for over 50 years; and on the other, the development of a more dynamic relationship between humans, technology and interaction in decentralised modes of sharing information through computers that were cultivated by the early computer hacking and software piracy scenes. As we shall see through the development of this thesis, the reasons why people were attracted to OiNK and the associated BitTorrent technology are bound up in the tension created by the meeting between these two strands of development. It is the former chain of techno-historical development, the rise and fall of the standardised modes of production, distribution and consumption in recording industry, to which we shall turn firstly.

Section 2: Monostable individuation and the global recording industry after WWII

Chapter 3 – Organising recorded music consumption in 1959 and 1999: Mnemotechnics.

The previous chapter outlined a 'theory-driven method' derived from the work of Gilbert Simondon and Manuel DeLanda, which prioritises the notions of disparation, transduction and signification when charting the 'techno-historical' development of a technical object, and the genesis of its dynamic properties as its components are reconditioned over time. It identified two threads of techno-history, the productive techniques of the music industry and the productive techniques of 'user-led' private filesharing groups, as pertinent to the individuation of OiNK as both a technical object and a transindividual collective. This section (chapters 3, 4 and 5) and the following section (chapters 7 and 8) of the thesis deal with the two techno historical strands directly, with this section focusing on the music industry.

We focus here on identifying the particular developmental properties of the music industry's conglomerate system of manufacturing, distribution, retail, broadcasting and promotion that expressed a particular signification which isolated, reified and concentrated the experience of engaging with 'consuming' recorded music. The technical object of music industry production underwent a profound reconditioning after WWII, which enabled it to hold onto a more or less stabilised system of dominance for the second half of the 20th Century. It is to the in-formation of this system to which we now turn.

Science, technology and recorded music after WWII

The post-WWII boom in popular music is often explained and perhaps most easily understood with recourse to an emergent youth culture; to an explanation that revolves around higher expendable incomes, the influence of youth culture on popular culture, the birth of rock 'n roll, and the identification of 'teenagers' as an economic group and

advertising demographic, and the expansion of post-compulsory education.[109] In terms of the characterisation of the relationship between popular music culture and society, there are three broad tendencies. The first two tend to explain the relationship in terms of music or 'style' subcultures and are closely linked, with one leaning toward a sharper focus on music and a vernacular of rebellion, self-expression, liberation and counterculture within music 'scenes';[110] the other toward one that emphasises general behaviour within 'subcultures', 'urban tribes' or 'neo-tribes' and the conflict between the ritualistic disavowal of that which is perceived to be the established order of 'mass culture' and the appropriation of subculture into that established order.[111] The third and least fashionable tendency concentrates on conformity, repetition, repression and mass culture or on mass culture as alienation brought on by mass deception.[112] Pop music, then, is characterised as either a form of resistance through which young people can create nascent subcultures and experience alternative modes of expression, values, thoughts and action; as a site through which marginalisation, appropriation and resistance is played out in the hegemonic order or in the mass media; or as a punitive arm of a mass culture machine that contributes to the general expurgation of the possibility of creativity and expression from shared culture.

 Without wishing to dismiss any of these accounts out of hand, I shall contend here that a vital explanatory layer can be added if we consider what existed *between* mass culture

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[109] See Abrams (1959) *Op Cit*; Osgerby (1998) *Op Cit*; Frith (1978) *Op Cit*; Frith (1984) *Op Cit*; Gillett (1983) *Op Cit*; Osgerby (2004) *Op Cit*; Valentine (1998) *Op Cit*.

[110] Chang (2007) *Op Cit*; Reynolds (1999) *Op Cit*; Reynolds (2005) *Op Cit*; Reynolds (2008) *Op Cit*; Toop (2000) *Op Cit*; Toop (2001) *Op Cit*.

[111] Andy Bennett (1999) "Subcultures or Neo-Tribes? Rethinking the Relationship Between Youth, Style and Musical Taste", *Sociology*, Vol. 33, No. 3, pp. 599-617; Andy Bennett (2000) *Popular Music and Youth Culture: Music, Identity and Place* (London: Macmillan); Stanley Cohen (1964) *Folk Devils and Moral Panics* (London: Paladin); Stuart Hall and Tony Jefferson (1976) *Resistance Through Rituals: Youth Subcultures in Post-War Britain* (London: Hutchinson); Dick Hebdige (1979) *Subculture: The Meaning of Style* (London: Methuen); Michel Maffesoli (1996) *The Time of the Tribes: The Decline of Individualism in the Mass Society* (London: Sage).

[112] Theodore Adorno (1941) "On Popular Music", in Theodore Adorno (1991) *The Culture Industry* (London: Routledge); Theodore Adorno and Max Horkheimer (1972) *Dialectic of Enlightenment* (New York: Continuum).

and subculture, in terms of the recorded music boom. That is, one can easily identify the processes, plateaus and environments that subcultures claimed as *their own* in the second half of the 20th Century– the dancehall, the rave, the pirate radio station, the bedroom, the fashion, the boombox, the dubplate, the scratch. Conversely, there was a large scale architecture inhabited only by the machinations of Capital – the balance sheet, the manufacturing plant, the production house, the distribution system. What existed in between – in the areas where both mass culture and subculture could be felt - were the records, the tapes, the CD's; the record players, tape players and CD players; the record shops and retail outlets; the radio and the television. The popular music boom was not a generic mass cultural deception but a very specific organisational infrastructure of recorded music circulation that encouraged conformity but also enabled forms of collective, subcultural action through its operation. Not the free play of subcultural modes of reflection and action, but the desire for such freedom filtered through the strictures of a particular constellation of rational organisation that was carefully managed by the recording industry.

I would like to suggest that at the very kernel of the post-war growth of popular music culture was not a cloying 'mass culture' that reached its invisible hand into everything unreservedly, nor was it an emancipatory 'youth culture' desire amongst consumers that came to constitute 'pop culture' and which worked in relation to an overarching hegemony or in response to an homogenised mass media, but a new relationship between science and technology, instantiated by WWII, that changed the face of industrial production and had a specific impact on the relationship between producers and consumers of recorded music.

As Carolyn R. Miller has argued, the emergence of the USA as a global industrial superpower was due in no small part to the broader scientific base created by Allied activity during the war and the pronounced commitment to focus scientific work into military-industrial endeavours. This led to the standardisation of the relationship between science and technology under the rubric of a central organisational

infrastructure, the Office of Scientific Research and Development (OSRD),[113] which, amongst other endeavours such as the Manhattan Project, oriented the potential of information technology toward supercomputers such as the ENIAC, designed to calculate trajectory tables for the U.S. Army;[114] and the Whirlwind, which originally commissioned by the U.S. Navy to train its pilots.[115] The first ever Turing-complete supercomputer, the Z3, was developed under the same fog of war just a few years earlier, by German scientist Konrad Zuse in order to develop ground-to-air missiles for the Nazi war effort.[116] Daniel Bell has argued that the intensification of the relationship between science and technology brought about by their linkage under the rubric of military and industrial production was indicative of a new post-war 'future-orientation' which focused on the '…technological and scientific possibility of controlling' change through developing standardised methods of production, based on the 'hallmarks' of the age: rationality and planning.[117]

Indeed, the intense period of war-led technological development on both the Allied and Nazi sides came together to revolutionise both the materials and technologies used in record and record player production, in tape recording and in radio broadcasting, which followed a similar pattern of orientating scientific and technological innovation through the organisational parameters of a meticulously rationalised infrastructure; in this case a tightly knit conglomerate of record companies and broadcasters looking to capitalize on recorded music through imposing standardised techniques of manufacturing, circulation, retail and broadcasting. This infrastructure ushered forth the beginnings of the standardisation and commodification of organised sound recordings through a series

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[113] Carolyn R. Miller (1998) "Learning from history: World War II and the culture of high technology", *Journal of Business and Technical Communication*, Vol. 12, No. 3, pp. 288-315.

[114] June Jamrich Parsons and Dan Oja (1997) *New Perspectives: Computer Concepts* (Boston, MA: Thomson Course Technology), p. 490.

[115] Wes L. Stone (2005) "The History of Robotics", in Thomas R. Kurfess (ed) *Robotics and Automation Handbook* (Boca Raton: CRC Press), pp. 1-12.

[116] Konrad Zuse (1993) *My Computer – My Life* (Berlin: Springer-Verlag), pp. 61-62.

[117] Daniel Bell (1973) *The Coming of the Post-Industrial Society* (New York: Basis Books), pp. 346-348.

of major developments – magnetic tape recording, the standardised microgroove LP record and stereophonic sound. The regimented technological structures of Nazism that had enabled the circulation of propaganda and the war effort were captured, appropriated, reconfigured and combined with Allied technological developments into a unitary sonic medium that was recorded onto magnetic tape, sold through the 33½ rpm 12 inch LP and the 45 rpm 7 inch single.

Magnetic tape recording was the quickest to take hold. Radio Luxemburg was captured by the Allied forces in 1944 and with it the German Magnetophon tape recorder and its operating technique of combining the German invention of iron-oxide coated plastic tape with the American invention of ultrasonic alternating-current bias. This became the basis of research and allowed small companies that sprang out of the war, such as Magnecord (comprising five engineers from the US Armour Research Corporation) and Ampex (started by a Russian military engineer) to develop tape recorders based on 3M magnetic tape. Within three years, magnetic tape recording had been accepted as the standard in mastering by the American broadcasters and record companies, and became the standard in Britain in 1950. It made the LP record commercially viable. "Reel-to-reel" mastering allowed long, uninterrupted recording and sound could be captured without the need for breaks. Tape could be operated by a relative novice and could be stopped and started by the touch of a button. Crucially it could be edited – numerous recordings could take place and the preferred parts of the material could be spliced together, giving complete control over output to the producers, record companies and broadcasters.[118]

The capacity for longer recording required records that were able to hold a much greater degree of information. The main component of the old 78rpm records was shellac, a chemical compound secreted onto trees by the female lac bug in the forests of India and Thailand. The supply line was severed during WWII, which gave impetus to the

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[118] See Timothy Day (2000) *A Century of Recorded Music: Listening Musical History* (New Haven: Yale University Press) pp.19-21. Also Peter Copeland (1991) *Sound Recordings* (London: The British Library Board) pp. 26-30, and Andre Millard (1995) *America on Record: A History of Recorded Sound* (Cambridge: Cambridge University Press) pp. 199-201,

recording companies to find a replacement using vinyl resins, first introduced by the Union Carbide Company in the 1930's. The copolymer of vinyl acetate and vinyl chloride used in early vinyl records was harder and finer than shellac, meaning that more grooves could be pressed into them – 224 to 260 grooves per inch compared to 80 to 100 grooves for shellac. These grooves were around three times smaller than shellac grooves, hence the term 'microgroove'. Also the tracking force of the pickups on microgroove players meant that the needle exerted far less pressure (10 grams to shellac's 100 to 200 grams) onto the record. This allowed the records to last far longer and enabled people to build up large, lasting collections. Crucially, the new pickup technology and the lower tracking force eliminated most of the background noise synonymous with shellac.[119]

 The challenge faced by a record industry intent on standardising the listening experience was to find a way of making a stereo disc. The intention was to mass produce and sell duplicates of recordings – this would only be possible if the recording curve corresponded to the functionality of the record player and of vinyl, and if all studio master copies were produced using the same base level frequency and volume settings. What became known as stereophonic, or stereo sound was achieved due to a flood of amateur inventors and new start up companies, many funded by GI loans, who investigated new possibilities for loud speakers and amplification.[120] The Recording Industry Association of America (RIAA) established a standard for microgroove records after 1945, however until the mid 50's, the record companies used their own unique recording curves, and often used different ones for different styles of music. Each was as unwilling as the other to relinquish their unique standing in the market. They also took a long time to agree on a standard for record speed, but in 1954, the 33½ and 45 rpm microgroove records came to dominate, as record companies started to send 45 rpm single to radio stations for airplay. Studio recording with magnetic tape, the RIAA's standardised recording curve and stereophonic sound all came together in 1957 in the form of the Westrex stereo disc system, which was accepted as the industry standard.

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[119] See Day, *Ibid*, pp. 19 and Millard, *Ibid*, pp. 203-204.

[120] See Millard, *Ibid*, pp. 199-201 and Copeland (1991) *Op Cit*, pp.26-30.

The RIAA recording curve was accepted by both recording companies and record player and amplifier manufacturers, and the 45/45 system of stereo sound, which divided binaural sound between two identical cuts in the record was adopted and had the advantage of not requiring an adjustment in frequency to balance the sound.[121]

From this point onwards, all record players distributed stereo sound in the same way. They all emitted the same mid range frequencies, largely at the expense of bass, regardless of the record being played. Although 78 rpm discs were produced until the 60's, the 33½ and 45 rpm microgroove records were the industry standard and could be played on any new machine. The circulation of stereo sound around a room, the circulation of frequency levels oscillating around the mid-range, the circulating loops of magnetic tape and the spinning circle of the disc itself had been subsumed by the meta-circulation of an imposing infrastructure of production. The standardisation of recording and record players had the desired effect. Between 1951 and 1954 income from record sales in America stabilized, rising slightly from $191,000,000 to $195,000,000. Between 1954 and 1959, the era of the inculcation of the microgroove record and the standardisation of recording and playback, the figure rose from $191,000,000 to $514,000,000.[122]

Simondon, 'Du Mode' and standardised systems of production

Looking at the post-war recorded music boom in this way seems to work against the notion of individuation we developed in the previous chapter. Instead of the relationship between the technical system and its preindividual environment being metastable – capable of change at the instance of perturbation – we are presented with the movement of a technical system that has been expressly designed to reproduce itself without changing, in order to achieve a prefabricated commercial goal. Simondon's approach in *Du Mode D'existence Des Objets Techniques* (hereafter abv. *Du Mode*) can be seen as an attempt to account for the individuation of not only fully metastable

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[121] See Day (2000) *Op Cit*, pp.19-21. Also Copeland , *Ibid*, pp. 26-30, and Millard, *Ibid*, pp. 199-210,

[122] Russell Sanjek and David Sanjek (1991) *American Popular Music Business in the 20th Century* (Oxford: Oxford University Press), p. 136.

systems, but also those that are shorn of the ability to continually 'fall out of step' with themselves; where the genetic passage of individuation has become procedural and predictable, rather than catalytic and disparate. Although the book contains nothing about the recording industry, it was written in 1958, in the middle of the recording industry boom, and amidst the backdrop of the new standardised techniques of production heralded by the relationship between science, technology and industry that we have outlined.

Simondon uses the social organisation of work, particularly the interaction between humans and technical objects in industrial work, as the kernel of his normative critique of the reification of individuation as production and reproduction. As we have already observed, Simondon conceives of individuation as an operation. Thus Muriel Combes strikes a chord when she conceptualizes his objection to this reification as a "forgetting of operation".[123] Under this lapse of memory, technical objects are nothing more than dead assemblages of physical material. Commensurately, it is not the technical object that catalyses this alienation of humans, it is the factoring out of the technical object from the cultural world of values and meanings that renders the separation of humanity from that which is created by interaction between humanity and nature: the technical object. That is, for Simondon, standardised systems of production and reproduction, such as that of the emerging post WWII recording industry, reproduce themselves by rendering both the human *and* the technical object as 'products'.

The overarching impact of this new organisation of production is to alienate humans from their transindividual impulse and machines from a role in mediating the transindividual process by imposing the rigid form of one onto the inert matter of the other. One is always held in the thrall of the other, therefore there is a separation of intellectual labour from physical labour within the individual, as Simondon puts it in *IGB*, when "…the one who thinks is not the one who works, in his thinking there is in effect only one form for all the objects in the same collection: form is generic not logically or

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[123] Murial Combes (1999) *Simondon: Individu et collectivite* (Paris, PUF). See also Alberto Toscano (2007) "Technical Culture and the Limits of Interaction: A Note on Simondon", in *Interact or Die!* (Rotterdam: V2 Publishing), p. 200.

physically but socially."[124] The tragedy of work under capitalism then, is the removal of a middle ground upon which technology and humans can interact, and the retreat from the tactile centre to the extremities of mastery and slavery is led by a fundamental misappropriation of automation within culture; which is its 'hidden logical flaw'. This refers to the tendency to assume that technical perfection in a machine is realised by increasing the level of automism within a system. For Simondon, the opposite is true. The inventive potential of a machine is delineated by its "…sensitivity to outside information"[125] – its ability to recondition itself when entered into new interrelationships with nature, other machines and humankind.

Simondon nevertheless held that technology could be orientated towards this 'sensitivity' through focussing on the indeterminacy and creativity of the machine rather than automation and reproduction. He did not consider the cycle of standardised manufacturing and reproduction to be an inescapable end, and by the same token he did not consider the role of humans in individuation as mere 'operators' of technical objects in all situations. Simondon positioned the problematic of modern technology as one whereby the humanisation of technology needed to be untangled in order to grasp the fundamental relationship between technology and humans:

> Ideas about slavery and freedom are too closely bound to the old
> idea of man as technical object to be able to relate to the real
> problem of the relationship between man and machine. The technical
> object must be known in itself if the relationship between man and
> machine is to be steady and valid.[126]

For Simondon, the potential for transductive interaction between human and technical object resided in the indeterminacy of 20th century technology. Emergent information and communication technologies had now put previously isolated technical individuals in touch with each other in what Simondon called 'technical ensembles', by which he

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[124] *IGB*, p. 57.

[125] *Du Mode*, p. 3-4.

[126] *Du Mode*, p. 98.

means a series of technical individuals that have separate systems of functioning, but are put into a delicate proximity with each other in a larger setting such as a laboratory or a factory. Far from this development reducing humans to passive operators in every situation, Simondon argues that, under certain conditions, humans were both an element in and also director of the ensemble:

> "The machine with superior technicality is the open machine, and the ensemble of open machines assumes man as the permanent organiser and as a living interpreter of the interrelationships of machines."[127]

The conditions that Simondon set out by which humans could become 'permanent organisers' and 'living interpreters' of machines are dependent on a very specific genetic development in the technical object. For Simondon, this status could only be reached by through the invention of a new relationship between the geographical and technical environments of a technical object. We can discern an almost sanctimonious demarcation in Simondon between the purity of a technical object that brings about what he sees as a transindividual mediation of nature and humanity through invention, and technical objects that merely the result of an adaption or innovation. He refers to the former as 'self-conditioning' technical objects and the latter as 'hypertelic' technical objects. 'Self-conditioning' occurs when both the associated milieu and the internal milieu of a technical object are reconditioned by a human invention. He gives a number of examples: the use of silicon sheet metal in traction engines, which both lessens its weight and volume and also increases its efficiency; the guimbal turbine which utilises the 'natural' materials that constitute its associated milieu (oil and water) to cool, lubricate and insulate the elements of its internal milieu, the generator, gears, axle and bearings, whilst these 'internal' technical elements provide the conditions of functioning for the oil and water. For Simondon, this 'relational adaption' between the geographical and the technical instantiated by the human inventor is the panacea for the production line-obsessed modernity he is reacting against: "Indeed, between man and nature there

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[127] *Ibid*, p. 4.

develops a techno-geographic milieu whose existence is only made possible by man's intelligence."[128]

Hypertelia refers to how already constituted technical objects individualize within the limitations of the geographical and technical environment. It is a process of 'one-sided' adaption – either the geographical environment is adapted to an unchanging technical environment, or vice versa. At best hypertelic development is a technical object that is so specific it cannot be individuated very far beyond its environment and its current set of internal functions. For example, some planes are built to fly at a high altitude and cannot function well at low altitudes; computerised drip irrigation systems are inefficient in areas of high water pressure, whilst sub irrigation is not suited to yielding crops in areas with low water tables. At worst, it is the frivolous development of trinkets and add-ons that occur for aesthetic rather than technical purposes, such as power steering in a car, which: "…casts nuances of ridicule on other cars – those that have a starting handle – which are consequently outmoded and made obsolete by an advertising gimmick."[129]

As Alberto Toscano shows in his note on *Du Mode*, Simondon is really trying to make an argument for an ethics of invention upon which a purified notion of transindividual collectives could be built. The 'true invention' of a technical object is equated with a deep spiritual understanding and reconditioning of nature through the medium of technicity, and the orienting of it towards the desires of humanity is sacrilege. Toscano comments: "The ethical use of technical objects, which, albeit indirectly, is also an ethics of our transindividual interaction with other humans, thus depends on a respect for the concrete and engendered individuality of the object, and on a kind of asceticism vis-à-vis the superficial desires of men."[130] Toscano argues that the underlying aim of Simondon's work on technics is to attempt to forge a new 'technical culture'. Indeed for Simondon, humans, when considered in relation to hypertelic technical objects can only be 'operators' of the technical system. Their intentionality and creative impulse is

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[128] *Ibid,* p. 60.

[129] *Ibid,* p. 21.

[130] Toscano (2007) *Op Cit*, p. 204.

marginalised and they become workers in the production line. When operating in relation to self conditioning technical objects, humans play the role of 'conductors':

> Far from being the supervisor of a squad of slaves, man is the permanent organizer of a society of technical objects which need him as much as musicians in an orchestra need a conductor… in fact, it is through him that the members of the orchestra affect each other's interpretation…he is the real, inspiring form of the group's existence as group, he is the central focus of interpretation for all of them in relation to each other.[131]

To what extent can individuals act as the 'conductors' of a technical system? What would be the contours of this 'technical culture'? There is a section towards the end of *Du Mode* where Simondon outlines how he envisions the enactment of this culture. His first claim is centred around the need to invent machines that can be constructed, regulated and maintained chiefly by the humans that both invent and operate them, which:

> …involves not only the utilisation of the machine, but also a certain coefficient of attention to technical functioning, maintenance, regulation, betterment of the machine, which prolongs the activity of invention and construction.[132]

His second claim involves somehow finding a mode of production whereby the user of the machine has complete ownership of it and of how it is maintained:

> It would be necessary to discover a social and economic mode in which the user of the technical object is not only the owner of this machine, but also the man who chooses and maintains it.[133]

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[131] *Du Mode*, P.4.

[132] *Ibid,* p. 250.

[133] *Ibid*, p. 252.

Although Simondon identified new communication and information technologies as having the potential to provide the 'indeterminacy' needed to circumvent repetitive processes of capital, the normative process he sets out to achieve this goal was, ironically, based on the technical object as a thermodynamic machine – the engine; the turbine; the anode and the cathode. It is difficult to see how the majority of humans could invent, maintain and own the technical objects that they come into contact with. Indeed, Simondon's vision for a technical culture would look more like a hierarchy of inventors, presiding over a horde of lesser individuals who are unable to achieve 'relational adaption' between the geographic environment and technical functioning. However, if one removes the semantics of 'invention' and 'inventors' from his work and develops upon his discussion of how a deeper interaction between technical objects and humans is possible through a *"social and economic mode in which the user of the technical object is not only the owner of this machine, but also the man who chooses and maintains it."*, we can observe that the technical evolution that has occurred since the Cold War period has provided a new context for this aspect of his work on technics.

Mnemotechnics and material culture

Bernard Stiegler's critique of Simondon and his work on 'mnemotechnics' sheds light on how Simondon's thesis can be adjusted to incorporate the notions of information and communication technology into the preindividual. Particularly pertinent to our analysis of the BitTorrent-OiNK architecture is Stiegler's recognition of both the spatial and temporal constraints placed on individuals and how they relate to media, and also the potential of digital technology to give the individual a measure of control over the cultural memory implicit within contemporary mass media. In this respect, Stiegler's work can be read as a 21st century re-appraisal of Simondon, in light of the shift from mechanical to digital reproduction. Stiegler utilises the structure of Simondon's work on the disparation and transduction of individuation as well as the concepts of psychic and collective individuation, but argues that technical objects are generative elements in the pre-individual realm, rather than merely the mediators of nature and the human.

The point here is that Simondon does see technical objects as part of the preindividual milieu in a certain sense, but only when broken down to their constituent parts as

elements of nature. That is, when a new individuation occurs in a technical object, it is a reconfiguration of the natural elements that make up the entities involved in the disparation, rather than the entities themselves, that set the process of transduction into its phased development. As Stiegler notes, nowhere does Simondon mention *technical individuation* in *Du Mode* because he only accords technicity the role of transindividual mediator between the preindividual and the individual. Moreover, 'mediations', which is what technical objects are for Simondon, can never constitute the pre-individual ground from which new individuations emerge.

What Simondon misses, argues Stiegler, is that technicity is not only a matter of mediating an unmediated nature, but also of *memory worlds*. That is, technicity is in no small part involved in the preservation of memory in writing, painting, sculpture and more recently phonography, cinematography, photography and the internet. All of the aforementioned practices are also *techniques*. Stiegler calls this type of technicity *mnemotechnics*. Mnemotechnics are the result of a process that he calls *grammatisation*, which is: "…the process whereby the flux and flow networking our existences become discreet elements: writing is, thus…the breaking into discreet elements of the flux of speech."[134] Moreover, the mnemotechnical is nature, or a series of elements within nature *recoded* into a language that cannot simply be broken down and re-solved into an 'unmediated' natural state of flux or flow. Words, recorded images, recorded sounds and algorithms become hard-coded elements and constitute part of the preindividual realm. Thus, the transindividual realm of technicity can still be seen to mediate the preindividual, but the preindividual realm is not solely the realm of pure nature.

In *Technics and Time Vol. 3*, Stiegler conducts a close analysis of the historical development of mnemotechnics. He shows that before the 20th Century, there was a distinction between technical systems and mnemotechnical systems. The former refers to the basic system of tool-bearing and inventions that has changed dramatically a number of times through the concatenation of industrialisation and capitalism. The

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[134] Bernard Stiegler (2007) *About Simondon and the Current Question of Our Powerlessness in the Era of Nanotechnologies*, paper presented at Northwestern University, p. 2.

latter refers to technologies invented specifically with the intention of documentation and memory, which until the 20th century had stayed relatively the same throughout history and only involved the information and communication technologies of writing, printing and some forms of painting and sculpture.

> …*this independence of mnemotechnics from the technical system of production no longer exists today: in becoming planetary, the technical system is now also, and even foremost, a global mnemotechnical system*. In a sense, *a fusion between the technical system, the mnemotechnical system and globalisation* has occurred…Over the course of the twentieth century…communication and information industries have become the centre of the technical system responsible for the production of material goods. What I previously described as 'convergence' between computer, audio-visual and tele-technologies also seems to refer to a convergence between the technical system of material transformation and the technologies of memorisation.[135]

For Stiegler, the 20th century sees Simondon's tri-partite definition of technics, in which the 'raw materials' of nature and the intentionality of humanity are mediated by technology is reconfigured so that that the 'raw materials', the objects that undergo technological transformation, *are* information and communication technologies. We can conceive of the preindividual milieu from which transindividual collectives emerge as not just a realm of unmediated nature, but as rife with technologies of memory: writing, audio, visual, algorithms, protocol that in turn mediate the individuation of new technical objects. This being so, we can theorise the individuations that the transindividual collective disparates from the preindividual as 'technical individuations' rather than the reconditioning of the natural, which is necessary in our attempts to understand a world where the digital access to the mnemotechnical, and in particular new potentialities for the *collective* virtual access to the mnemotechnical are a point of

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[135] Bernard Stiegler (2003) "Our Ailing Educational Institutions", in *Culture Machine*, Vol. 5 "The E-Issue": http://www.culturemachine.net/index.php/cm/article/view/258/243 Trans. from B. Stiegler (2001) *La technique et le temps*, vol. 3, *le temps du cinema* (Paris: Galilee), ch. 4.

enquiry. Moreover, we can explore both the post-WWII standardisation of recorded music circulation and the emergence of new techniques of sharing information from the point of view of a preindividual that is rife with communication and information technologies; with constellations of warehouses, lorries, aeroplanes, retail outlets, hardware, software, protocols and humans. Moreover, where the control of standardised and repetitive systems of organisation, and potential movements beyond such control, depend upon the control of the shifting registers of technologies of memory, or more generally of 'media' in its multifarious forms, rather than solely on the homogenised actualisation of natural resources.

We can get a handle on this if we consider that the post-WWII standardised techniques of production in the recording industry that we outlined at the beginning of this chapter were not inculcated to control the production of raw materials, or the relationship between humans and those raw materials, but to control the *consumption* of particular information and communication technologies by means of controlling the production, circulation and retailing of those technologies. The manipulation of vinyl resins into records was not an attempt to monopolise the vinyl resin market, or orient humans towards particular utility of vinyl resin, but to encode the mnemotechnics of phonography in such a way that could be standardised, replicated and thereby controlled *without* having to factor in the *productive capacity* of those that desired to listen to music, only factoring in desire for the mass *consumption* of that recorded music. The development of magnetic tape did not alienate humans from alternating current-bias or iron-oxide coated plastic tape, but controlled what sort of recordings they were able to hear by enabling producers, record companies and broadcasters to edit recordings, and thereby control the mnemotechnics of recording technology. The currency, for those organisations that policed these technologies, was not just the money made from selling records and CD's, but in controlling the *mnemotechnical system* that linked production, reproduction, distribution, storage, retail and broadcasting. As we shall see below it is this system, and its rapid decline during the first few years of the new millennium, which put into play some of the perturbative processes that led to the individuation of private BitTorrent filesharing and OiNK, and the transindividual collectives that formed around them.

The global-mnemotechnical system of the recording industry circa 1999

This mnemotechnical system of physical production, storage, manufacturing, distribution and sales that was controlled and monopolised by the Global recording industry reached its global apex just before the end of the last millennium. Between 1999, when Napster began both the trend towards widespread music sharing on the internet and the P2P revolution in general, and the 2004 inception of OiNK, the worldwide music industry was run by a tight oligopoly of 5 global corporations that accounted for just over 70 per cent of the recording, production, manufacturing and distribution of the world's recorded music.[136] At almost exactly the same time that OiNK was founded, the 'big 5' became the 'big 4', following the merger of Sony Music Entertainment and Bertelsmann Music Group (BMG).[137] The 'big 4' at the end of 2004 were Universal Music Group (UMG) with a 25.5% share of the global market, Sony BMG with 21.5%, Electric and Musical Industries (EMI) at 13.4% and Warner Music Group (WMG) at 11.3%. The remaining 28.4% was made up of hundreds of thousands of independent music companies.[138]

In 1999, four of the five record companies were subsidiaries of much larger transnational media conglomerates. UMG was owned by Vivendi, which also owned major television, film, publishing, video game and telecommunications companies. Sony Music Entertainment was part of Sony Corporation, which presided over electronics, games, motion picture and financial services empires. BMG was an arm of Bertelsmann, a broadcasting, publishing, communications and media editing giant. Until 2003 WMG

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[136] Benjamin M. Compaine and Douglas Gomery (2000) *Who Owns the Media? Competition and Concentration in the Mass Media Industry*, third edition (London, Mawah NJ: Lawrence Erlbaum Associates); David R. Croteau and William Hoynes (2001) *The Business of Media: Corporate Media and the Public Interest*, second edition (London: Pine Forge Press).

[137] BBC (2004) "Sony and BMG merger backed by EU", 19th July, http://news.bbc.co.uk/1/hi/business/3908405.stm

[138] IFPI (2005) "IFPI releases definitive statistics on global market for recorded music", 2nd August, http://www.ifpi.org/content/section_news/20050802.html

came under the umbrella of Time-Warner, which had major operations in film, television, publishing and telecommunications.[139] It was sold by Time Warner for $2.6 billion to an investor group comprised of a number of different private equity firms[140] including Bain Capital and Thomas H. Lee Partners (which between them owned Burger King, Dominos Pizza and shortly after acquiring WMG, Dunkin' Donuts[141]), in an attempt to recover from the debt that Time Warner incurred through its largely unsuccessful merger with internet service provider AOL.[142]

This nexus of power led to a large amount of cross-cooperation, both within and between the record companies and within and between the media conglomerates that owned them. This served to both reaffirm the market dominance of what was then the Big 5 in the recording industry, and also enabled each music company to integrate both horizontally and vertically with the various other media holdings of each conglomerate in order reduce costs and maximise profits. In this sense, one of the industry's strongest guarantors of profit was how it controlled the circulation of not just recorded music but also video, DVD, software and video games, specifically in relation to manufacturing and distribution of physical products. Before the filesharing appeared as a force via Napster in 1999, this ensured that the CD market was an extremely profitable one for those 5 companies and their patrons. At the beginning of 1999, each of the record companies either owned a global network of manufacturing plants and distribution centres, or their parent company did. Sony Digital Audio Disc Corporation (Sony DADC), another

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[139] Compaine and Gomery (2000) *Op Cit*, pp. 285-358.

[140] Warner Music Group (2003) "Investor Relations: News Release", 17th April, http://investors.wmg.com/phoenix.zhtml?c=182480&p=irol-newsArticle&ID=708718&highlight=

[141] PR Newswire (1998) "Bain Capital's acquisition of Dominos Pizza Inc. complete", 21st December, http://www.highbeam.com/doc/1G1-53445214.html; Boston Business Journal (2002) "Bain Capital joins TPG, Goldman Sachs in Burger King buy", 22nd July, http://boston.bizjournals.com/boston/stories/2002/07/22/daily53.html; Riva D. Atlas (2005) "Parent of Dunkin' Donuts sold for $2.4 Billion to Equity Firms", *New York Times*, 13th December, http://www.nytimes.com/2005/12/13/business/13doughnuts.html?scp=1&sq=%22thomas+H.+lee%22+dunkin&st=nyt

[142] David D. Kirkpatrick (2003) "Time Warner Sells Music Unit for $2.6 Billion", *New York Times*, 25th November, http://www.nytimes.com/2003/11/25/business/time-warner-sells-music-unit-for-2.6-billion.html

subsidiary of Sony Corporation, has manufacturing plants and distribution centres all over the world and was (and still is) the world's largest producer of pre-recorded optical media. It serviced all CD's for Sony Music Entertainment, but also services other branches of the entertainment industry, in the areas of Video Entertainment, Music, Software Services and Video Games.[143] UMG owned Universal Music Distribution (UMD), which until 2005 comprised a large network of manufacturing and physical distribution centres across Europe, North America and Asia that serviced most of the UMG labels. UMD also handled the distribution for labels outside of the UMG family, most notably for the Disney Music Group in North America, part of the Walt Disney Company. EMI distributed Disney Music Group releases in the UK.[144] BMG distribution manufactured and distributed music for all BMG music labels, video and expanded into CD-ROM and DVD in the late 90's and early 00's.[145] Until 2003, WMG manufactured and distributed for its own labels and had a huge global manufacturing, distribution, packaging network[146] as did EMI until 2005, with some of its manufacturing and distribution ventures conducted jointly with WMG.[147] Also of note is RED distribution, owned by Sony, and Fontana distribution, owned by UMG, who distribute the records for many of

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[143] Sony DADC (2009) "Global Capabilities", 17th April,
http://www.sonydadc.com/opencms/opencms/sites/sony/global_capabilities.html; MillerWhite Marketing (2009) "Pledge Branding, Case Studies, Sony DADC", 9th February,
http://www.millerwhite.com/pb_cs_sony.html

[144] Wikipedia (2009) "Disney Music Group", 16th February,
http://en.wikipedia.org/wiki/Disney_Music_Group

[145] Ed Christman (1997) "Learning Co. Links with BMG: 'Turnkey' Deal Struck For CD-ROM products", *Billboard*, 28th June, p. 59; Jill Kipnis (2004) "Labels Get Aggressive with DVD's", *Billboard*, 28th February, p. 3.
[146] Larry LeBlanc (2003) "Cinram International Signs Deal For Warner Manufacturing Units", *Billboard Bulletin*, 21st July, http://www.allbusiness.com/retail-trade/miscellaneous-retail-retail-stores-not/4380091-1.html

[147] EMI (2005) "EMI completes its manufacturing outsourcing strategy with agreement to sell Toshiba-EMI's manufacturing plant in Japan", 14th May,
http://www.emigroup.com/Press/2005/press37.htm

the smaller labels and artists on their respective rosters, and also for many smaller 'indie' artists that are not affiliated with the major labels.[148]

Thus, the percentage of profit from a CD that the major labels 'spend' on manufacturing and distribution is effectively recouped through either owning the manufacturing/distribution network, by being owned by the company that owns the network, or by distributing pre-recorded optical media for other media holdings. Moreover, it is not in the collective interest to foster competition between the horizontally and vertically connected media holdings of each conglomerate. Rather, the over-arching profit margins of the major labels and the media holdings they cross-collaborate with depend on this cartel-like behaviour. The conglomerates not only had a vested interest in but *depended upon* the conditions of production, manufacturing, storage and distribution staying the same; upon the *standardisation* of such conditions to ensure that the movement from production, to manufacturing, to storage, to distribution became an unerring cyclical repetition.

This standardisation of the productive circuit enabled the major labels to control pricing at the point of sale. They dictated manufacturing costs and thereby how much the manufacturing plants they owned charge for their services. They dictated distribution costs and thereby the 'commission' the distribution networks they owned could charge on top of their costs. They were therefore largely responsible for setting the wholesale price that retailers paid to stock the products. Furthermore, accepted practice is to 'suggest' a recommended retail price, at which the CD should be sold. A number of studies have shown that this process of 'intermediation' is the primary means the Big 5 used to reproduce and reinforce a stable and repetitive relationship with consumers upon which its profit margins depended. The fight against 'disintermediation' – the breakdown of this tight relationship between oligarchic control of distribution, retail and

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[148] Red (2009) "Red: An Artist Development Company", 17th February, http://www.redmusic.com/
Fontana Distribution (2009) "Fontana Distribution: Music Defines You", 18th February, http://www.fontanadistribution.com/

consumer is the critical area of struggle for the Big 5, and one that existed even before the internet posed a threat.[149]

 From the point that CD's came to commercial prominence in 1983 until 1999, the major labels unquestionably won the battle for stable intermediation. CD sales in the industry's biggest market, the USA, rose from 800,000 in 1983 to 288 million in 1990 and carried on increasing by hundreds of millions throughout the decade. Despite a slight slump in general sales during the mid nineties due to falling cassette and vinyl sales, sales rose again between 1997 and 1999 due to an average price increase of $3.00 per CD.[150] The retail price of a CD album peaked in 2000 at between $15.98 and $18.98, and the seemingly exponential increase in pricing was found to be the result of collusive efforts towards price fixing by the major labels, in a series of anti-trust investigations into the music industry. The industry subsequently made an agreement with the FTC to stop this practice.[151] As the industry sought to 'protect' its distribution streams, widespread and large scale price fixing continued even after the industry had entered into its agreement with the FTC in 2000, and in the growing face of widespread music filesharing, through which anyone could get the $18.98 new releases for free. The interconnectedness of price fixing was played out very publicly in 2002 when the major labels and some major retailers in the United States were found to have colluded with each other by engaging in distribution and advertising practices that kept the price of CD's artificially high.[152] In 2003, Warner Music and Universal Music Australia were fined by the Australian Competition and Consumer Commission (ACCC) for economically

[149] Charles Fairchild (2008) *Op Cit*; Mark Fox (2004) "E-Commerce business models for the music industry", *Popular Music and Society*, vol. 28, no. 2, pp. 501-519; Steve Jones (2000) "Music and the internet", *Popular Music*, vol. 19, no. 2, pp. 113-124; Steve Jones (2002) "Music that moves: popular music, distribution and network technologies", *Cultural Studies*, vol. 16, no. 2, pp. 213-232.

[150] David J. Park (2007) *Conglomerate Rock: The Music Industry's Quest to Divide Music and Conquer Wallets* (Lanham MD: Lexington Books), p. 25-26.

[151] Barry Willis (2000) "FTC: No More Minimum Advertised Pricing on CDs", *Stereophile*, 14th May, http://www.stereophile.com/news/10744/

[152] Lisa M. Bowman (2002) "Labels pay to settle price-fixing suit", *CNET News*, 30th September, http://news.cnet.com/2100-1023-960183.html

punishing retailers who stocked cheaper import CD's rather than use the major label's preferred distribution network.[153] It ruled that the major labels could not legally dictate the channel through which music was distributed within and between borders.[154]

Speaking in 1999, just before the Industry was first indicted for price fixing, and during the period that Napster was in the process of attracting 70 million members in just 18 months,[155] head of BMG Entertainment Strauss Zelnick saw nothing wrong with price increases and no reason why the growth in online music should curb it: "The cost of a CD is related to the creative effort that goes into making the music, which is a lot more than the plastic that goes into a disk," Zelnick said. "What's driving the costs is rewarding the artists for their creativity."[156] This indefensible claim is indicative of an industry that did not conceive of a possible end to its monopoly over manufacturing, distribution and pricing. In fact, there was an almost impenetrable (but adaptable) 'standard contract' that the major labels had been using to 'sign' artists that had changed very little since the 50s, and guaranteed that the majority of any incoming cash flow would be oriented to the labels rather than to 'rewarding the artists for their creativity.' Typically, the artist receives 9-12 per cent of the retail price of a record, tape or CD. Out of this small percentage, 15-20 per cent goes straight to the artist manager, making the net income for artists around 7-10 percent. The record company recoups the rest of the record profits, minus the producer's royalty (usually 3 per cent) and the production, manufacturing and distribution costs (usually 15-20 percent).[157] Put simply, the artist earns significantly less than the record company, and doesn't start earning a penny

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[153] Peter Holmes (2003) "Sound Barrier: why the music industry is struggling to make money", *Sunday Telegraph* (Australia), 12th October.

[154] Shane Homan (1999) "Australian music and the parallel importation debate", *Media International Australia*, No. 91, pp. 97-109.

[155] Corey Doctorow (2008) "Illegal filesharing: A suicide note from the music industry", *The Guardian*, 29th July, http://www.guardian.co.uk/technology/2008/jul/29/internet.digitalmusic

[156] Strauss Zelnick in Dave Marsh (1999) "Why do we need the music industry?" *Rock and Rap Confidential*, 7th February, http://www.rockrap.com/nomusicbiz/RRC9918.html

[157] M. William Krasilovsky and Sidney Shemel (2007) *The Business of Music: The Definitive Guide to the Music Industry. 10th Edition* (New York: Watson-Guptill), p. 19.

before they have paid off the advance they were given in full. Danny Goldberg, former CEO of both Warner and Atlantic records, gives a further insight into this closed system, and points out that only a small percentage of the most successful artists ever make any money, and most do not ever make enough to pay back their advance:

> So let's take our mid-level artist, and say that she managed to sell 200,000 copies of her latest CD…Based on a royalty rate of $1.40 per album, 200,000 CDs sold results in earned income of $280,000…If our artist received a $25,000 advance and spent another $115,000 making the record, this $140,000 is deemed recoupable, which means that the label can collect that amount against royalties…Also, let's assume the artist received $70,000 in tour support (recoupable) and another $70,000 in recoupable video and promotional support (this is usually split between the label and artist). That adds up to $280,000 in recoupable advances, thereby cancelling out the $280,000 earned by the artist on points from her CD sales. Royalty-wise, it's a wash.[158]

Seeing as though the price increases that Zelnick discusses were not accompanied by an increase in the percentage share for artists in the standard contract, the only conclusion can be that they worked to the significantly greater benefit of the labels. As the industry was making a concerted effort to increase the price of music to the highest levels ever, the first proclamations of the Internet as a serious force of disintermediation in the music industry were being made. A short working paper from the Science Policy Research Unit at the University of Sussex in 1998 was quick to see the oncoming battleground:

> For many years the music business has had very little to do with music. It essentially consists of fast-moving, unit-led production, marketing, licensing and distribution functions. How much product will sell in which territories, how quickly they can ship, how fast they

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[158] Danny Goldberg (2000) "The Ballad of the Mid-Level Artist", 16th March, http://www.rapcoalition.org/label_exec_$$_breakdown.htm

can re-stock and so on. With the World Wide Web as a potential high-speed digital distribution channel, record companies will no longer be in a position to control the distribution chain.[159]

Considering our method, we can conceptualise these processes in terms of a systemic operation that trammels the potential for *signification* into the communication of a *unitary signal*. The capacity of properties (in this case, production, storage, manufacturing and distribution of mnemotechnics) to express different meanings and functions through a recursive catalysis with other properties is filtered into a unilinear articulation of the singular functioning of a system, which blocks the impulse of signification through the repetition of that signal – the unerring and impenetrable whirr of cross-conglomerate cooperation, the horizontal and vertical monopolization of manufacturing and distribution, the standardisation of the recording contract and price fixing. This is where *disparation* – the meeting of two or more previously incompatible systems to form new entities – becomes *conglomeration*; which aside from its business definition has a related meaning in geology, as: "…pieces of previously existing rocks, united into a compact mass by some kind of cement"[160] and: "A mixture of various materials or elements, clustered together without assimilation."[161] Conceived of as a physical system, the conglomerate is where incompatible components are merged together by force or manipulation, rather than through the reconditioning of the delicate proximity between them. In the mnemotechnical system, the infrastructure is the productive circuit which controls the memory-worlds of recorded music through manufacturing, distribution and retail, with the force or 'cement' in this case being the impulse to ensure profit mark-ups at each stage of the process. That is not to say that the consumers of such a system are necessarily 'victims' of it. There is a sense in which

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[159] Emma Janson and Robin Mansell (1998) "A case of electronic commerce: the on-line music industry: content, regulation and barriers to development", *ACTS/FAIR Working Paper 40*, Science Policy Research Unit, University of Sussex, March 1998.

[160] OED (2010a) "Conglomerate", Def. B.1a, *n*, *Oxford English Dictionary*, Revised December 2010, http://www.oed.com/view/Entry/39104?rskey=xW2KOX&result=1&isAdvanced=false#

[161] OED (2010b) "Conglomerate", Def. B.2, *n*, *Oxford English Dictionary*, Revised December 2010, http://www.oed.com/view/Entry/39104?rskey=xW2KOX&result=1&isAdvanced=false#

individuals are *complicit* within such an infrastructure - a way in which they *invest* in the repressive operation of its architecture. The following chapter explores such tendencies.

Chapter 4 – Monostable individuation: The global recording industry as a 'desiring machine'

Resolving the 'excess' of individuation: Socialised desire

If the 'nature' of Simondon's preindividual becomes predominantly mnemotechnical in the second half of the 20th century, in what ways do individuals and groups tend towards the mnemotechnical and mnemotechnical systems? Moreover, how do individuals collectively manage the transindividual 'excess' created by individuation, and to what extent is this 'excess' managed for them by the sort of systemic, standardised systems of production that we looked at toward the end of the last chapter? Here we shall interrogate a dimension of the global circuit of record music circulation that compels individuals and groups of individuals to *desire* music in a repetitive and predictable way. We shall look at how the music industry managed this 'excess' of desire through bracketing consumer choice around fewer and fewer 'artist-brands', but firstly we must clarify what is meant here by 'desire', and how it is generated by organisational infrastructures of production and consumption. We shall approach this through interrogating an idea that lies latent in the work of Stiegler – that *desire* is what orients the human towards the mnemotechnical, and that this desire is eminently collective in its operation; it is a *socialised desire*.

We shall develop this notion of socialised desire from Stiegler's briefly articulated conviction, contained within his work on Simondon, that desire is *transindividual*. Simondon's 'technical individual' is an inventor using esoteric and recondite knowledge to recondition the functioning of the natural environment. That is, just as the inventor is working with the base elements of oil, water, metal, steam and fire unmitigated by their current social function or technical form, the inventor's own psychic and collective individuation is also unmitigated. Inventors are driven towards their inventions by a 'pure' unconscious urge that is sanitised of prevailing desires and interests in the current social milieu, which Simondon sees as essentially whimsical and meaningless in the inventive process, and also the current functionality of a technical object, which has no inherent meaning beyond being the current technical compromise between a series of

disparate natural elements. In short, because the propensity of the inventor's psychic individuation is not driven by sociality or by current technical conditions, it stems from an *instinctual vitality*.

Stiegler states that desire is 'socialised sexuality' and therefore transindividual: "…desire is not sexuality, it is not "completely" sexuality, it is only "partially" sexuality: desire is socialised sexuality, i.e., *always already transindividuated.*"[162] He does not elaborate on what the contours and movement of this transindividual 'socialised sexuality' might entail, but from our analysis of his theory of mnemotechnics we are able to discern the following: the grammatisation of nature into tools, machines, text, recorded sound, recorded images and algorithms are elements in the preindividual that are in disparate connection with humans in the transduction of new individuations. Therefore, and even before the period of mnemotechnical dominance, the very presence of these transindividual technical objects in the transductive process means that the libidinal impulse of humans is also transindividual – it is always already mediated by the prior collective involvement and cannot 'de-code' itself back to the pure, vital realm of instinctual urges. It is therefore *desire* that binds the drive for new individuations – the collective apprehension of what has gone before is what drives humans towards the re-articulation or creation of a technical object. Therefore we can posit that desire, for Stiegler, is the 'socialised' instinctual urge – the vitality of the human impulse that is *always already transindividuated*.

Stiegler replaces Simondon's preindividual 'ground' of nature/instinct with the recursive preindividual disparation between technics and desire which cannot be grounded in the transcendental because its constituent elements have undergone a process of grammatisation – the discreet coding of instinct as socialised desire; the transformation of speech, sonics and optics into language, text, recorded sound and recorded images - that cannot be undone. They have been 'de-natured' and in this sense they are 'dead'. This is what Stiegler means when he continually refers to Marx's term "*the dead seize*

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[162] Bernard Stiegler (2007) *Op Cit*, p. 8, original emphasis. See also Bernard Stiegler (2009a) "The Theater of Individuation: Phase Shift and Resolution in Simondon and Heidegger", *Parrhesia*, No. 7, pp. 46-57. Trans. by Kristina Lebedeva.

the living".[163] It is those elements of both nature and humanity that have become de-natured and therefore technical that shape the contours of the living – psychic and collective individuation and the human drive towards individuation. This provides a more durable starting point for an investigation into the contemporary relationship between humans and digital technology, transforming Simondon's moral question of 'how can we return to the 'magic unity' of the technical object between nature and the human?' into 'how is human desire able to be expressed in relation to the mnemotechnics that are at the centre of material and cultural production – music, TV, Cinema, radio, the internet?'.

What does it mean to claim that this desire is 'social'? The modern conception of desire, formulated firstly by Kant[164] and transposed into a psychoanalytic register in the 20th Century by Freud,[165] focuses sharply on the unconscious; on 'unconscious desire'. Stiegler hints at these unconscious desires somehow being social in origin, but how might the already-transindividuated (and therefore social) elements of the preindividual – particularly the inescapable meta-systems of global politics, the entertainment media and computer networks – elicit the feeling of desire from individuals? A preoccupation with the *social organisation* of this unconscious permeates the immanent theory of desire developed by Gilles Deleuze. This thread of his work can be read as a more thoroughgoing exposition of what Stiegler hints at – that *any given social milieu structures the unconscious desires of individuals*. That is, desire it is not a residual effect of a social milieu, nor is it something that is projected onto a social milieu, desire is replete *within* the very infrastructure of a social milieu, and thus provides a situated

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[163] Bernard Stiegler (2005) *De la misère symbolique. 2, La catastrophè du sensible* (Paris: Galilée).

[164] The second critique in *Critique of Practical Reason* is presented by Kant as a theory of desire. See: Immanuel Kant (2002) *Critique of Practical Reason* (Indianapolis, IN: Hackett Publishing Company), p. 15 [90], pp.14-16f.

[165] For the connection between the Oedipus complex and desire, see Sigmund Freud (1999), Ch.5 "The Material and Sources of Dreams" in *The Interpretation of Dreams* (Oxford: Oxford University Press).
For the relationship between the ego and id in the experience of desire, see Sigmund Freud (1949), Ch.1 "Consciousness and the Unconscious" and Ch.2 "The Ego and the Id" *The Ego and the Id* (London: The Hogarth Press).

social repository through which the expression of our desires and urges, even those that seem most personal or unknowable to us, are refracted. Or, remembering our 'theory-driven' method – the operation of signification and disparation in a milieu is at the same time the structuration of desire.

Deleuze, in a line of his thought that begins in his early work on Nietzsche and is replete within *Anti Oedipus*, explores how humans are given over to particular modes of reflection, and express different actions and intentions dependent upon the immanent '*modes of existence*' they experience in different contexts. These reflections, actions and intentions cannot be judged, argues Deleuze, by recourse to 'morality', a word he uses to refer to: "…a set of constraining rules of a special sort, ones that judge actions and intentions by considering them in relation to transcendent values." Rather, they need to be understood from the perspective of 'ethics', which are: "…a set of optional rules that assess what we do, what we say, in relation to the ways of existence involved."[166] That is, any particular social formation, or mode of existence, within which people have cause to think and feel a certain way ought not to be judged by a universal standard, but 'evaluated' in terms of the particular modes of existence that those thoughts and feelings imply. The questions to be asked is not moral: 'What should I do/think/feel here?', but ethical questions related to capacity, or the power one has within a given mode of existence: 'What can possibly be done/thought/felt here?' and to properties, directly related to how one feels one can act: 'What can *I* do/think/feel here?' As Deleuze writes in his monograph on Nietzsche: "Evaluations, in essence, are not values but ways of being, modes of existence of those who judge and evaluate…This is why we always have the beliefs, feelings and thoughts that we deserve given our way of being or style of life."[167]

It follows that any mode of existence which, through its functioning, imposes an immutable set of universal values on the thoughts and feelings of individuals is the enemy of this immanent notion of ethics. Transcendence and the recourse to universal

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[166] Gilles Deleuze (1990) *Negotiations* (New York: Columbia Press), p.100.

[167] Gilles Deleuze (1983) *Nietzsche and Philosophy* (Cambridge: Cambridge University Press), p. 1.

values render the individual *impotent* because the power to act is removed from the mode of existence itself, and is instead ceded to immutable rules that take no account of the properties and capacities of the mode. This poses a clear problem for Deleuze's immanent ethics, insofar as the building blocks of Capital rest on the foundations of acquiescence to rules and regulations, to law based on universal tenets of justice and morality rather than the potential of the active capacity of the humans subject to it. In *Anti-Oedipus*, Deleuze and Guattari pose this problem in terms of desire. Why do people desire rules and regulations? Why do we actively desire to cede our capacity for power to structures that may not necessarily work in our best interests? As they write: "The astonishing thing is not that some people steal or that others occasionally go out on strike, but rather that all those who are starving do not steal as a regular practice, and all those who are exploited are not continually out on strike."[168]

Deleuze's answer to this is that our desires are not simply the contents of our private psychic reality. That is, the unconscious desires of an individual are not *organised* by that individual, but by the *social infrastructure itself*. Crucial to this claim is the Nietzschean notion that modes of existence are characterised in terms of *drives*. In *Will to Power*, Nietzsche alludes to the individual as a "…vast confusion of contradictory valuations and consequently of contradictory drives."[169] Moreover, these drives are in constant competition with each other, with particular drives winning out in different modes of existence.[170] Ways of being – feeling, thinking, willing – have a structure, Nietzsche thinks, only as a particular relation of the drives to each other. Therefore, the key question is: What governs the relation between the drives? This is where the notion of *morality* enters Nietzsche's thinking, for whenever we encounter a morality, he argues, we encounter a *social* ordering of the drives and impulses. In *The Gay Science* Nietzsche outlines the notion of the 'herd instinct', whereby the individual is instructed by morality

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[168] Gilles Deleuze and Felix Guattari (1983) *Anti-Oedipus: Capitalism and Schizophrenia* (Minneapolis: University of Minnesota Press), p. 29.

[169] Friedrich Nietzsche (1967) *The Will to Power* (New York: Vintage), p. 149.

[170] See also: Friedrich Nietzsche (1997) *Daybreak: thoughts on the prejudices of morality* (Cambridge: Cambridge University Press), p.109.

to serve as a function of that community. We encounter different moralities, Nietzsche writes, as the shift from one type of community to another takes place: "…Since the conditions for preserving one community have been very different from those of another community, there have been very different moralities; and in view of essential changes in herds and communities, states and societies that are yet to come, one can prophesy that there will yet be very divergent moralities. Morality is herd instinct in the individual."[171]

Indeed, Deleuze and Guattari attempt to construct an historical analysis of the social formation of moralities in *Anti-Oedipus* – those found in primitive societies, States and capitalism. Here, they set out an argument which contends that the social-moral ordering of the drives that Nietzsche referred to is nothing but *desire*, and that desire is fundamentally linked to production in the social field. They write: "…drives are simply the desiring-machines themselves."[172] Desiring-machines refer to societal institutions and other organisational architectures that structure *economies of desire* – they are not 'libidinal economies', where individuals 'project' their individual desires onto society; nor are they 'political economies', where individuals 'introject' class interests which become their 'false consciousness'. Desire is the sum-total of the properties and capacities of social production in a society, and the economy of desire (the desiring-machine) is how that desire is *organised* through the imposition of a moral framework. What is referred to as 'libido' in the post-Freudian world is in fact the 'labour' of desiring-production, or the work that can be done by individuals within a given economy of desire. Society *needs* to repress desire because the actualisation of an unrepressed notion of desire, one based on what Deleuze calls 'ethics', or the facilitation of different kinds of styles of life, would undermine the hierarchical conditions that capitalism depends on: "…If desire is repressed, it is because every position of desire, no matter how small, is capable of calling into question the established order of a society: not that

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[171] Friedrich Nietzsche (2001) *The Gay Science* (Cambridge: Cambridge University Press), p. 115.

[172] Deleuze and Guattari (1983) *Op Cit*, p. 35.

desire is asocial, on the contrary…. no society can tolerate a position of real desire without its structures of exploitation, servitude, and hierarchy being compromised."[173]

Monostable and metastable individuation

 Deleuze and Guattari were keen to underline that desiring-production under capitalism is a matter of the power relationships implied by the techniques of *planning* and *organising* a system. Furthermore, the extent to which the organisational framework is either uncritically reproduced or open to change on the basis of empowered modes of reflection, actions and intentions, determine the economy of desire within that system. For Deleuze, 'planning' and 'organising' in desiring machines are not consequences of rationality or the crystallisation of a certain ideology, but are structures of desire that ensure the following of a particular rationale or the espousal of a certain ideology. That is, both rationality and ideology, particularly within the capitalist economy of desire, are the discreet encoding of *irrationality* based upon a constraining morality designed to uphold the hierarchy of organisational power. A way of comprehending this point is to distinguish between means and ends – i.e. the structures of capitalism 'work' – the 'means' or 'functioning' of the stock market, of political structures, of educational institutions, of the music industry, all proceed in ways that seem perfectly logical and understandable as means to achieve certain ends. However, those ends are irrational as they involve the desiring of repression for most people, within organisational systems that they have no control over – they are all hierarchical systems that are carefully structured to reproduce themselves (and thereby the inequalities which are hard-coded into them), and the irrationality of them is borne out in the demented precision and success with which such rules and regulations are carried out, and in spite of the fact that they render most of their subjects impotent. As Deleuze writes: "…Reason is always a region carved out of the irrational – not sheltered from the irrational at all, but traversed by it and only defined by a particular kind of relationship among irrational

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[173] Ibid, p. 115.

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factors...."[174] and furthermore: "...the organisation of power, i.e. the way in which desire is already in the economic, the way libido invests in the economic, haunts the economic and fosters the political forms of repression."[175]

If we think about the ways in which these organisational forms of desiring-repression might 'individuate' in relation to recorded music, we can contrast two interrelated and competing tendencies of individuation; one emerging from collective and inventive practices of production and consumption that decentralize and distribute control around all those that desire to participate, and another found within large scale, highly regulated systems of physical production that repress desire and regulate, stabilize and centralise control. Related to the former, we can discern a *metastable individuation* that can occur in some forms of P2P sharing through BitTorrent, where the 'meta' prefix is used in the Hellenic sense to link a notion of sharing or action in common with the process of change.[176] In this sense, it is linked to the Latin prefix 'Trans-', hence Simondon's notion of the 'transindividual collectives', where the shared reflections, actions and intentions of individuals within a given collective – the 'excess' that is a by-product of individuation - come to continually recondition its topological borders. Individuation here is not unstable or stable, but *metastable*, where changes to components in a given organisational infrastructure (let us take 'component' to mean software, hardware, communication protocol, user, website etc in this case) does not render the collective perilously unstable, but allows it to re-formulate in a slightly different constellation owing to the delicate, mutable proximity between the components.

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[174] Gilles Deleuze and Felix Guattari (2004) "On Capitalism and Desire", interview with *Actuel* magazine, in Gilles Deleuze, *Desert Islands and Other Texts 1953-1974* (New York: Semiotext), p. 262.

[175] *Ibid*, p. 263.

[176] OED (2009) "Meta – prefix", Def. 1A with Etymology, *Oxford English Dictionary*, Revised Sept 2009, http://0-dictionary.oed.com.catalogue.ulrls.lon.ac.uk/cgi/entry/00307096?query_type=word&queryword=meta&first=1&max_to_show=10&sort_type=alpha&result_place=4&search_id=8Gp3-XLVH2j-1279&hilite=00307096

In relation to the latter – the macro-infrastructural bracketing of desire – we can discern what I shall call *monostable individuation*. 'Monostable' is a term used in electronics as an adjective to describe "Having one stable position or state "[177] and as a noun to refer to "An electronic circuit that has one stable state."[178] This shall be used as a method to further elucidate the conditions of standardisation in the productive system of the global recorded industry, and how the operation of the music industry was both 'alone' (mono) and unchanging (stable) thus, any internal or external 'noisy' influence was simply regulated out of its systemic functioning. This is where the transindividual excess of individuation is managed not by the collective modes of reflection, action and intention of those that created the excess through their own individuation, but by hierarchical, monolithic organisations that seek to systematise that transindividual excess and trammel it into linear, repeatable patterns. Furthermore, the imagery of a 'circuit that has one stable state' works to elucidate the notion, which we shall expand on presently, that any sort of major reconditioning of one of its elements (manufacturing, distribution, storage, retail, broadcasting etc) would constitute its degradation, because its organisational outposts and infrastructures are stringently designed to enforce the repetition of a singular productive state, and of a stabilised notion of desire that reproduces the desiring of such a state. That is, such a collective organisation does individuate, but its individuation is closed off and designed to 'come into being' on repeat, without change - it can only be 'stable', or 'unstable' to the point of destroying itself, without any potential for transformation in between those states. In terms of the method used here, this is where signification becomes a unitary signal of morality, and disparation is 'monostabilised' into an unresponsive routine that reproduces predictable modes of reflection, thought and action.

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[177]OED (2010c) "Monostable", Def. A. *adj*, *Oxford English Dictionary*, Revised March 2010, http://0-dictionary.oed.com.catalogue.ulrls.lon.ac.uk/cgi/entry/00314968?single=1&query_type=word&queryword=monostable&first=1&max_to_show=10

[178] OED (2010d) "Monostable", Def. B. *n*, *Oxford English Dictionary*, Revised March 2010, http://0-dictionary.oed.com.catalogue.ulrls.lon.ac.uk/cgi/entry/00314968?single=1&query_type=word&queryword=monostable&first=1&max_to_show=10

Producing desiring machines: The music industry

We shall explore how metastable individuation plays out in the disparation between components in decentralised 'user-led' information sharing environments in chapters 7, 8 and the final section on OiNK, but it is important to note that the potential of and desire for the sort of metastable conditions for sharing music that exist now stems in no small part from a draconian re-articulation of organisational *monostability* in the appropriation of the recording industry into huge global media conglomerates during the 90s and early 00s. As we have stated, monostable individuation depends on guaranteeing precise repetition without any sort of infrastructural reconditioning, and, as we have seen in the previous chapter, the concentration of the mainstream recording industry into 5 companies, and then shortly after into just 4 companies, worked towards that. However, we are not making the claim here that particular individuals and groups of individuals do not bear any responsibility for these moral-desiring machines. Rather, it is those individuals and groups that desire to capitalise on the organisation of power, those who understand that the desire for making others desire in a particular way is a far more reliable guarantor of power than the desiring of a particular idea or a particular rationale, that control how desire is ordered.

Both Deleuze and Guattari give a number of examples of this in their interview with *Actuel*, published in Deleuze's *Desert Islands* collection. Speaking of traditional political structures, Guattari argues that it is not those who most faithfully espouse the prevailing ideology or rationale of the dominant political party that seize power, but those that control how those ideas are recast in organisational terms and those who manage the implementation of the agreed-upon desiring machine, at which point proper adherence to, and positioning within, the chain of command, procedure and party line affectively *becomes* desire. Guattari states: "…Only then are the political oppositions built up: an individual chooses one position over another, because in the scheme of the organisation of power, he has already chosen and hates his opponent."[179] Moreover, even those individuals who 'control' moral-desiring machines are constrained by them, as those

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[179] Deleuze and Guattari (2004) *Op Cit*, p. 263.

machines do not resonate with their own capacity for power, but are detached constructs of organisational power which those individuals merely 'preside' over. Their particular individuality - their capacity for individuation and to achieve the transindividual connection with others that is necessary for the metastable resolution of the excess of individuation - is ceded to the organisational power of that system in exchange for the chance to regulate that power. Socialised desire that settles into a monostable system, into a circulatory permanence that shackles the parameters of desire whilst factoring out the modes of existence, is what we shall call *routinised desire*. Deleuze and Guatarri are implying that this process ensures that the organisational blueprint for monostability comes to routinise not only the desire of those who work within such organisations, but also all those who are subject to the machinations of such organisations, whether that be as citizens, clients or customers. This dual manifestation of desire in monostable systems, shorn of the metastable potential to change on the basis of collective desire both internally and externally, can be seen to intensify in the operation of the recording industry as it became increasingly subordinated to non-music conglomerate interests, as the big five became the big four.

The chances of major record labels changing their approach due to the creative thoughts and reflections of their staff members, or as a response to the desires of consumers to experience a diverse array of recorded music and new ways of accessing it, declined significantly as recorded music became a less and less important part of the cross-conglomerate infrastructure. It terms of staff members and the diminishing power of the labels to individuate in unique directions, one long running issue was the 'culture change' that had been going on at major labels since the first spate of corporate takeovers in the 70's and 80's, where the top executive jobs were increasingly given to people with a background in accounting and finance, rather than music. Ahmet Ertegun, who signed Led Zeppelin and co-founded Atlantic Records, summed up his tenure as head of WEA under Time Warner as such: "They kept putting up people to run it who were non-music people ... they would never take somebody from the cable division and let them run the movie division ... but they would take anybody and let them run the

music ... there was no leadership from the top ... it was everybody fighting everybody else."[180]

 The labels were not 'priority' businesses because they accounted for a small percentage of overall conglomerate income. In the last financial quarter of 2001, Sony Music Entertainment only accounted for 9.1% of total revenue for Sony Corporation. WMG's revenue made up only 10.3% of total sales for Time Warner, and only 4.2% of the conglomerate's total profits. Even UMG, which at the time Vivendi still had 'very great dependence on' according to Harold Vogal, the former Wall Street media analyst,[181] only accounted for 23.3% of Vivendi's revenue.[182] Furthermore, the cross-collaboration cartel structure did not always work in the music industry's favour. As well as giving them the benefits of the manufacturing/distribution infrastructure and cross-promotion and licensing opportunities, it also gave rise to situations where the aims of the conglomerate were not consistent with the aims of the label. The major labels also had no control of how profits were reinvested – it did not necessarily follow that revenue would be used to invest in new artists and new ways to establish relationships with consumers. For example, in the early 90's Time Warner used WMG's cash flow to buy up cable TV stations, eventually becoming the 2nd largest cable operator in the US.[183]

 The reality was that the conglomerate infrastructure of the music industry could not monetise the methods of distribution opened up by the Internet in a way that would work to maintain its vertical and horizontal dominance. An online business model did not offer any possibility for the major labels to grow at the same level and maintain the same levels of profit they had done from 1983 onwards. The old monostable model of management, where the industry could ensure that it made money at each stage –

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[180] Ahmet Ertegun in Simon Napier-Bell (2008"The Life and Crimes of the Music Biz", *The Guardian*, 20th January,
http://www.guardian.co.uk/music/2008/jan/20/popandrock.musicindustry

[181] Harold Vogal in Matthew Benz (2002) "Are Major Labels Positioned to Solve Their Problems?" *Billboard*, 30th March, p. 15.

[182] Benz, *Ibid*.

[183] *Ibid*.

production, manufacturing, distribution, retail – would have to be replaced by a model where the labels sold directly to retailers or directly to customers if the Internet were to be adopted as the new frontier of the industry. This would have meant that the global circuit of production they used to circulate money back into the conglomerate structure would have less and less of a reason to function, and that they would no longer be able to justify selling at a high price to the retailer using the excuse that the CD had gone through a costly production, manufacturing and distribution process. Thus, the conglomerates were simply not interested in meeting this challenge. The relative unimportance of record labels in the conglomerate structure meant that the parent companies were happy to re-enforce the monostable operation that guaranteed them the highest return for as long as possible, seeing as though the risk of the labels going into liquidation would not jeopardise the overall functioning of the conglomerate. As Irving Azoff, who ran MCA (which became UMG) for 6 years has pointed out, the conglomerates purchased the record labels on the basis of the pre-internet business model and the pre-internet profit margins, and they were not interested in reform on the basis of improving the relationships between labels, artists and consumers if that reform might mean scaling down levels of growth and profit: "The big boys swooped in and bought all the historic, artist-friendly, independents ... A&M, Geffen, Interscope, Island, Chrysalis. The multinationals rationalised these purchases based on growing cash flows that don't exist anymore. Now they are trying to defend failed business plans."[184]

 The approach to promoting and selling music became as such: focus spending on a smaller number of targeted products (artists). This process dramatically intensified as the industry began to perceive the 'threat' of the internet to its massive profit margins. The first evidence of this intensification was a concerted effort to slash the number of artists on the rosters of the Big 5. In 1999, following the Seagram/Polygram merger, UMG dropped hundreds of artists as it closed or 'reorganised' its labels by folding smaller labels into larger ones.[185] In 2002 EMI dropped around 400 of its 1,600 acts, and then-CEO Alain Levy chose to justify the move in wholly financial terms: "We had a really

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[184] Irving Azoff in Simon Napier-Bell (2008), *Op Cit.*

[185] Park (2007) *Op Cit*, p. 32.

bloated roster – we don't feel we've lost any sales potential."[186] It then cut another 400 artists in 2004.[187] WMG regularly trimmed its roster between 2003 and 2005, attempting to recover its market position after being bought by a group of private equity firms. It is estimated that it cut 30% of its roster during this time.[188] In 2003, Sony Nashville cut its roster in half for all four of its imprints – Columbia, Epic, Monument and Lucky Dog.[189] BMG dropped 60% of its artists in Germany, the world's 4th biggest music market, in 2004. Its strategy was to drop all artists that sold fewer than 25,000 units in the previous financial year in order to focus on a small number of 'career artists' that they could turn into 'brand names'.[190]

 The linking of 'branding' and 'artists' is key to how the major labels operated after 1999. The focus since then has been to promote a small number of artists who have been carefully selected on the basis of their suitability to be cross-promoted within and between different mainstream media holdings, creating a 'brand' rather than a 'band' or a 'singer-songwriter' that can also be used to sell different products through those media divisions. Employees of major labels now spoke of 'artist diversity' not to refer to how eclectic their artist roster was, but to describe the ability of one artist to succeed in as many different entertainment mediums as possible. Traditionally, this technique of 'breaking' artists had been used for 'teenybopper' and 'boyband' markets, where record sales were transient, long term artist development wasn't considered an issue, and 'success' depended on areas such as merchandising and TV. As success increasingly

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[186] Alain Levy in Adam Howarth (2002) "EMI slashes workforce, artist roster worldwide", *Billboard*, 30th March, p. 8.

[187] Park (2007) *Op Cit*, p. 32.

[188] Josh Friedman and Chuck Phillips (2005) "At Warner Music, cuts go deep", *Los Angeles Times*, 12th March, http://www.latimes.com/business/la-fi-warner12mar12,0,5150896.story?coll=la-home-business
David Teather (2005) "Warner Music cuts losses", *The Guardian*, 17th May, http://www.guardian.co.uk/media/2005/may/17/citynews.business

[189] Phyllis Stark (2003) "Sony Nashville cuts roster", *Billboard*, 21st June, p. 12.

[190] DW Staff (2004) "Record Giant BMG to Drop Majority of its German Artists", *Deutsche Welle*, http://www.dw-world.de/dw/article/0,,1235202,00.html

depended on making money for multiple sections of an oligarchic structure, all artists became subject to similar, albeit more subtle, practices.

The UK singer-songwriter Dido is a salient example of an artist that would be considered 'adult contemporary' by the global music industry but nevertheless became a multimedia brand, and made money both horizontally and vertically for the conglomerate infrastructure. Dido was discovered and signed in 1997 by Clive Davis, head of Arista Records, and subsequently signed a publishing deal with Warner Chappell. Both Arista and Warner Chappell were then subsidiaries of Time Warner. Before her 'No Angel' album was released, the song 'Thank You' was featured on the 1998 film 'Sliding Doors', which was made by Paramount Films, a company owned by Viacom, who also owned the music channels MTV and VH1, as well as being the second biggest player in the US radio market. Once the album was released, 'Thank You' began receiving heavy rotation on MTV, VH1 and 'adult contemporary'/''Top 40' formatted radio stations, most of which were owned by Viacom and market leader Clear Channel, thereby offering blanket radio coverage across the country. The song 'Here With Me' also received blanket airplay after being featured as the theme tune to the US TV show Roswell, which aired on the WG network, also a subsidiary of Time Warner. In 2000, just after the release of her album, 'Thank You was sampled by Eminem in his biggest hit song 'Stan', which was also published by Warner Chappell. Dido also appeared in the video for Stan, which was the most played video on MTV in 2000.[191] By 2005, Dido had sold 21 million copies of 'No Angel'. [192] This case in point is emblematic of a shift from a 'top-down' technique of selling recorded music, where labels would focus on marketing the music itself solely through music retail and music broadcasting outlets, to a *diffusion* of a desire-brand, where the construct of desire that an artist represents is so accessible and so replicable that it can be used to sell *anything*. This gives the impression of metastability insofar as the diffusive operation of the desire-construct looks to be

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[191] Carla Hay (2000) "Touring, Airplay Spurs Sales Revival for Dido's Arista Set", *Billboard*, 26th August, p. 13; Paul Sexton and Emmanuel LeGrand (2003) "Dido's New Lease on Life", *Billboard*, 27th September, p. 1.

[192] Peter Paphides (2005) "Music to watch girls buy", *The Times*, 25th March, http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/music/article437174.ece

adaptable, but in reality the very same monostable desire-construct – in this case Dido's 'adult contemporary' brand – is repeatedly being used to sell a number of different products within and between conglomerate structures.

 In many cases, any success in appealing to consumers who were primarily interested in the music itself was merely a residual effect of a concerted campaign to 'sync' the music with more profitable advertising avenues. This being so, the major labels increasingly sought to forge cross promotional links with global brands outside of the staple music/TV/film cartel.[193] Branding even managed to find its way into song lyrics, with artists effectively selling advertising space within their songs. This practice became particularly prevalent within mainstream Hip Hop, where large corporate brands, particularly those related to alcohol, paid artists to include the brand name, hoping to cash in on the 'aspirational' lifestyles of the biggest stars. In 2002, Hip Hop mogul Russell Simmons' ad company dRush won the contract to promote the cognac brand 'Courvoisier'.[194] Simmons' then set up a 'celebrity seeding program' to promote the drink to the biggest Hip Hop artists, leading to Busta Rhymes' global hit 'Pass the Courvoisier'.[195] Courvoisier then signed a promotional deal with Busta's management company, Violator.[196] After rappers 8ball and MJG mentioned Grey Goose vodka, sales increased by 600%. Rick Zieiler, director of the company that imports the vodka, then set up the 'Grey Goose Music Tour' to promote the brand, featuring both 8ball and MJC as well and Lil' Jon and Bone Thugs 'n Harmony.[197] Rapper Petey Pablo in his track 'Freak-a-Leek', the 2nd biggest hip hop song of 2004, garnering over 300,000 plays on US radio, celebrated the fact he received money for lyric-branding, including the lyric: "Now

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[193] Brian Garrity (2002) "Labels Hitching Stars to Global Consumer Brands", *Billboard*, 30th November, p. 35.

[194] Stephen Armstrong (2005) "I'm drinkin' it – they payin' me for it", *The Guardian*, 11th July, http://www.guardian.co.uk/media/2005/jul/11/mondaymediasection.advertising

[195] William Chipps (2004) "Luxury Life: Hitching Brands to the Stars", *AllBusiness*, 21st August, http://www.allbusiness.com/retail-trade/miscellaneous-retail-retail-stores-not/4649795-1.html

[196] Gill Kaufman (2003) "Push the Courvoisier: Are Rappers Paid for Product Placement?" *MTV*, 9th June, http://www.mtv.com/news/articles/1472393/20030606/puff_daddy.jhtml

[197] Chipps (2004) *Op Cit*.

I got to give a shout out to Seagrams Gin, cause I'm drinkin' it and they payin' me for it."[198]

Rather than artists being a medium through which music is produced and sold, they were rapidly becoming a medium through which desire for a variety of external products was created, with music relegated to being a soundtrack to the artist 'lifestyle', which is indicated within the lyric-branding or within the film, TV show, or product the music is used to sell. With fewer and fewer artists being signed and promoted, with advertising and other types of media playing an ever more prominent role in signing and promotion decisions, and with selling CD's mattering less than the large licensing fees gleaned from advertising and other media syncs, consumers were expected to engage with an economy of desire that offered less choice and less reciprocity than ever, and which relegated recorded music to the role of facilitating 'artist brands' or other products.

Collective desire and the digital

Just as the reproduction, distribution, storage, retail and media/marketing systems of the music industry provided the topological borders for how potential energy was disparated into information in the circulation of recorded music before the Internet, *so did such material modulations and organisational discretions provide the topological borders for our desire in relation to recorded music*. Moreover our desire was tightly bound to highly routinised methods of playback, and to the specific material and operational limitations of the vinyl record, the cassette tape and the CD. Our desire was further bound by highly routinised methods of recorded music circulation, straight jacketing the possibility of interaction with recorded music, as we shall see in the next chapter, in the narrow monetised logic of the retail store and broadcasting. This was underpinned by a conglomerate system of reproduction, distribution and storage that reflected and rewarded the capacity, and enacted the specific properties, of the monostable arrangement of this system. That is, *the desiring framework was not organised by those who desire the recorded music, but by a constellation of monostable individuation that seeks to systematically reproduce itself as a direct result of routinising*

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[198] Armstrong (2005) *Op Cit*.

the desire of those who desire recorded music. The framework of organisation that presided over the internal functioning of the record player, the CD player, the vinyl record and the CD - and also the monostable management of the reproduction, distribution, storage, retail and broadcasting - had no goal other than maintaining and reproducing its dominance.

The only way out of such repression, argues Guattari, is to somehow engender a systemic arrangement whereby *collective desire* could flourish. That is, the answer is not to find another fixed social system of desire that might be less repressive, but to develop an immanent field of desire that functions at the shifting limits of the properties and capacities of all those individuals that experience the organisation; a field that would facilitate the expression of desire based on modes of existence through being open to change on the basis of developing modes of reflection, actions and intentions. This is consistent with a *metastable individuation*. Guattari writes:

> What is liberated desire? A desire that escapes the impasse of individual private fantasy: it's not about adapting desire, socializing and disciplining it, but hooking it up in such a way that its process is uninterrupted in the social body, so its expression can be collective. The most important thing is not authoritarian unification, but a kind of infinite swarming…It's not about a make-over, or totalization, but hooking up on the same plane at its tipping point.[199]

It is noteworthy that Guattari writes about 'swarming' here, over 20 years before the term became popular amongst commentators on the early days of the internet and 30 years before it became commonplace amongst BitTorrent users . Guattari uses it to refer to a possible assemblage whereby the properties and capacities of all individuals, the libidinal 'work' that they do through simply living, would be invested in the immanent ethics of desire engendered by social action, rather than the 'conflict' notion of swarming we have been critical of earlier. Famously Deleuze and Guatarri, in *A Thousand Plateaus*, argued for a 'nomadic war machine' that could assemble the drives

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[199] Deleuze and Guattari (2004) *Op Cit,* p. 267.

and impulses in a way that would liberate desire. Writing at a time before the full force of Globalization and the digital had become manifest, the clear enemy of collective desire was the State apparatus, and the idea of the nomadic war machine is fundamentally set against that. The notion of 'a body without organs' is at once a claim that desire can be liberated if the monolithic institutions of the State can be overcome.[200] It is at this point which we must return to our discussion of mnemotechnics, as it is crucial to understand what happens to routinised desire when it is no longer a matter of the imposition of State morality residing in parliament, the church or the school, but the diffusion of geo-political and corporate-conglomerate power through the techniques of information and communication technology. We must insert what we have developed regarding desire back into the discussion regarding the centrality of mnemotechnics to material culture; into an environment where systems of mnemotechnical distribution bring together different constellations of information and communication technology, which work to either routinise or collectivise desire, to enable modes of reflection through metastable individuation or to promulgate a simulacra of individuation that renders our interaction with TV, radio, cinema, music and the internet as something we passively accept or actively engage with.

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[200] The second problem posed in 'Treatise on Nomadology: The War Machine' is as follows: "*Is there a way to extricate thought from the State model?"* Deleuze and Guattari go on to say: "…the primary question is that of form itself. Thought as such is already in conformity with a model that it borrows from the State apparatus, and which defines for it goals and paths, conduits, channels, organs, an entire *Organon*." – Deleuze and Guattari (1987) *Op Cit*, p. 374, original emphasis.

Chapter 5 - Mnemotechnique and recorded music circulation: Retail and radio

Given our identification of the potential for 'collective desire' within organisations, based upon the complex interactions between the modes of reflection, action and intention of the individuals that comprise such groupings, it should be acknowledged that theories which emphasise 'machinic subjectivity' and the vicissitudes of complexity within nascent communities that work against the repetition of capital have been here-to-fore used more readily for micro-incursions into specific digital environments than those of Simondon and Stiegler. Guattari's essay 'Machinic Junkies' provides an immanent (dis)juncture from which the battle between the monolithic desiring-machines and non-linear groups of individuals could be fought. Drawing human desire and the machine together using the analogy of 'doping', Guattari characterises our addiction to machinic behaviour as violent and prohibitive, through the mindless repetitions of such things as video games and rock 'n' roll, but at the same time molecular and potentially radical, in our re-formulation and re-interpretation of such things that is a residue of the addiction.[201] Terranova's analysis of the protocols of the internet in the emergence and exploitation of 'network culture' explores the interplay between the potential of the internet as a forum for new constellations of political engagement and the 'soft control' of a digital economics that appropriate these low level activities into a new modes of regulation.[202] Hardt and Negri's notion of the 'multitude' has been adopted by diverse activist milieus within digital culture, providing a theoretical backdrop to accounts of groupings and digital modes of engagement that exist outside majoritarian notions of democratic representation, and tend towards entropy and the dissolution of such representations.[203] Directly related to P2P, the

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[201] Felix Guattari (2009) "Machinic Junkies", in Felix Guatarri *Soft Subversions: Texts and Interviews 1977-1985*, edited by Sylvere Lotringer (Los Angeles, CA: Semiotext), pp. 158-161.

[202] Tiziana Terranova (2004) *Network Culture: Politics for the Information Age* (London: Pluto Press).

[203] Michael Hardt and Antonio Negri (2005) *Multitude: War and Democracy in the Age of Empire* (London: Hamish Hamilton).

endeavours of the P2P foundation have proposed an ethical mandate that emphasises the ecological benefits of distribution systems that circulate goods on a non-scarcity basis and the potential for innovation and creativity manifest within the free flow of information.[204]

Whilst the richness of this intellectual terrain is appreciated and to some extent drawn upon, we shall focus on the theory driven method we have developed from Simondon, Stiegler's work on mnemotechnics and Deleuze and Guattari's notion of desiring infrastructures. The capacity of individuation to account for both metastable environments that assemble and dissipate just as quickly as their temporary form is forgotten, and also monostable environments that seek to regulate, concentrate and replicate is one that can provide a nascent methodological palette for the endless stream of digital environments that emerge and re-emerge as constellations of humans, computers, hardware and software continually evaporate and condense into newer temporary forms. In chapter 6, we shall use this recursive dichotomy between the operation of mnemotechnics and the structuring of desire to interrogate the dominant digital environments that seek to control how information distribution, search and storage individuates online. In **Section III**, we will look closely at metastable individuation and collective desire in digital cultures that envelop and are enveloped by BitTorrent P2P environments.

Retention: Mnemotechnics, cultural memory, mnemotechnical artefacts

Before we focus on the digital, we must return to an earlier point regarding the instantiation of a global mnemotechnical system in the 20th century. How might the ubiquity of mnemotechnics and its centrality to the creation of wealth and material goods impact on the notion of collective desire we introduced toward the end of chapter 4? What are the contours of desire in a global system of information and communication technology? As we saw from our analysis of some of the workings of the

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[204] P2P Foundation (2009) 'The Foundation for P2P Alternatives', http://p2pfoundation.net/The_Foundation_for_P2P_Alternatives

music industry in the last two chapters, the 're-solution' of the seeds of all individuation (the 'excess') through transindividual collective connection, so necessary for the expression of desire based on shared modes of reflection, is subjected to a process of routinisation that seduces and controls individuals by imposing an organisational blueprint of impotent, unchanging desire. In order to comprehend this further and to understand why the memory function of technics is so central to individuation and becomes more so in the mnemotechnical system, we shall turn to Stiegler's theory of *retention.* We can take Stiegler's analysis further here by re-evaluating some of the terminology he uses in this branch of his theorising, which will enable us to concurrently adapt and update his discussion with the aim of mapping the homology between mnemotechnics and desire before the internet, and the changing topological borders of the relational catalysis between the two once the internet became manifest.

 Stiegler adapts his own theory of primary, secondary and tertiary retentions from Husserl's discussion of time-consciousness, and specifically from his focus on melody as a 'temporal object'. All mnemotechnics, argues Stiegler, are temporal objects and are constituted in the same way as conscious thoughts – they appear and in a moment they are gone, stored as memory:

> A temporal object — melody, film, radio broadcast, speech — is
> constituted by the time of its flowing off, which Husserl names a flux.
> It appears only to disappear: an object passing away. Consciousness
> as well is temporal in this sense. A temporal object is constituted by
> the fact that, as the consciousnesses of which it is the shared object,
> it flows away and disappears after having appeared.[205]

 Sticking with Hussurl's example of melody, *primary retentions* are the apprehension of the melody at the time that it is heard, or how one becomes conscious of it in the here and now – how the resonance of one note is constituted by the previous note, and how it tends toward the next note in the sequence, thus constituting the unity of the melody

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[205] Bernard Stiegler (2009b) "Desire and Knowledge: The Dead Seize the Living", *Ars Industrialis*, 19th February, http://www.arsindustrialis.org/desire-and-knowledge-dead-seize-living

in the present. Moreover, it is the flux of the past concresing on the present and the present concresing on the future in a single moment of consciousness. *Secondary retentions* are how we remember the melody once it has finished playing – broadly speaking, *cultural memory*. They are what the memory selects from the melody that gives the melody meaning beyond its temporal flux. Hearing the melody again and again creates a constant oscillation between primary and secondary retentions – our memory of the melody changes the way we become conscious of it the second time around, and our conscious apprehension of it again changes our cultural memory of it. Tertiary retentions are the means by which individuals access their cultural memory. These are objects, exterior to the individual, that contain the means to facilitate the recall of a memory of a temporal object and enable it to be traced through recordings and transmissions. A melody is retained in this sense through sheet music or a sound recording in the form of vinyl acetate, tape reel or digital file. Books, the internet, computers, TV sets, radio's, CD's, DVD's and cinema reels are also tertiary retentions insofar as they are repositories for temporal objects. For our methodological purposes, we shall call these *mnemotechnical artefacts*.[206]

Making a distinction between 'media', 'delivery systems' and 'protocols'[207] can be used to disentangle this complex analysis in the following way: Temporal objects or *mnemotechnics* (primary retentions) are what we now broadly refer to as *media* or in new media parlance *content* – writing, audio/visuals, binary code – that which is the recorded document of memory. *Mnemotechnical artefacts* (tertiary retentions) are what we can broadly refer to as *delivery systems* that enable us to access content – vinyl records and record players; CD's and CD players; DVD's and DVD players; computer hardware, software and the internet that enables CD/DVD/digital playback, ripping, burning, encoding and circulation of mnemotechnics. 'Protocols' are approximate to

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[206] The word 'artefact' is preferable to 'object' here because it is necessary to underline the 'man-made' or in Stieglerian terms 'de-natured' quality of all mnemotechnical artefacts.

[207] To make this distinction, I drew upon the work of both Lisa Gitleman and Henry Jenkins. Lisa Gitelman (2008) "Introduction: Media as Historical Subjects", in *Always Already New; Media, History and the Data of Culture* (Cambridge, Mass: MIT Press) and Henry Jenkins (2007) *Convergence Culture: Where Old and New Media Collide* (New York: New York University Press).

secondary retentions or *cultural memory*. They are the sets of cultural, material, social and economic practices that govern how we 'recall' mnemotechnics through our engagement with mnemotechnical artefacts In music these could be as diverse as expecting the lyrics to be printed on a CD inlay cover, the collective anticipation before a new album release, or plugging an iPod into a friend's laptop to upload some of their music.

Stiegler couches this terminology in mnemonic semantics because the recourse to memory captures the pedagogic social operation of reading, writing, television, cinema, recorded music and the internet, and the quickening pace at which the individual must learn and re-learn in a system where these mnemotechnics are at the centre of culture. The relationship between our conscious apprehension of temporal objects and our cultural memory of them is determined by how we use or are able to use mnemotechnical artefacts. That is, in contemporary information culture, the preindividual environment is made up of, on the one hand, *mnemotechnics* (text/audio/visuals/code) and on the other, our experience of cultural memory through our engagement with mnemotechnical artefacts. Remembering what we took from our consideration of Deleuze, mnemotechnical artefacts provide an *infrastructure*, both economic and psycho-social, through which we order our drives and impulses towards mnemotechnics, which in turn becomes our cultural memory, or *desiring memory*. This preindividual therefore contains the stock of all our psychic and collective individuation. We access mnemotechnics through mnemotechnical artefacts – these artefacts (tertiary retentions) therefore determine the relationship between our conscious apprehension (primary retentions) of music, film and TV and what we select from that, which becomes our memory of them (secondary retentions). In Stiegler's words: "…Tertiary retentions are that which, like an alphabet, enables access to the preindividual stock of all psychic and collective individuation…[and] which all condition individuation as symbolic sharing and distinction, made possible by the exteriorisation of individual experience in traces and as transmission."[208]

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[208] Stiegler (2009b) *Op Cit*.

Mnemotechnique and interaction

This primacy of what Stiegler calls tertiary retentions, or what we are calling mnemotechnical artefacts, is of concern in Stiegler's interlocution with Jacques Derrida, published as *Echographies of television: filmed interviews*.[209] Stiegler argues here that the bracketing of desire that has occurred due to the global mnemotechnical system can be understood as a process of limitation and control of the *interaction* between mnemotechnics, the cultural memory of those objects and the mnemotechnical artefacts we use to engage with them, or between primary, secondary and tertiary retentions. Interaction is understood here as the relationship between the user and mnemotechnical artefacts, and the extent to which this relationship enables the user to learn the 'language' of mnemotechnics, what Stiegler calls *mnemotechnique*.

Through his conversation with Derrida, Stiegler looks at the difference between the individual's ability to 'interact' with mnemotechnical artefacts in pre-mnemotechnical and global mnemotechnical systems. Stiegler compares alphabetic writing to the technologies of film, television and computers, through outlining the differential implications of interaction with the 'addressee' (reader/viewer/audience) that each imply. When one learns the technique of alphabetic writing, Stiegler argues, one learns at the same time how to read and how to write. Despite the many different levels of ability and styles of literacy present amongst those who are literate, all those who know the technique can to some extent read and to some extent write. One learns both how to *consume* writing through reading, and how to *produce* writing through reading. The same is not strictly true of film, TV or computers. The techniques involved in 'receiving' the information contained within the technology here often exclude the addressee from the productive knowledge of how the technology works, that is, from the *mnemotechnique*, but enables the addressee to use the technology nonetheless. Technical competence is not a pre-requisite for using the mnemotechnics that became manifest in the 20th century. The mnemotechnique of film, TV and computing is largely

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[209] Jacques Derrida and Bernard Stiegler (2002) *Echographies of Television: filmed interviews* (Cambridge: Polity Press) pp. 56-67.

the domain of the technical expert or the artist, excluding most that use the technology. The mnemotechnique of writing is the domain of all those who use the technology.[210]

The uncritical acceptance of mnemotechnical artefacts, specifically through consumer interaction with recorded music, was something that the music industry took for granted even in the face of substantial online filesharing. As we have seen in the preceding chapter, from 1999 onwards the Big 5 chose to remain entrenched in the pre-internet status quo through practices aimed at the 'consolidation' of its key money making concerns. Another angle of attack it used to maintain its monostable systems, as we shall see below, was to exercise deeper levels of control over elements of the preindividual environment through which most people, until the internet, commonly *accessed* recorded music – namely broadcasting and retail – thereby subordinating everyday interaction with music to the domain of the predictable; to an uncomplicated routine that required active external management but no reciprocal response from those subject to it. The music industry and its retail and broadcasting cohorts attempted to routinise the operation of psychic and collective individuation – our capacity to express collective desire through our interaction with mnemotechnics and our interaction with each other through mnemotechnics – into a passive regime; to make our individuation in relation to music uncritical, as if it were something that happens to people, rather than something people can make happen.

Stiegler touches on the idea of a 'passive regime' in *Technics and Time 2: Disorientation*. His focus here is on the systemic co-opting of secondary retention, or cultural memory, by ubiquitous media artefacts that have come to dominate tertiary retention in the modern media landscape. He emphasises here that it is the control over the *temporality* of media and its operation that has led to our experience of that media being reconstituted in the image of those who control the production of mnemotechnics and mnemotechnical artefacts.[211] Stiegler argues here that the mnemotechnical artefacts of the 20th century – TV sets, radios, the cinema, the phonograph and its derivatives – set

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[210] *Ibid*, p. 58.

[211] Bernard Stiegler (2009c) "Temporal Object and Retentional Finitude", in *Technics and Time, 2: Disorientation* (Stanford, Cal: Stanford University Press), pp. 188-243.

strict spatio-temporal boundaries for the consumption of mnemotechnics. They allow us to receive mnemotechnics at particular times and in particular places, but do not allow us to reconfigure them to make the spaces and the times more suitable for us. Thus, desire is created for us, and we are eliminated from the process of creating desire, and the pleasure that may bring. Moreover, our conscious appraisal of the temporal object (mnemotechnics) and our selective memory of it (cultural memory) is controlled by mnemotechnical artefacts that we cannot control. Collective desire, then, becomes routinised desire.

The routinisation of desire in music retail and broadcasting intensified after 1999, and not only limited consumer choice, but actively excluded consumers from the *mnemotechnique* of traditional recorded music circulation. That is, from productive knowledge of the workings of mnemotechnical artefacts, which as will be remembered are the delivery systems that enable us to access recorded music. These delivery systems are not limited to the playback materials and 'black box' machines that we are in direct contact with when we playback music, such as .mp3's, .avi's, CD's, DVD's, CD players, DVD players, TV's, radio's, the internet and computers. They are also the systems through which music is broadcast to us (radio stations, TV stations, the internet), the systems through which we buy our music (mass merchants, specialist music chains, independent music shops, the internet) and the systems through which the recorded music is reproduced and circulated before the point of sale (manufacturing plants, distribution logistics, the internet). In the USA between 1999 and 2005, as we shall investigate presently, the consumer's ability to engage with mnemotechnique of the recording industry - to have access to productive knowledge of the delivery systems that many had been relying on since commercial recorded music began (namely, major labels, radio and retail) and to have some sort of role in *producing* or influencing the content of radio and the availability of music in retail shops – had been systematically reduced to almost nothing.

Shutting off mnemotechnique: The high street and the airwaves in the USA

 The focus on selling more copies of fewer artist 'brands' and controlling the spatio-temporal structure of how consumers could interact with commercially sold recorded music was reflected in the cartel relationships that the music industry entered into with retailers. In the USA, there had been a shift away from working with the 'specialist' music chains it had previously colluded with when found guilty of price fixing in 2002, and a deliberate move towards the dominant 'mass merchant' discount department stores, a sector which had almost doubled their market share between 1990 and 2002, from 16.2% to 31.7%. The major players here were Wal-Mart and Target. The mass merchant stores both fitted the remit for the Big 5's new 'streamlined' strategy, and also encouraged an increasingly severe implementation of it. Both major players had a massive nationwide infrastructure of outlets. In 2002 Wal-Mart had 1,800 outlets and planned to open another 235 that year. Target had around 1,000 and planned to open 115 new outlets within the year. [212] Unlike the specialist stores, they did not necessarily have to make a profit on selling CD's, often using music as one of a range of products to lure customers into the stores to buy a variety of merchandise, so were able to offer much lower prices. The far larger customer and outlet base they had meant they could make far bigger orders, but this fact, combined with the reality that CD's were just another product vying for shelf space with thousands of others, meant that they would only stock music by top selling, established artists or by new artists that the industry could convince them were going to sell well all across the country, or at least appeal to the widest range of customers. Furthermore, Target began to adopt a policy where no more than 10 new artists would be stocked and promoted in their stores at any one time. Ed Christman, the senior retail editor of American Industry bible *Billboard Magazine* asserted that "…the mass merchants will not even consider taking a title until it looks like it is about to take off."[213] The escalating dominance of the mass merchants

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[212] Ed Christman (2002) "Labels Ponder Impact of Discounters: Will growth of mass merchants make it harder to break acts, sell catalog?" *Billboard*, 31st August, p. 101.

[213] *Ibid*.

allowed them to dictate terms to the music industry. Wal-Mart, which by 2004 accounted for 1 in every 5 major label CD's purchased in the USA, attempted to drive the wholesale price of CD's down so they could sell the most popular CD's for under $10, by threatening to replace CD shelf space with more lucrative DVD's and video games. The major labels acquiesced, in fear of losing 20% of their sales margin.[214]

This placed unprecedented constraints on consumer choice, and created a rupture in a relationship that consumers had relied on unquestioningly: that their knowledge of music retail was *productive* insofar as they could expect to be able to *demand* a diverse array of available music, which would be supplied by the labels on the basis of that demand. This trend both drove and was driven by the major labels, who colluded with the mass merchants on the basis that it chimed with their decision to focus spending on an increasingly small number of 'dead cert' artists. In a sense, the labels could justify this behaviour because it enabled them to finally abandon any notion of 'wasting' money on investing in artists who were not going to become major 'crossover' stars. Furthermore, any money they lost on selling at a lower wholesale price could be recouped by selling huge amounts of fewer products, where those 'products' were artists whose music or 'brand' was in any case prosaic enough to make money in a multiplicity of other conglomerate media divisions. Furthermore, the responsibility to develop 'mid-level' artists, which largely involved allowing artists to make albums that were not a commercial success, or even made a loss, while they found their feet was increasingly considered the job of independent labels. The majors would now come in and sign the artists who were about to 'break' due to the success they had had on independent labels, that were nevertheless completely dependent on the distribution networks of the majors for survival. This risk minimisation strategy was also used to justify staff cutbacks, as fewer people were needed to work at labels that had no artist development department.[215]

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[214] Warren Cohen (2004) "Wal-Mart Wants $10 CDs: Biggest U.S. record retailer battles record labels over prices", *Rolling Stone*, 12th October, http://www.rollingstone.com/music/news/wal-mart-wants-10-cds-20041012

[215] Mark Fox (2005) "Market power in music retailing: the case of Wal-Mart", *Popular Music and Society*, vol. 28, no. 4, pp. 501-519.

This situation was further exacerbated by the 'exclusives' cartel that grew between the majors and the mass merchants. This is where a mass merchant buys, or is offered, the exclusive rights to sell an album, single or related content (a live DVD, for example) in their stores. The deal can work for a set period of time, after which other retailers can stock the product, or for all time, where the product can only ever be sold by that merchant.[216] The deal is sometimes used to make major label CD's more attractive to the mass merchants, whereby the merchants are offered the chance to stock an exclusive new album featuring 'bonus tracks' or 'interactive content' that cannot be found anywhere else,[217] or used by mass merchants to secure the rights to products that are guaranteed to be big sellers, whereby the merchant will offer the label money or, as happened with Journey's recent deal with Wal-Mart, a paid-for print, TV, radio and in-store promotional campaign, advertising Wal-Mart as the exclusive vendor of the product.[218] This enabled Wal-Mart and Target to position themselves as the market leaders of new music releases over the chain specialists and independent stores, and offered a guarantee to the major labels that their priority mainstream acts would be the focus of music promotions in the largest network of outlets in the country during the first few weeks of release. The Coalition of Independent Music Stores, a powerful co-operative group of some of the biggest independent music specialist stores in the US, deemed the practice both anti-competitive and hostile, and in 2004 sought to exclude any major label artist that was offered as an exclusive to the mass merchants from their charts and promotions. Whilst this had some effect, the lure of massive TV campaigns and huge circulation meant that the practice went on largely unabated.[219] In these dominant mass merchant stores, the mnemotechnique of the record store became an identikit, monostable construct that excluded the desires of the widest range of music consumers, in favour of forcing desire for recorded music into a concentrated circuit of

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[216] Terry Currier (2003) "How Exclusives Are Killing Retail", *Billboard*, 16th August, p. 12.

[217] Ed Christman (2003a) "Discounters Press Labels on Pricing", *Billboard*, 16th August, p. 1.

[218] Robert Levine (2008) "For Some Music, It Has to be Wal-Mart and Nowhere Else", *The New York Times*, 9th June, http://www.nytimes.com/2008/06/09/business/media/09walmart.html

[219] Ed Christman (2004) "Retail Groups Warn Labels Against Exclusives", *Billboard*, 2nd October, p. 35.

repetitive mainstream consumption determined only by the best selling music products and other best selling mass market products that had little or nothing to do with music.

In general terms, this trend towards the homogenisation of the retail structure and the concentration of a small number of leading artists within that structure saw over 1,000 music-carrying stores close in the USA in 2003 alone.[220] Whilst some of the music specialist retail chains could compete in some areas, independent record stores typically offering the most diverse catalogues and dedicated, knowledgeable staff struggled to compete in any. They could not offer the outlet network or pricing structure, nor were able to afford to buy exclusives or run multimedia advertising campaigns. This left them in a position where they were either unable to stock new records or had to stock them at higher prices than the mass merchants. Often they could only stock some of the bigger titles after the 'opening day rush' had been and gone. *HITS* magazine, a US industry tip sheet, estimated that one third of independent music stores closed between 1998 and 2003.[221] At the end of the first quarter of 2006, when total US album sales declined by 5%, independent stores were down by 18.5%.[222] Again, we can observe how a metastable notion of mnemotechnique - of including the music fan in the individuation of the productive capacity of the delivery systems they have traditionally relied upon - is supplanted by cross-corporate responsiveness. Recorded music availability is dictated by mass-market merchandisers with no vested interest in selling music over other products, to which the labels have allowed to determine what types of music are available, in what quantities and at what price. Desire for music becomes something that the major labels and mass-market retailers attempt to mass-manufacture, homogenise and routinise across an entire network of retail that dominates floor space and advertising

[220] Ed Christman (2003b) "Sales Down, Retailers Up: Merch Covers Album Skid", *Billboard*, 13th December, p. 3.

[221] New Rules Staff (2003) "Coalitions Key to the Survival of Independent Music Stores", *New Rules Project*, 1st April, http://www.newrules.org/retail/news/coalitions-key-survival-independent-music-stores

[222] Ed Christman (2007) "Long, Cold Winter: Digital Growth Couldn't Stem CD, Rap and Country Q1 Drops", *Billboard*, 14th April, p. 6.

space on TV and radio, and those who have music tastes outside of this mainstream are left with fewer and fewer specialist retail outlets with which they can engage.

 Nowhere was the drive towards the monostable individuation of fewer mainstream artists circulating around fewer and fewer outlets more strongly exhibited than in the oligarchic operation of Clear Channel, the dominant force in US radio since the 1996 Telecommunications Act.[223] Before this Act was passed, individual companies were allowed to own no more than one FM and one AM station per market[224] and could own no more than a total of 14 stations nationwide. The Act lifted both the regional and national ownership caps and led to rash of acquisitions by large media companies. Once the dust had settled, just 10 companies had a 65% market share of listeners across the country. Clear Channel was by far the most dominant force, owning around 1233 stations, more than 30 times the amount it could have owned prior to the Telecommunications Act and more than 10 times the amount of their closest rival in terms of station ownership, Cumulus Media, who owned just over 200. Clear Channel had 27% of the nationwide market share of listeners, which was more than the combined share of its 4 closest rivals.[225] Moreover, four firms- Clear Channel, Viacom, Cox and Entercom - controlled 52.3% of radio revenue nationwide, turning the US radio market into an oligopoly.[226]

 Clear Channel's dominant role in the rapid centralisation of radio ownership was reflected by their policy of centralisation in both staff decision making and playlists. Local station programmers were replaced with 'Program Directors', who decided station

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[223] Full text of the 1996 Telecommunications Act can be found here: FCC (1996) "Telecommunications Act of 1996, Pub. LA. No. 104-104, 110 Stat. 56", *Federal Communications Commission*, http://www.fcc.gov/Reports/tcom1996.pdf

[224] In the American music industry, a 'market' usually refers to a city and its surrounding area. A list of specific radio markets can be found here: NationMaster (2008) "List of United States Radio Markets", http://www.statemaster.com/encyclopedia/List-of-United-States-radio-markets

[225] Peter DiCola and Kirsten Thomson *(2002) Radio Deregulation: Has it Served its Citizens and Musicians? A Report of the Effects of Radio Ownership Consolidation Following the 1996 Telecommunications Act* (Washington DC: Future of Music Coalition), pp.23-24.

[226] *Ibid*, p. 28.

playlists across whole markets, and sometimes across multiple markets.[227] Clear Channel programmed each of its music stations to a specific format, usually one of the most popular such as 'AC' (Adult Contemporary),'Contemporary Hit Radio', 'Urban Contemporary', 'Rock', 'Top 40' and 'Country'. Radio in the US had long taken this formatted approach, but the difference in the Clear Channel era was that playlists became standardised within each format. The lifting of on-air advertising restrictions meant that the focus was on the small number of key artists and tracks that would garner the most advertising revenue nationwide,[228] and they would often simply 'plug' the playlist from a popular 'Top 40' station in one part of the country into another similar station in a different part of the country. If there was any local diversity in the music selection, it would come from the Program Director or higher, and it certainly wouldn't occur for reasons of artistic merit or community responsiveness, whereby local listeners could have strong input into the makeup of the playlists.[229] Local DJ's were also replaced, with Clear Channel demanding that bigger name DJ's record voice-overs that could be played on multiple stations. The practice became known as 'voice-tracking', and Clear Channel used it to actively deceive listeners. Indeed, there are numerous of examples of Clear Channel DJ's recording voice tracks in one city and pretending to be in another.[230]

This monostable standardisation of radio stations, playlists and the DJ 'voice' were consistent with the strategies of the major labels. Whereas the mass merchants offered them a dominant national network where the same 10-15 artist brands could be sold at any one time, Clear Channel offered a similar-sized network which could broadcast songs by those artists anywhere and at anytime. In their detailed study of radio consolidation in the US, the not-for-profit think tank The Music of Music Coalition found

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[227] Eric Klinenberg (2007) *Fighting for Air: The Battle to Control America's Media* (New York: Metropolitan Books), p 59-61.

[228] DiCola and Thomson (2002) *Op Cit*.

[229] Future of Music Coalition (2002) "Joint Statement on Current Issues in Radio", 24th May, http://72.27.230.165/filing/joint-statement-current-issues-radio-2002

[230] Alec Foege (2008) *Right of the Dial: The Rise of Clear Channel and the Fall of Commercial Radio* (New York: Faber and Faber), pp. 158-161.

that there was a 'twin bottleneck', which reduced the diversity of music on the radio directly because of the interrelated oligopolies in both radio and the music industry.[231] Crucially, Clear Channel owned all of the major 'Top 40' formatted stations that were seen as key to breaking new songs and new artists[232] and 60% of rock-radio listening.[233] This led to Clear Channel controlling, and through doing so exacerbating the practice of 'pay-to-play' or what is referred to in the US as 'payola' – the practice of record labels paying radio stations in return for airplay.

Before 1999, payola worked through labels paying 'independent promoters' to take records to individual radio stations and 'convince' the station programmer or DJ to play the record, usually by simply paying them money. The promoters are 'middle men' who enable both the radio stations and labels to avoid breaking the law by virtue of no money directly changing hands.[234] After 1999, Clear Channel stopped independent promoters dealing directly with radio stations, and instructed that the money be sent straight to Clear Channel head office in San Antonio. Clear Channel's Program Directors also signed market-wide or multiple market-wide exclusivity deals with the larger independent promoters, such as Jeff McClusky & Associates and Tri State Promotions & Marketing, creating a situation where these promoters could charge huge prices to the labels because they exclusively controlled playlist additions in massive chunks of the nationwide market.[235] The major labels therefore concentrated more and more millions into the promoters that had exclusive deals with Clear Channel. The net result was a massive increase in payola, and only the most bankable artists that were deemed by the labels to be worth the biggest payments to the promoters were guaranteed airplay in

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[231] DiCola and Thomson (2002) *Op Cit*, p. 4.

[232] KIIS-FM in Los Angeles, WHTZ and WKTU in New York, KHKS in Dallas, WXKS in Boston, WHYI in Miami – see Eric Boehlert (2001a) "Radio's Big Bully", *Salon*, 30th April, http://www.salon.com/entertainment/feature/2001/04/30/clear_channel/print.html

[233] *Ibid.*

[234] *Ibid.*

[235] Foege (2008) *Op Cit*, pp. 223-226.

the biggest markets. This also priced artists on independents labels out of the mainstream radio market.[236]

Clear Channel made sure that its acquisition of the lion's share of the radio market was accompanied by the acquisition of large parts of other music-related markets that its radio stations depended on to make money, and which in return it could make more profitable due to its radio dominance. Its purchase of SFX in 2000 for $4.4 billion gave them ownership and operation of over 120 live entertainment venues in 31 of the top 50 US markets, including 15 amphitheatres in the top 10 markets.[237] It also gave them ownership of a large network of staff and infrastructure that exclusively booked and promoted concerts in those venues. It owned Katz Media, the company that ran most of the advertising on US radio[238] and it had also bought Eller Media, which owned over 50,000 outdoor advertising billboards in 15 major markets in 8 States,[239] making Clear Channel the biggest player in the outdoor advertising market. The 5 institutions Clear Channel thus controlled – radio, concert venues, booking agents, radio advertising representation and billboards – held the key to how artists booked and promoted their gigs, and to how, where and when a potential audience could experience gigs. Prior to these takeovers, standard procedure would involve a local concert promoter paying all the local radio stations for advertising to promote a concert, and also paying the local company that ran the billboard and poster advertising. However, in the Clear Channel era that promoter was usually part of SFX, the advertising liaison would be Katz Media, and Clear Channel Outdoor (the rebranded Eller Media) would own the billboard network. Indeed, in the FMC's *Joint Statement on Current Issues in Radio*, a cornerstone of the accusations of anti-competitive behaviour it brought against Clear Channel was the 'vertical integration' of its companies, and that it "...had an interest in limiting the

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[236] Di Cola and Thomson (2002) p. 73; Soma FM (2004) "emails between Sony BMG records and radio stations", 18th April, http://somafm.com/payola/payola2.pdf

[237] Foage (2008) *Op Cit*, p. 178.

[238] Klinenberg (2007) *Op Cit*, p.60.

[239] Foage (2008) *Op Cit*, p. 124.

promotional support of bands and artists who are performing for other companies [non-SFX booking agents], at other venues or who are sponsored by other stations."[240]

Clear Channel could use any one of, or a combination of, these 5 assets as leverage to maintain and increase its dominance of fiscal circulation between radio, advertising, concert venues and concert bookings. It created its own set boundaries of monostable individuation, forcing the movement of capital around its holdings, and leaving consumers, artists and labels with little choice but to go from one Clear Channel company to another when engaging with music radio and live music in the USA. It was a regular occurrence for Clear Channel head office to instruct its booking agents, in writing, to move 10% of their advertising budget from print or non-Clear Channel radio to radio stations owned by Clear Channel, regardless of whether those stations were an appropriate promotional fit for the artist (i.e. would reach listeners who were likely to be interested in attending the concert) or not.[241] The residual effect for music consumers (who now only ever experienced 'residual' effects) was yet another instance where the structure of their interaction with music was being manufactured for them, and without their input. Songs would bizarrely disappear and reappear on Clear Channel Stations, concerts would be cancelled and reorganised, and promotions would be taken off one station and reappear on another, all at the behest of Clear Channel and without giving listeners or concert goers legitimate reasons for the changes, related to providing them with a better service.[242]

If we consider Clear Channel alongside the other targeting, concentrating and routinising tendencies within and between major labels and retail markets, we can observe that as the closing off of mnemotechnique becomes more marked, there is simply less choice and less opportunity for the consumer to interact with increasingly

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[240] FMC (2002) "Joint Statement on Current Issues in Radio" *Future of Music Coalition*, http://72.27.230.165/filing/joint-statement-current-issues-radio-2002

[241] Foege (2008) *Op Cit*, p.180.

[242] Eric Boehlert (2001b) "Suit: Clear Channel is an Illegal Monopoly", *Salon*, 8th August, http://www.salon.com/ent/clear_channel/2001/08/08/antitrust/index.html; Eric Boehlert (2001c) "Rock 'n' Radio Rumble", *Salon*, 8th August, http://www.salon.com/ent/clear_channel/2001/08/08/riverbend/index.html

unresponsive and targeted methods of accessing music. The situation for many ordinary music fans, sat at home in front of their computers was as such: The same tiny handful of songs, recorded and performed by an ever-decreasing glut of major label brand-artists, were being circulated around the Western World at any one time, to the exclusion of the vast majority of music that did not fit the branding remit. There was less choice than ever in terms of musical diversity – people were sonically and visually bombarded by the same artists and songs where ever they went and whatever they did – at the supermarket, on the radio, on the TV, at concerts, at the cinema, in the car, on the street *ad infinitum*. Furthermore, people had less power than ever to influence the types of music being promoted, sold, broadcast and performed through traditional channels. It was becoming more and more obvious to consumers that the industry no longer even tried to hide the fact that it made decisions primarily on the basis of circulating money around itself through the cartel operation of vertical and horizontal integration, regardless of whether that limited the choice of paying customers, or whether it damaged their experience of buying music, listening to it being broadcast or watching it being performed live.

 The reticulation of recorded music retail and broadcasting regimes between 1999-2005 illustrates that for those controlling such hierarchies, the primary currency is our *attention* and the main intention is not to control the actual content of the mnemotechnics we use and thereby focus our attention onto particular content, but the timeframe and spaces in which we use and purchase mnemotechnical artefacts and thereby *de-focus* our attention so that we cease to actively discern content. If our desire can be pinned down to particular temporalities and spatial assumptions, a passive regime can be created through which our desire, through tertiary control of the relationship between primary and secondary retention, is routinised and we will be more likely to consume the mnemotechnics that we are told are appropriate for particular times and ought to be bought in particular places.

 The result is that the metastability of the preindividual, that proclivity to fall out of step with itself that is the source of new orientations between desire and mnemotechnics and therefore new individuations, becomes *monostable* – we acquiesce to a singular, passive set of habits. Socialised desire is tempered by ubiquitous mnemotechnical

artefacts than are purposefully made to be hypertelic – they can only be innovated rather than reconditioned, and the non-expert has little or no idea how to do even this. These artefacts enervate our interaction with the temporal object – they control our secondary retention by heavily limiting what we can select from our primary retention - we have to 'enjoy' mnemotechnics along the spatio-temporal trajectory that is provided for us, and commensurately our consciousness and cultural memory becomes passive. Moreover, the mnemotechnical artefacts which consumers had relied upon before the internet had perversely become less interactive and more exclusionary as the potential for global interactivity and inclusion became clear through the rise of the Internet. Indeed, these limitations were not brought to an end simply through the emergence of the internet. The internet itself implies particular manifestations of monostable individuation that routinise desire in different ways to the pre-internet conditions of 'physical' distribution. The operation of monostable individuation on the internet is the subject to which we shall now turn our attention.

Intermezzo

Chapter 6 - The routinisation of the transindividual collective: Google and social networking

This chapter outlines a shift in the regulatory patterning of monostable individuation, from large organisational infrastructures seeking to control the movement and management of *mnemotechnical artefacts*, such as CD's, DVD's, playback devices, radio and retail, to new large-scale online organisations shifting the site of control to *transindividual collectives* of people sharing mnemotechnical content that is no longer dependent upon physical delivery systems, but has been 'uploaded' to a hard drive or a server that has a connection to the internet. As we shall see, it is control over how and where this content is uploaded to, how and where it is stored and distributed, and what happens to it once it has been uploaded that constitutes the parameters for the relationship between desiring-machines that seek to control and monostabilise these new opportunities into cycles of online repetition that produce profit, and groups of individuals that come together on the internet to create, share and discuss digital content. This chapter is positioned here as an 'intermezzo' (a term used in music to indicate a short movement serving as a connecting link between the main divisions of a larger work) because it is necessary both to understand the transition from a 'physical' to a 'digital' system of mnemotechnical control, and also the differences between a nascent digital system that attempts to monetise and commercialise collectives or 'communities' of 'online' individuals, and an older system of digital circulation that is part of the history of collective decentralised online information sharing that largely managed to escape the grasp of commercialisation, which we shall go on to analyse in **section 3**.

Transindividual collectives and the internet

Stiegler and Derrida published their conversation *Echographies of Television* as early as 1996. Both acknowledged, however, that machinic development was proceeding in the direction of producing widely available mnemotechnical artefacts that could not only receive/send information, but manipulate and produce information. Thus, what Stiegler

calls 'practices of the image'[243] in relation to TV and film but that can be extrapolated to phonography and software/hardware (the prerequisite being the preservation of memory via non-alphabetical means), were seen to have the potential to develop in such a way that the user can both produce and consume mnemotechnics. Others writing at the same time, such as Allucquere Rosanne Stone[244] noticed the early potential of internet-enabled computers as "…arenas for social experience and dramatic interaction,"[245] something people could build a collective sense of desire around rather than merely use as a tool to complete work, in her analysis of BBS (Bulletin Board Systems) that eventually morphed into the World Wide Web. One only has to type the name of a band, artist, actor, music/film/novel genre, album or TV programme in order to find a rigorous structure of collective endeavour – dedicated websites, images, blogs, streaming, P2P sites and forums. The uncoordinated endeavour of individuals and small pockets of individuals ends up having a coordinate impact. The old idea of a 'fan club', replete with its culture of dedicated 'geek' fans, meeting up periodically at esoteric fan conventions, has been opened up to a wider remit of individuals through the interactions possible on the internet.[246]

However the existence of potential does not necessarily translate into action and the existence of collectives does not always imply transindividual connection. In the paper *Within the limits of capitalism, economising means taking care*[247] Stiegler considers Microsoft's attempted $44.6 billion dollar takeover of Yahoo[248] and Google's decision to

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[243] Derrida and Stiegler (1996) *Op Cit*, p. 56.

[244] Allucquere Rosanne Stone (1996) *The War of Desire and Technology at the Close of the Mechanical Age* (Cambridge, Mass: MIT Press), pp. 99-121.

[245] *Ibid*, p. 16.

[246] Henry Jenkins (2007) *Op Cit*.

[247] Bernard Stiegler (2009d) "Within the limits of capitalism, economising means taking care", *Ars Industrialis,* 19th February*,* http://www.arsindustrialis.org/node/2922

[248] BBC (2008) "Microsoft Wants to Purchase Yahoo", 1st February, http://news.bbc.co.uk/1/hi/business/7222114.stm

invest in the mobile phone network.[249] He claims that conglomerates are now focusing their attention on controlling *social networks* rather than mnemotechnical artefacts:

> The objective of these operations is to gain control over the social networks, designating the digital networks wherein new types of the capture and formation of psychical as well as collective attention are revealed: it is a new age of reticulation that is being implemented, and it constitutes a new stage of what I have described as a process of grammatisation. At this stage, it is the mechanisms of transindividuation that are grammatised, that is, formalised, reproducible, and thus calculable and automatable.[250]

He makes a strong argument here that the battleground for control of desire and mnemotechnics is no longer the mnemotechnical artefact, but the *transindividual collective*. As the internet has subsumed music, film and television and thereby become the dominant mnemotechnical artefact, controlling it depends on controlling the collective engagement that it offers with its users. Due to the fact that conglomerates cannot completely control what is uploaded, downloaded and shared on the internet – it cannot *routinise* it as a whole – they seek to routinise collective groupings of internet users by shepherding them into particular confines of the internet and thereby limiting its visible potential. This bracketing of desire within the confines of heavily routinised structures can be observed when one observes the rise of social networking sites that were popular during OiNK's existence (2005-2007) such as MySpace and Facebook, and the ubiquity and dominance of Google. In a sense, the same sort of rules apply as those discussed by Derrida and Stiegler in 1996: one learns how to *consume* the internet through pointing, clicking and typing in graphical/textual interfaces, but the very same processes, although they enable the user to 'contribute' text, audio and video to the internet, do not teach one how to write code or build and adjust hardware and software; how to *produce* the internet.

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[249] Elena Balan (2007) "Google Bids USD 4.6 Billion to Buy Mobile Phone Network", *Softpedia*, 27th July, http://news.softpedia.com/news/Google-Bids-USD-4-6-Billion-to-Buy-Mobile-Phone-Network-61168.shtml

[250] Stiegler (2009d) *Op Cit*.

MySpace and Facebook

Social networking websites offer users the opportunity to create a public profile, complete with personal information, photos, videos, images and music, and to connect to other public profiles by becoming their 'friend' or 'follower'. They are characterised by simple design that focuses on making it easy to 'interact' with people via textual interfaces and to upload images, music and video to share with other users. A 2009 Neilson Report into social networking entitled *Global Faces and Networked Places*[251] showed that in early 2008, just after the closure of OiNK, around two thirds of the global online population were members of a social networking site and that these sites took up 10% of all internet time. Around this time, the two most popular, in global terms, were *Facebook*, bankrolled by neo-conservative activist and owner of PayPal, Peter Theil,[252] and *MySpace*, owned by Rupert Murdoch's *News Corporation*, the conglomerate that also owns the Fox News Network and 20th Century Fox, amongst many other companies. The Nielson Report shows that Facebook was the largest, with nearly one third of the online population (108 million) having an account. MySpace was just behind with 81 million users. It also estimated that Facebook was growing at a rate of over 1 million new users per week.

Social networking sites generate money by placing advertising within user profiles. The user must agree to the terms and conditions of a licensing agreement before they join, which give the sites the right to place advertising and also a large measure of control over any content that is uploaded or shared by the users. One does not have to conduct a detailed study of these sites to observe how they routinise the collective involvement with mnemotechnics, one just has to read the sections of their terms of use (as of 14th

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[251] Nielsen (2009) "Global Faces and Networked Places: A Nielson Report on Social Networking's New Global Footprint", March, http://blog.nielsen.com/nielsenwire/wp-content/uploads/2009/03/nielsen_globalfaces_mar09.pdf

[252] See: Elizabeth Fox-Genovese, David O. Sacks, and Peter A. Thiel (1995) *The Diversity Myth: Multiculturalism and the Politics of Intolerance at Stanford* (USA: Independent Institute); Tom Hodgkinson (2008) "With Friends Like These…", *The Guardian*, 14th January, http://www.guardian.co.uk/technology/2008/jan/14/facebook

April 2008) that pertain to the control they have over 'content', or mnemotechnics. Firstly, MySpace:

> By displaying or publishing ("posting") any Content on or through the MySpace Services, you hereby grant to MySpace.com a limited license to use, modify, publicly perform, publicly display, reproduce, and distribute such Content solely on and through the MySpace Services.[253]

If you chose to join the MySpace collective, you would have to agree to allow them to use any of your personal information or the text/audio/video/code that you create or upload in any way that they desire. In short, you gave them the final say in how the mnemotechnics you have placed on the site were stored, manipulated and circulated.

Facebook was even more far reaching:

> For content that is covered by intellectual property rights, like photos and videos ("IP content"), you specifically give us the following permission, subject to your privacy and application settings: you grant us a non-exclusive, transferable, sub-licensable, royalty-free, worldwide license to use any IP content that you post on or in connection with Facebook ("IP License").[254]

Here, the stipulations are the same but with the added injunction that the content you place on the site can be used not just on Facebook, but by Facebook anywhere and in any way. An example of this is Facebook's 'Beacon' advertising strategy, whereby user's personal information was given to outside advertisers so they could target individuals and tailor advertising to them on Facebook. For example, if you claim that you like a particular band (conceived of under the remit of 'brand') in your personal information, adverts and Facebook applications for that band or similar bands would appear on your

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[253] MySpace (2008) "Proprietary Rights in Content on myspace.com", 14th April, http://www1.myspace.com/index.cfm?fuseaction=misc.terms Term 6.1.

[254] Facebook (2008) "Sharing Your Content and Information", 14th April, http://www.facebook.com/terms.php Term 2.1.

profile page, the idea being that all your friends will see that you like the band, and it will become a 'trusted referral'.[255] Whereas conglomerates in the pre-internet era maintained mnemotechnical dominance through broadcasting mnemotechnics at users, they now do so by making users agree to upload mnemotechnics to them, and then selling them back to users through re-aligning them in corporate information channels.

Thus, the social networking sites maintain their dominance by capitalising on and managing the online relations between human beings (transindividual collectives) by simplifying and stultifying their collective relationship to the dominant mnemotechnical artefact (the internet) and therefore their relationship to mnemotechnics (text/audio/visual/code). Social Networking sites are a prime example of how the temporal apprehension of mnemotechnics is controlled, not by controlling and limiting the internet *per se*, but by controlling and limiting how users connect to each other through it. The excess of individuation here is detached from the transindividual connection between users and subordinated to codified regulations that put the site in control of the storage and movement of mnemotechnics, and thereby enable the site to impose an impotent notion of desire that in turn manages how the users connect with each other.

Google: Monostabilising the internet

There is no clearer example of how the transindividual potential of emergent groupings can be routinised into monostable, inflexible organisations than Google. Google's global dominance as a search engine has been a fixture of the internet for many years – its market share was around 85% as of 14th January 2011.[256] The search engine has now become the front-end for a growing range of Google applications that serve to steer traffic back towards the advertising-funded search engine, and seek to routinise online content into channels of information flow that Google can capitalise on. These range

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[255] Caroline McCarthy (2007) "Facebook Ads Makes A Flashy Debut in New York", *CNET*, 7th November http://news.cnet.com/8301-13577_3-9811932-36.html?tag=mncol;txt

[256] Net Applications (2011) "Search engine market share", 14th January, http://marketshare.hitslink.com/search-engine-market-share.aspx?qprid=4

from the control of email (Gmail), online geo-positioning (Google maps, Google Street View, Google Earth), text and audio-visual media (Google Books, Google Video, YouTube), metadata relating to web traffic (Google Analytics) and of online financial transactions (Google Marketplace, Google Checkout), amongst many others. Accordingly, the corpus of Google scholarship has tended to focus on Google's 'front-end' search engine and the consequences for how metadata, knowledge and content are accessed, ordered and manipulated into networks of control and tailored to advertising agendas. Many commentators have worked with the term 'Googlisation,'[257] used to encapsulate both how the Google search engine conditions our expectations of the aesthetics, interface and functioning of the internet, and also the growing infiltration of an ever-multiplying list of Google web applications into personal, business and academic life.

Richard Rogers has located the strands of the Googlisation thesis, firstly, within the context of a nascent political economy, emphasising media concentration and the regulatory, standardising impact of Google's PageRank search algorithm, with all the other major search engines seeking to emulate Google, leading to the problem of 'algorithmic concentration.'[258] Geert Lovink has argued that that the overbearance of a search engine that emphasises simplicity and usability, and which works on the basis of 'popularity', serves to paralyse the collective ability to question and change the

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[257] The term 'Googlisation' came to prominence in 2003, through Alex Salkever's analysis of Google's business model and hypothetical imagining that Google would control every aspect of the user interaction with the internet by 2006, and then through John Battelle's subsequent critique of Salkever's article.

See: John Battelle (2003) "The 'Creeping Googlization Meme'", *John Battelle's Searchblog*, 16th December, http://battellemedia.com/archives/000145.php
Alex Salkever (2003) "Google Here, There, and Everywhere", *BusinessWeek Online*. 16th December,
http://www.businessweek.com/technology/content/dec2003/tc20031216_9018_tc047.Htm

[258] Richard Rogers (2009b) "The Googlization Question, and the Inculpable Engine", in Felix. Stalder and Konrad Becker (eds) *Deep Search: The Politics of Search Engines*. (Edison, NJ: Transaction Publishers.), pp. 173-184.

structure of our interaction with information.[259] Using the history of bibliometrics and sociometry as a backdrop, Katja Meyer emphasises that subsuming both the instruments of measurement and the objects of measurement into a dominant search engine puts Google into a position of unprecedented dominance.[260] Jean-Noël Jeanneney, former President of the Bibliothèque Nationale de France, has criticised Google's controversial Google Books Library Project, an effort to upload and make 'keyword searchable' the collections of several major research libraries, pointing to concerns that the centralisation and standardisation of knowledge into one search engine would paper over locally sensitive and essential criteria of search, cataloguing and editorial, effectively trapping knowledge within 'Anglo-Saxon' assumptions,[261] and what Siva Vaidhynathan has called "…Google's technocratic libertarian ideology."[262]

Rogers also identifies an affiliation between Googlisation and the 'service-for-profile' arguments found in the surveillance studies paradigm, particularly in the work of Greg Elmer[263] and David Lyon.[264] This refers to the personal information economy that has boomed since the Internet, where large companies offer services for 'free', insofar as there is no financial transaction at the point of service, in return for information

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[259] Geert Lovink (2008) "The society of the query and the Googlization of our lives: A tribute to Joseph Weizenbaum", *Eurozine*, 9th May, http://www.eurozine.com/articles/2008-09-05-lovink-en.html

[260] Katja Mayer (2009) "On the Sociometry of Search Engines. A Historical Review of Methods", in Stalder and Becker (eds) *Op Cit*, pp. 221-234.

[261] Jean-Noël Jeanneney (2006) *Google and the Myth of Universal Knowledge: A View from Europe* (Chicago: Chicago University Press).
In August 2009, after Jeanneney had left bibliothèque nationale de France, it cut a deal with Google. This prompted widespread debate in the French media, statements from leading politicians and a public denunciation of the decision by Jeanneney. See Charles Bremner (2009) "Google bruises Gallic pride as national library does deal with search giant", *The Times*, 19th August,
http://technology.timesonline.co.uk/tol/news/tech_and_web/the_web/article6800864.ece

[262] Siva Vaidhynathan (2007) "Where is this book going? (The Googlization of Everything)", 25th September, http://www.googlizationofeverything.com/2007/09/where_is_this_book_going.php

[263] Greg Elmer (2004) *Profiling Machines* (Cambridge, MA: MIT Press).

[264] David Lyon (2007) *Surveillance Studies* (London: Polity).

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regarding the users 'profile', which can mean the traditional name/age/DOB/address details, but is more likely to refer to 'flecks' of information that only partially reveal identity, such as tastes, preferences and browsing behaviour, and thus feel less intrusive. Siva Vaidhynathan's ongoing book-blog *The Googlization of Everything* places service-for-profile within the context of Googlisation: "We get Web search, email, Blogger platforms, and YouTube videos. Google gets our habits and predilections so it can more efficiently target advertisements to us. Google's core business is consumer profiling. It keeps dossiers on all of us."[265]

Google's mission statement reflects, on the one hand, its imperious underbelly, the first part claiming that it wants "…to organize the world's information", the implication being that Google's generalized logic of routinisation ought to subsume the individual and collective capacity for people to organise information themselves, and on the other, its careful PR strategy to appear as a 'facilitator' or 'enabler' rather than a controller, insofar as it wants to organise information in order to "…make it universally accessible and useful."[266] As blogger Rich Skrenta puts it, paraphrasing a saying that was commonly used to describe IBM when it dominated the 'first age' of personal computing (Microsoft presiding over the second age and Google over the third): *"Google is not your competition, Google is the environment."[267]*

Google's dominance of torrent search

Allied to its Global dominance, the workings of Google come into sharp focus in this thesis because its search engine, the very business that its dominance is based upon, on the one hand works in a remarkably similar way to the search functionality of BitTorrent websites; and on the other, subjects the process of search and discovery to levels of

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[265] Vaidhynathan (2007) *Op Cit*,
http://www.googlizationofeverything.com/2007/09/where_is_this_book_going.php

[266] Google (2009a) "Corporate Information", 18th June, http://www.google.com/corporate/

[267] Rich Skrenta (2007) "Winner-Take-All: Google and the Third Age of Computing", *Skrentablog*, 1st January, http://www.skrenta.com/2007/01/winnertakeall_google_and_the_t.html 2nd paragraph.

control and thereby routinisation, underpinned by monopoly control of search and content advertising, that work in complete opposition to the tenets of active interaction, decentralisation and the free flow of information that inform the undercurrents of private BitTorrent culture. Such tenets will be subject to scrutiny in subsequent chapters. In terms of the similarities between Google Search and searching through BitTorrent websites, it is important to note that in the 2009 copyright infringement lawsuit brought against The Pirate Bay, one of the World's largest and most popular 'public tracker' BitTorrent websites,[268] one of its main defences was that it offered a similar service to Google. Both Google and The Pirate Bay (as well as all other Torrent websites) cache data and provide links to torrent files in their search engines, without any of the content that the torrent file relates to being hosted on or transferred through the servers of the websites owners.[269] Indeed, once The Pirate Bay was found guilty of "assisting in making copyright content available," Google, fearing similar prosecution, moved quickly to release a statement underlining its commitment to copyright and to removing infringing content.[270] One can get an initial idea of this by observing the clear cosmetic similarities between the search 'frontpage' of Google and of the Pirate Bay, each shown below.

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[268] In mid-2008, The Pirate Bay was 101st in the Alexa rankings of the world's most popular websites, and by November 2008 it had logged over 25 million unique users. See: Duncan Riley (2008) "Mininova Heads Towards 5 Billion Downloads", *TechCrunch*, 4th May, http://techcrunch.com/2008/05/04/mininova-heads-towards-5-billion-downloads/; Ernesto (2008a) "The Pirate Bay Sees Traffic and Peers Surge", *TorrentFreak*, 15th November, http://torrentfreak.com/the-pirate-bay-sees-traffic-and-peers-surge-081115/

[269] Sebastian P (2010) "Google, Corporate Propaganda, and the future of P2P", *Yale Law & Technology Blog*, 3rd March, http://www.yalelawtech.org/p2p-law-piracy/corporate-propaganda-google-and-the-problem-with/

[270] Andy Greenberg (2009) "Why Google is the new Pirate Bay", *Forbes*, 17th April, http://www.forbes.com/2009/04/17/pirate-bay-google-technology-internet-pirate-bay.html

Figure 6.1: Google homepage (Google 2009b)[271]

Figure 6.2: The Pirate Bay homepage (The Pirate Bay 2009)[272]

An anonymous web designer has gone one step further and created a mash-up of The Pirate Bay and Google, called 'The Pirate Google', pictured below.

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[271] Google (2009b) "Google homepage", 3rd May, www.google.com

[272] The Pirate Bay (2009a) "The Pirate Bay homepage", 3rd May, www.thepiratebay.org
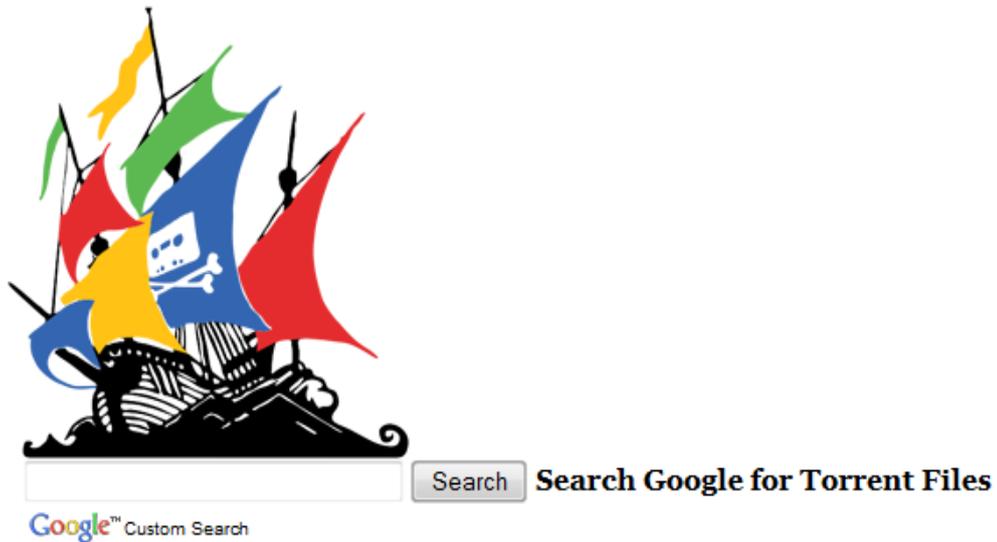
Figure 6.3: The Pirate Google homepage (The Pirate Google 2009)[273]

 The Pirate Google takes advantage of Google's 'custom search' function, which allows users to search for particular file types, which in this case has been used to limit the Google search to only torrent files. This specific torrent search functionality is not the result of a dramatic recode by the designer; the functionality is readily available in the normal Google search engine simply by appending a search query with "filetype:torrent". "The intention of this site is to demonstrate the double standard that was exemplified in the recent Pirate Bay Trial." Writes the website creator. "Sites such as Google offer much the same functionality as The Pirate Bay and other BitTorrent sites but are not targeted by media conglomerates such as the IFPI as they have the political and legal clout to defend themselves unlike these small independent sites."[274]

 What is now known as 'the Google argument' gained publicity following the shutdown of OiNK, when website owner Alan Ellis posted some links to search for music torrents on Google on the frontpage of the defunct website. He confrontationally placed a

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[273] The Pirate Google (2009) "The Pirate Google Homepage", 3rd May, www.thepirategoogle.com

[274] Anonymous website creator, in Drew Wilson (2009a) "The Pirate Google Launches", *Zeropaid*, 26th April, http://www.zeropaid.com/news/86052/thepirategoogle-launches/

Google link to an advance release (i.e. to a 'leak' of a yet to be released album) on the page, seen below.

Figure 6.4: The OiNK frontpage 01/11/07 (OiNK.cd 2007c)[275]

The Google argument is not of primary importance to this thesis when it is used as a specific argument to justify why particular torrent sites ought not to be the subject of litigation. However, it does become central when it is considered against the backdrop of evaluating what sort of techniques of sharing and accessing information a search engine needs to engage with to manage the 'excess' of individuation it creates, and to be perceived as legitimate so that it can avoid the wrath of global-mnemotechnical music conglomerates and wider entertainment industry. The below will indicate that to become a legitimate conduit for the search, discovery of and access to mnemotechnics, a search engine needs to also become an accountable institution that places tightly controlled and inflexible infrastructural limitations on how material culture is accessed, stored shared and ultimately monetised, and commensurately on transindividual collective desire through the monostable management of the excess of individuation.

Following the Pirate Bay trial, there was a great deal of speculation as to whether Google would be prosecuted or targeted in some way by the major film and music industries. Most concluded that the reasons why this didn't happen centred around its

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[275] OiNK.cd (2007d) "The OiNK frontpage 01/11/07", 1st November, www.oink.cd

amount of 'legitimate' users, and the fact that torrenting is a by-product of Google search rather than something that is caused by it.[276] It will be contended here, however, that Google search has played a central role in the popularity of torrenting, and that it escapes prosecution because it controls the contours of how socialised desire plays out as people share and access mnemotechnics through its search engine. Commensurately it can appropriate potentially litigious organisations by offering them a stake in the money made by its techniques of control and behavioural profiling.

As we touched on earlier, the Google search engine works in much the same way as a torrent tracker website, providing links to cached data that it neither owns nor stores on its servers. We can go further than this and state that Google's search engine is integral, perhaps fundamental, to the popularity of BitTorrent. As we outlined in chapter 1, whereas all previous P2P applications managed search from within a desktop application, BitTorrent has the major advantage of having a web presence, with most public and private trackers appearing in search engine results. Google's success in making the both its own search engine and the search engine method of finding information so popular was also a success for BitTorrent. For example, as of 22nd March 2010, one of the major public BitTorrent trackers, isoHunt, had 13,500,000 indexed pages on Google, and The Pirate Bay had 4,500,000.[277] Google's key role in internet users' discovery of torrent files is underlined if the 'Google Suggest' application is scrutinised. This feature of Google search gives five real time suggestions for searches after just typing a few keystrokes, and the suggestions are based on the popularity of search results in Google's global network.[278] Below (**Figure 6.5** and **Figure 6.6**) are the Google Suggest results for the best selling album in the USA in 2010, Eminem's

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[276] Greenberg (2009) *Op Cit*; Drew Wilson (2009b) "Google – Stop comparing us to the Pirate Bay!" *Zeropaid*, 29th April, http://www.zeropaid.com/news/86103/google-stop-comparing-us-to-the-pirate-bay/ ; Jack Schofield (2009) "Pirate Bay guilty verdict, a year in jail: Google next?" *The Guardian,* 27th April, http://www.guardian.co.uk/technology/blog/2009/apr/17/piratebay-guilty-verdict

[277] Ernesto (2010d) "Why Google Made BitTorrent a Success", *TorrentFreak,* 21st March, http://torrentfreak.com/why-google-made-bittorrent-a-success-100321/

[278] Google (2009c) "Local Flavour for Google Suggest", 31st March, http://googleblog.blogspot.com/2009/03/local-flavor-for-google-suggest.html

'Recovery', and the best selling UK album in 2010, Take That's 'Progress'.[279] In both cases, 'torrent' is the top suggestion. The results are based on search habits in one's national location, but the 'torrent' suggestion appears in the top five for most popular albums and films regardless of location, as others have concluded.[280] This tells us that the most popular artist/album search on Google is usually for torrents, and that Google plays an active role in introducing people to torrenting, given the almost total global dominance of its search engine.
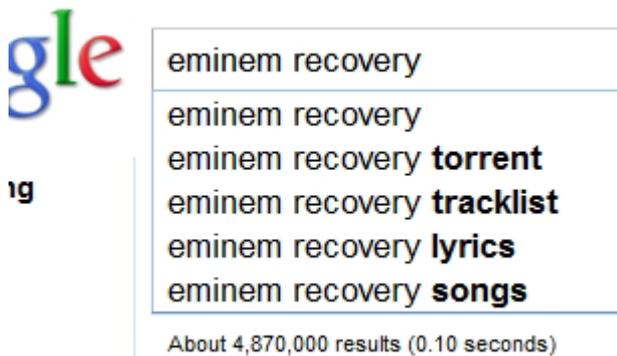
Figure 6.5: 'eminem recovery' Google Suggest results (Google 2011a)[281]

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[279] Associated Press (2011) "Eminem's 'Recovery' is 2010's best-selling album", 6th January, http://www.google.com/hostednews/ap/article/ALeqM5j_OGqPSZOu7YMHM03c92jXzVWJDQ?docId=c16e9d7e2a7841398e60a9fa75ea6604 ; Chris Cope (2011) "Take That's 'Progress' best-selling album of 2010", *AOL Music,* 4th January, http://music.aol.co.uk/2011/01/04/take-that-progress-best-selling-album-2010/

[280] Ernesto (2010e) "What's That Torrent Thing Google Keeps Suggesting?" *TorrentFreak*, 13th November, http://torrentfreak.com/whats-that-torrent-thing-google-keeps-suggesting-101113/ I have made the same searches in the UK, USA, Czech Republic, Spain, and the 'torrent' suggestion is always in the top five, and usually the first suggestion. There are very few 'artist album' searches that do not return the 'torrent' suggestion in the top five.

[281] Google (2011a) "'eminem recovery' Google Suggest results", 11th January, www.google.com
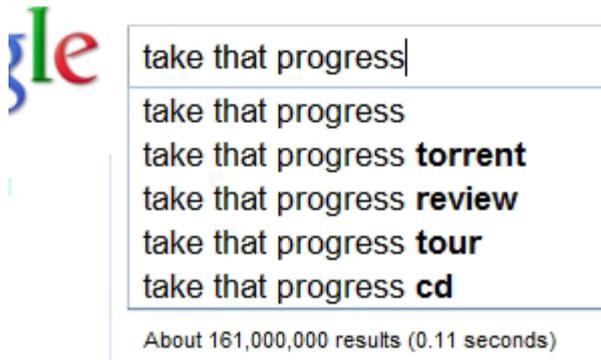
Figure 6.6: 'take that progress' Google Suggest results (Google 2011b)[282]

The routinisation of searching for recorded music on Google

Google's domination of search is predicated on its 'AdWords' program, where advertisers bid on certain 'keywords' so their advert appears as a 'sponsored link' on its 'search network'[283] when the keyword is searched for. Secondly, it uses its 'content network', consisting of hundreds of thousands of websites that are not search engines, to situate AdWords ads. These websites are those that use Google's AdSense program, which enables webmasters to earn money through implementing AdWords ads on their site for no fee. This is by far its main income stream, accounting for $21.1 billion of its $21.7 billion total revenue in 2008.[284] Set against the backdrop of the popularity of searching for music torrents using Google, this makes it a major player in the online music market for three reasons. Firstly, BitTorrent is the most popular P2P application

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[282] Google (2011b) "'take that progress' Google Suggest results", 11th January, www.google.com

[283] The Google search network is comprised of the Google homepage (google.com); any national /local Google server (e.g. google.co.uk for the United Kingdom, google.se for Sweden); Google owned 'search' sites (such as Google maps, Google Product Search and Google Groups); Google-owned search engines (such as AOL search, ask.com and Netscape); and other 'affiliated' websites of which Google is highly secretive, admitting only to amazon.com and virgin media on its own website – Google (2009d) "Where will my Ads appear?" 15th May, http://adwords.google.com/support/aw/bin/answer.py?answer=6119&cbid=-1owb7e6no5x6&src=cb&lev=answer

[284] Google (2009e) "2008 Financial Tables", 15th May, http://investor.google.com/financial/2008/tables.html

for filesharing music, accounting for between 27-55% of all internet traffic.[285] Secondly, we have seen that Google's search network accounts for around 85% of all searches made globally, and it claims that its content network reaches over 75% of unique internet users, in over 20 different languages and in over 100 different countries, potentially reaching three out of every four of the Earth's Internet users.[286] Thirdly, Google has monopoly control over how that search is monetized. This hegemonic position afforded it the potential to heavily capitalise on music search, and to placate the legal arms of the circling entertainment industry. In order to do this, it had to find a way to subvert the 'traditional' organic search, where the most popular results (i.e. torrent sites) appear first, in the direction of content owned by the major labels, and this is the direction it has moved in, as we shall see below.

Between 2003, when Apple introduced iTunes and became the forerunner of the legal digital download market, and 2007, when OiNK was shutdown, the 'pay-per-download' model was seen as the only viable 'legal' counterpoint to the ubiquity of BitTorrent, with iTunes still holding 70 per cent on the download market and 25 per cent of the overall recorded music sales market in 2009.[287] However, Google occupies a powerful position insofar as it is able to offer a targeted, monetised alternative to BitTorrent *without* having to charge for downloads. As tech-blogger Mark Mulligan has noted: "…Google is in a unique position to target music demand at the earliest possible stage i.e. when consumers start searching for music."[288] That is, it is the only company that can reach the majority of consumers before they have even considered buying or even freely downloading digital recorded music, and it has monopoly control of how that music

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[285] Net Applications (2011) *Op Cit*; Ipoque (2009) *Op Cit*; Ernesto (2009b) *Op Cit*; Jeremy Kirk (2009) *Op Cit*.

[286] Google (2009f) "Google's Content Network", 8th May, https://www.google.com/intl/en_uk/adwords/select/afc.html

[287] Lance Whitney (2009) "iTunes reps 1 in every 4 songs sold in U.S.", *CNET*, 18th August, http://news.cnet.com/8301-13579_3-10311907-37.html

[288] Mark Mulligan (2009) "What Google Could Bring to Digital Music", *Forrester Blog*, 21st October, http://blogs.forrester.com/consumer_product_strategy/2009/10/what-google-could-bring-to-digital-music.html

search is monetised through advertising. Google has recently begun to exploit this search dominance with the introduction of the One Box music search in the USA, which is essentially a deal between Google and most of the other big online streaming/download music players that ensures that their content appears at the very top of the Google search page. When a song, artist, or album is searched for, the One Box results appear at the top of the page. The image below shows a search for the album '21st Century Breakdown' by Green Day.
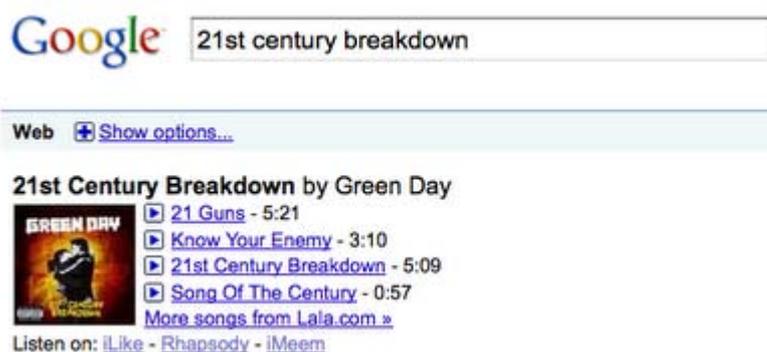
Figure 6.7: Google 'One Box' search for '21st century breakdown' (Google 2009h)[289]

The direct streaming links (the ones with the 'play' button) fully stream each song once, and then if you make subsequent searches that result in the same song appearing, the stream is cut to a 30 second clip. This is immediately pertinent as it is an example of how Google is using the service to profile data regarding listening habits. The streaming comes from either MySpace or Lala (a music streaming service purchased by Apple in 2009[290]). The 'listen on' links across the bottom direct the user to further content from MySpace, Lala and the other partners in the deal, such as iLike and iMeem (social music sites both bought out by MySpace in 2009[291]), where more songs can be streamed and

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[289] Google (2009g) " Google 'One Box' search for '21st century breakdown'", 28th October, http://googleblog.blogspot.com/2009/10/making-search-more-musical.html

[290] John Timmer (2009) "Apple buys music streamer Lala, but what's it getting?" *Ars Technica*, 9th December, http://arstechnica.com/apple/news/2009/12/apple-buys-music-streamer-lala-but-whats-it-getting.ars

[291] iLike (2009) "iLike Joins Forces With MySpace & Sells Music In-Page", *iLike Team Blog*, 19th August, http://blog.ilike.com/ilike_team_blog/2009/08/breaking-news-ilike-joins-forces-with-

purchased, users can sign up for accounts, and more detailed information such as tour dates, merchandise and biographies can be found. No money has changed hands between these stakeholders and Google; it is a mutually beneficial relationship whereby the stakeholders increase their traffic, and where Google can push its music-related advertising rates higher due to the increased amount of music related searches and the desire of companies to be associated with the content of huge companies such as Apple and News Corp. It has also enabled Google to curry favour with the 'big 4' major label record companies, because it directs users to monetised, non-infringing content holders.[292] The strategy is to make the time elapsed between search request and gratification as short as possible, and one way it achieves this is through making the One Box appear following a half-remembered lyric search: The image below shows the search results for the lyrics 'static silhouette somehow' from 'Rome' by Phoenix.

Figure 6.8: Google 'One Box' search for 'static silhouette somehow' (Google 2009i)[293]

Indeed, the strategy is predicated on minimising, and thereby routinising, both music search results and also the *process of feeling and thinking* about searching for and accessing music on the internet, through stopping modes of reflection at the static limits of a small handful of corporate websites. Whereas previously the user may have seen

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myspace-sells-music-in-page.html; Matt Rosoff (2009) "MySpace Buries iMeem", *CNET News*, 8th December, http://news.cnet.com/8301-13526_3-10411710-27.html

[292] Eliot Van Buskirk (2009a) "Google Closes the Loop on Music Search", *Wired*, 28th October, http://www.wired.com/epicenter/2009/10/google-closes-the-loop-on-music-search/

[293] Google (2009h) "Google 'One Box' search for 'static silhouette somehow'", 28th October, http://googleblog.blogspot.com/2009/10/making-search-more-musical.html

the Artists own website, independent fansites, forums, discussion groups and content from publishers that aren't part of Google's deal, they will now find that the top search results for the music they want to find bears little resemblance to the design of their search. The excess of psychic individuation that becomes manifest when the individual remembers the lyrics is quickly trammelled into a confined corporate space by the OneBox search, negating any transindividual connection with other individuals on the basis of truly 'searching' for the information through the internet. This is an example of behavioural targeting that subverts 'organic' search, where deal-cutting websites with cross-conglomerate backing are placed in prime position on the search platform, and where the contours of the online or 'social music' universe are shaped at the limits of a few 'partnered' multinational companies. This constitutes the removal of access to the mnemotechnique of music search from the user; to taking the inquisitiveness and willingness to learn about, reflect upon and feel that is bound up with discovering music through searching online, and subjecting it to a prefigured, cartel-organised template of how music *ought* be discovered and heard.

Google, server farms and music video: YouTube and Vevo

Another component that Google is increasingly using to maintain its dominance is the Google File-System, which is a supercomputing core is made up of localised 'clusters' or 'server farms' of regular commodity-class PCs which act as servers for information requests, and is where it stores all the indexed pages it links to through search and also all data that users upload to the internet through its apps, such as Gmail, Google Docs and Youtube.[294] The total number of servers is kept secret by Google in order to maintain a hardware advantage over competitors,[295] and estimates range from Google's own figure of 15,000,[296] to external commentators who put the figure nearer 450,000.[297]

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[294] Luis Andre Barroso, Jeffery Dean, Urs Holzle (2003) "Web search for a planet: The Google cluster architecture", *Micro IEEE,* Vol. 23, No. 2, March-April 2003 pp. 22 – 28.

[295] Randal Stross (2008) *Planet Google: One Company's Audacious Plan To Organize Everything We Know*. (New York: Free Press), p.61.

[296] Barroso et al (2003) *Op Cit,* p. 22.

In 2006, Google claimed that its goal for the File-System was 'infinite storage', meaning that it wanted users to upload 100% of their online content to Google.[298] Broadly after 2006, the infinite storage goal has been increasingly couched in the fashionable semantics of 'cloud computing'.[299] Evoked to give the impression of data existing in a 'free-floating' digital stratosphere, cloud computing is in fact a struggle between a small number of large corporations to convince individual users, small and large businesses, and educational institutions to use their network of server farms to develop, store, provide and run applications that we are used to residing on our desktops, such as email, documents, spreadsheets, audio, video, archives, calendars, webpage creation and instant messaging.[300]

The overarching goal of Google's cloud computing strategy follows its well worn pattern of monetising the uploaded 'free content' through advertising, and it could be argued that Google is *already* the dominant force in cloud-based music delivery due to the amount of people using YouTube, which Google acquired for $1.65 billion in 2006,[301] to

[297] Chandler Evans (2008) "Google Platform", in *Future of Google Earth* (LLC, Booksurge), p. 299; David F. Carr (2006) "How Google Works", *Baseline Magazine*, 6th July, http://www.baselinemag.com/c/a/Infrastructure/How-Google-Works-1/

[298] Jack Schofield (2006) "Google's Plans for World Domination", *The Guardian*, 5th March, http://www.guardian.co.uk/technology/blog/2006/mar/05/googlesplansf

[299] Contemporary notions of 'cloud computing' are the rearticulation of a technique of IT outsourcing that has been around since Ross Perot's company Electronic Data Systems (EDS) in the early 1960's, where the idle/excess computer power of one entity is used to assist in or carry out the work of another. See: Raj G. Asava (2010) "Cloud Computing - Been There, Done That!" *Dell Services White Paper*, February, http://www.perotsystems.com/MediaRoom/Library/WhitePaper_EPGCloudComputing.pdf

[300] The prominent service providers are Amazon's EC2 platform, Microsoft's Azure Services Platform and Google's App Engine. The platform that has received the most attention is Google's, because unlike Amazon and Microsoft, it does not charge third parties to use it as a development platform, and offers free use of its own applications to individuals and educational institutions. Brett Winterford (2009) "Stress tests rain on Amazon's Cloud", *IT News for Australian Business*, 20th August, http://www.itnews.com.au/News/153451,stress-tests-rain-on-amazons-cloud.aspx; Kieran Barker (2009) *Visualisation in the Google Cloud* (University of Leeds: School of Computing), p. 5-6.

[301] BBC (2006) "Google buys YouTube for $1.65bn", 10th March, http://news.bbc.co.uk/1/hi/business/6034577.stm

watch music videos and listen to music. As well as owning the server farms containing YouTube content, Google owns the search function, giving it monopoly control of how both search and content are monetised through it. The only stumbling block to controlling music video that YouTube has faced has been disputes over licensing agreements with the four major music labels (Universal, Sony, Warner, EMI) which it has recently solved through the creation of 'Vevo' – a premium music video website for which YouTube provides the technology, and through which three of the majors – Universal, Sony and EMI - have agreed to exclusively source all their video content. This refers not only to music video, but also interviews and concert footage.[302] Instead of YouTube paying a licence fee to the labels, it can now simply embed content from the Vevo website in exchange for sharing advertising money generated from Vevo-embedded content with the labels. This has enabled the major labels to move from a licensing to a 'syndication' model, where instead of cutting separate licensing deals with individual sites, they use the combination of the centralised power of Google's advertising backend and the centralisation of all music video content into the Vevo website to aggressively drive up the price of advertising around music videos, and then split that money with Google. Put simply, the majority of popular music video content is now only available on YouTube, Vevo and the artist websites of the major labels involved, and Google are responsible for overseeing the advertising-driven monetisation of this new monopoly, which they share with the other three stakeholders. Google CEO Greg Schmidt makes this quite plain: "…The ads are served in either places or both places, the content is served in either places or both places, and there's a common backend that makes sure all the revenue gets split up the right way."[303]

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[302] Eliot Van Buskirk (2009b) "Google, Universal to Launch Music Hub 'Vevo'", *Wired*, 9th April, http://www.wired.com/epicenter/2009/04/vevo-is-real/ ; Greg Sandoval (2009) "Sony joins YouTube and Universal on Vevo video site", *CNET*, 4th June, http://news.cnet.com/8301-1023_3-10257359-93.html ; Antony Bruno (2009a) "EMI Joins Vevo", *Billboard*, 7th Dec, p. 6.
The Warner Music Group has its own licensing deal with YouTube, which it agreed in September 2009 following a dispute that had resulted in Warner videos being pulled from YouTube between December 2008 and September 2009. See: Eliot Van Buskirk (2009c) "Warner's Music Returns to YouTube Following Nine Month Hiatus", *Wired*, 28th September, http://www.wired.com/epicenter/2009/09/warner-music-group-signs-youtube-deal/

[303] Greg Schmidt in Antony Bruno (2009b) "UMG, Google In Deal For Video Service", *Billboard Biz*, 9th April,

A pertinent point is that almost no one watches Vevo videos on the Vevo website itself – almost all users access it through YouTube. In its first month of operation, December 2009, a report by Comscore stated that approximately 92% of Vevo's 35 million individual users were the result of YouTube syndication.[304] Data generated by the tracking and analytics company TubeMogul on 22nd Feb 2010 shows that there had been a massive 1.01 billion views of Vevo content on YouTube since 8th December 2009. This made Vevo the top publisher on YouTube during that period of time, dwarfing the performance of huge TV companies such as CBS, who had 95 million views since Vevo's launch.[305] Vevo, as of March 2011, has almost doubled its monthly number of unique users to just below 60 million.[306] This puts Google in direct control of one of the most popular ways to access recorded music online. Moreover, Vevo gives Google a large measure of control over how the audio and visual protocols of the internet come together to facilitate our cultural memory of recorded music, insofar as it controls where on the internet we can now see the majority of music video and also crucially *what appears around that space* in the form of increasingly targeted advertising. The contours of this control are remarkable, because Google has achieved this through a reliance on what is, in a post-P2P internet environment, a primitive client-server relationship between a bloated and inflexible server backend (Google's server farms) and a small number of advert-heavy conglomerate-owned streaming websites that exercise full control over the design and implementation of how the music and video is experienced.

http://www.billboard.biz/bbbiz/content_display/industry/news/e3ie9cf6d4fe9496d05114eee35 0e70e66c

[304] Eric Schonfeld (2010) "YouTube Helps Vevo Overtake MySpace Music In The U.S. (Plus, Top Ten Music Properties)", *Techdirt*, 13th January, http://techcrunch.com/2010/01/13/youtube-vevo-overtake-myspace-music/

[305] Glenn Peoples (2010) "A Look At The Numbers: Vevo's Views Since Launch", *Billboard Biz*, 23rd February,
http://www.billboard.biz/bbbiz/content_display/industry/news/e3ib108b71d68d61db99cba014 44368af18

[306] Amanda Andrews (2011) "Vevo to launch UK service 'imminently'", *The Telegraph*, 16th March, http://www.telegraph.co.uk/finance/newsbysector/mediatechnologyandtelecoms/media/83869 53/Vevo-to-launch-UK-service-imminently.html

This *intermezzo* in the thesis has focused on the monostabilisation of the transindividual collective, as the kernel of global market forces moves from the monetisation of mnemotechnical artefacts of production, towards finding ways to monetise large groups of browsers, consumers and information sharers. However, this collective routinisation of search engine development, search/content advertising and storage does *not* mean that the 'sum total' of capacity for collective behaviour and interaction on the internet ricochets between these monolithic properties and comes to standardise the digital-interactive experience across all users on Google, Facebook and MySpace. Just because we comply in great numbers to the desiring infrastructure that tells us to upload our music, video, photos and text to corporate-owned server farms and to download them from their servers and partners, it does not mean that there are not those who reject these routinised collectives, or that the very same 'compliant consumers' are not storing, uploading and distributing mnemotechnics and mnemotechnical artefacts outside of the organisational control of market forces. The following section of the thesis explores the capacity for collective interaction and transindividual connection around digital artefacts when the disparation of the collective is *metastable* rather than monostable. It focuses on the development of a collective negotiation between properties that is sensitive to the recursive external functioning of each property, and where the users that comprise the 'human element' of the collective are capable of modulating and managing it through the productive knowledge they have been able to access through interacting with these properties.

Section 3: Decentralised information sharing and the private 'Scenes' of home computing

Chapter 7 – 'The Scene' and P2P before 2005

Beyond the history of 'technology'

We've taken a long hiatus from considering the relationship between recorded music circulation, BitTorrent and OiNK, so let's consider some of the preceding analysis in relation to it. Moreover, what sort of access to mnemotechnique can be found when we look at how people interact with digital recorded music beyond retail and broadcasting, and also beyond the way that techniques of information sharing, storage and distribution have become routinised and monopolised by proprietary market forces? Does the operation of the OiNK-BitTorrent architecture enable truly *metastable* disparation between the socialised desire of users and recorded music? In order to account for the individuation of this architecture and its impact upon how recorded music is reproduced, stored and circulated, we need to look beyond the 'history' of both OiNK and BitTorrent as seamless technical objects.

Remembering Simondon's meditation on the technical object, we are not only referring to the technical object itself, but the *genesis* of that object; the techno-historical development of its functioning. However, we are not reifying the technical object as Simondon did – as something that is individuated through the 'magic unity' between inventor and element. Rather, we are expounding the individuation of the technical object as something that occurs due to the relational catalysis between an assemblage of collective desire developing around a specific implementation of mnemotechnics and mnemotechnical artefacts. Furthermore, the potential for *transindividual* connection around these technical objects depends on this genesis. Therefore, the techno-genesis that we shall follow here extends beyond a history of 'innovation' in technology related to BitTorrent or to OiNK, and into the notions of collective desire and creative manifestations of mnemotechnics and mnemotechnical artefacts that were brought into disparate connection through a continual rearticulation of interrelated technical systems. Here, we shall look at the techno-historical development that began to occur with 'filesharing' through information technology after the late 1950s, and which became more widespread with the birth of home computing during the 1970's.

By positing technical objects in this way, we avoid the mistake of situating the individuation of BitTorrent and OiNK solely within the techno-history of P2P. The point here is that both BitTorrent and OiNK *did* recondition the functioning of P2P technology, but *not* expressly through taking elements of the previously existing P2P environment and improving upon them. Rather BitTorrent culture, particularly the private, invite-only manifestations of it such as OiNK, largely reconditioned these elements with the components of an organisational impulse derived from another techno-historical tradition. The seeds of this tradition were sewn some 30 years before Tim Berners Lee invented the World Wide Web in 1989,[307] in the development of the hardware and software hacking,[308] cracking[309] and not-for-profit distribution movement that eventually became known as 'The Scene'. We shall come to a definition of 'The Scene' as this chapter develops, but the pivotal point here is that private BitTorrent culture took the spirit that was latent in this specific constellation of hacking, cracking and file distribution and made it manifest amongst a new breed of internet-savvy users who did not identify themselves as technology enthusiasts, hackers or crackers, but were able to identify with the idea and practice of decentralisation, active interaction and the free flow of information that the preindividual environment of BitTorrent afforded them.

The structural changes that brought The Scene and P2P together via BitTorrent, and the consequences thereof, shall be discussed in the following chapter. Presently, we need to

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[307] Joshua Quittner (1999) "Tim Berners Lee – Time 100 People of the Century", *Time Magazine*, 29th March, http://205.188.238.181/time/time100/scientist/profile/bernerslee.html

[308] Hacking, for most hackers who have written about it, is an ethos, rather than a defined set of technical procedures, that is not limited to computer software or hardware culture, but can be identified in areas such as electronics and music. Broadly, it is any activity that comes under the rubric of solving problems in technical systems and thereby finding novel ways to improve on those systems. See Eric Raymond (2010) "How to Become a Hacker", 22nd October, http://catb.org/~esr/faqs/hacker-howto.html
Richard Stallman (2010) "On Hacking", 16th December, http://stallman.org/articles/on-hacking.html

[309] Cracking refers to 'breaking in' to software, or modifying it to remove unwanted or undesirable elements, such as password or copy protection. See: Bruce Gottleib (1999) "Hack, Counter Hack", *New York Times*, 3rd October, http://www.physics.ohio-state.edu/~wilkins/html/hackers/; Shon Harris, Alison Harper, Chris Eagle, and Jonathon Ness (2008) *Grey Hat Hacking: The Ethical Hacker's Handbook* (New York: McGraw-Hill).

understand why there are such things as 'tenets' of 'The Scene', and how it has been able to develop and maintain itself for over 40 years, despite being largely illegal, not-for-profit and difficult to access. Furthermore, contemporary notions of digital 'quality' in relation to mnemotechnics, the 'efficiency' of information circulation that filesharers expect, and commonly used methods of online encryption find their origins at least partially in how The Scene has developed since the 1960's, and also through development of new groups of 'non-scene' audio enthusiasts in the mid-90's, which took The Scene's focus on quality file encoding to new levels. Eventually, and unlike their software-hacking and early P2P predecessors, BitTorrent-OiNK filesharers were able to achieve *far higher standards of encryption, efficiency and quality* in encoding, storage, reproduction and circulation that the commercially available alternatives.

The early history of The Scene: Active interaction, decentralisation and the free flow of information

The pre-history of The Scene can be discerned in the growth of hacking culture during the 1950s and 1960s, and the events leading up to the invention of the home computer in 1975. The 'story' of early hacking, and the many convergent and divergent pathways leading to the invention and hacking of the first home computers, has been thoroughly and on occasion brilliantly recounted,[310] and need not be repeated in full here. However, we can draw out a vital chain in the disparation of this culture that contained a degree of potential for the specific types of active interaction, decentralisation and free information sharing that went on to permeate The Scene and which have become integral to private sharing on BitTorrent P2P networks today, specifically the work done

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[310] See: Levy (1984) *Hackers: Heroes of the Computer Revolution* (New York: Anchor Press/Doubleday);
John Markoff (2006) *What the Dormouse Said: How 60's Counterculture shaped the personal computer* (New York: Penguin); Theodore Nelson (1974) *Computer Lib: You can and must understand computers now/Dream Machines: New freedoms through computer screens—a minority report* (South Bend, IN).

Other useful texts on hacker history are: Pekka Himanen (2001) *The Hacker Ethic and the Spirit of the Information Age*, (London: Vintage); and Paul E. Curruzzi (2003) A *History of Modern Computing*, Second Edition (Cambridge MA: MIT Press).

on *Community Memory* in the 1970's, which led to the first modem protocols. Lee Felsenstein, one of the most prominent hardware hackers of the 1970's,[311] started the Community Memory project in 1973. Felsenstein and his cohorts managed to construct a clunky public terminal with a makeshift keyboard, which they placed in a busy East Bay record store in San Francisco and linked to an old XDS-940 mainframe computer they had in a nearby artist's warehouse. According to their hastily distributed flyer, the terminal was intended to be "…a communication system which allows people to make contact with each other on the basis of mutually expressed interests, without having to cede judgement to third parties."[312] The terminal became popular, not only as a means to express mutual interests, but as a confessional, a rumour mill; as a site for graffiti, poetry and conversation.

Michael Rossman, a theoretician who worked on *Community Memory* has described how one of the unifying principles of the project was to conceive of the computer as a 'radical social artefact'. His commentary is consistent with the idea that the terminals were a reaction against both the passive interaction with mnemotechnics and mnemotechnical artefacts that we identified previously, and also the techniques of monostable individuation that we discussed in relation to the recording industry:

> *Such a system represents a precise antithesis to the dominant uses*
> *both of electronic communications media, which broadcast centrally*
> *determined messages to mass passive audiences; and of cybernetic*
> *technology, which involves centralized processing of and control over*
> *data drawn from or furnished to direct or indirect users…The payoff is*
> *efficient, unmediated (or rather self-mediated) interaction,*
> *eliminating roles and problems that develop when one party has*

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[311] Felsenstein designed both the SOL computer, based on Intel's 8080 processor, and the penny whistle modem, used in most of the 1970's American 'hobbyist' computers. See: Robert M. Marsh and Lee Felsenstein (1976) "Build SOL, An Intelligent Computer Terminal", *Popular Electronics*, Vol. 10, No. 1, pp. 35–38; and Lee Felsenstein (1976) "Build the Pennywhistle - The Hobbyist's Modem", *Popular Electronics*, Vol. 9, No. 3, pp. 43–50.

[312] Levy (1984) *Op Cit,* p. 156.

control over what information passes between two (or many) others.[313]

Rossman has also written about the centrality of what we have called mnemotechnique to *Community Memory* – the prerequisite that in order for an individual to engage with mnemotechnical artefacts in a way that does not routinise socialised desire and restrict the spatio-temporal boundaries of interaction, the individual must be able to learn how to produce the conditions of functioning (maintenance, repair, modification) of that artefact *simply through using, or consuming it*:

> *A full system would offer the user instruction on how to maintain, repair, modify and understand the hardware, and even more the software. It would teach the user how to use it… Not simply how to handle information, but how to think about handling it, how to feel about using it - these are the potentials that open.*[314]

The goal was to have a cluster of linked terminals around the Bay Area- some even envisaged links between cities and college campuses using AT & T's long lines.[315] Although the project went bankrupt in 1975, it is widely acknowledged as the forerunner of the computer Bulletin Board Systems (BBS) that became popular after the 1979 release of the XMODEM transfer protocol, which allowed files to be accurately transferred over noisy telephone lines,[316] and which directly predate the internet as the main technique of virtual communication via modem technology.

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[313] Michael Rossman (1979) "What is Community Memory?" mimeo.

[314] Michael Rossman (1975) "Implications of Community Memory", *ACM SIGCAS Computers and Society*, Vol. 6, No. 4, p. 10. Original Emphasis.

[315] Theodore Roszak (1986) *The Cult of Information: A Neo-Luddite Treatise on High-Tech Artificial Intelligence, and the True Art of Thinking* (Berkeley and LA, Cal.: University of California Press), p. 140.

[316] Howard Rheingold (1994) *The Virtual Community: Finding Connection in a Computerised World* (London: Mandarin), pp. 131 – 144.

BBS culture: Quality, encryption and efficiency

The organised vicissitudes of community and interaction that led to activities as diverse as the infiltration of Government and corporate computing systems,[317] the cracking and sharing of computer games and commercial software, and the creation of new digital art and music, developed through the opportunities afforded by Bulletin Board Systems (BBS) in the 1980's and early 1990's. A BBS is a home computer system running software that enables other users to log in and connect via a phone line and a modem. The BBS software[318] made it possible for the user running the home computer system, known as the 'SysOp', to create text-based menu interfaces that the other members could use – online chat, message boards, games and file archives. Initially the systems were only capable of accommodating one user at a time, but 5, 10 and 20+ node BBS' quickly flourished as modem speed developed exponentially.[319] The self-contained operation of the system allowed users to determine the desiring infrastructure of its organisation, and in turn marked the development of new transindividual collectives engaging in the metastable information sharing of digital artefacts. Although the SysOp would set the tone in terms of the types of information shared and the quality of conversation, the SysOp was essentially just 'another user', and the users could determine the contours of the system based on shared reflections, actions and intentions, outside of the hierarchical and bureaucratic structures inherent within more regulated systems. As Bruce Sterling has commented, BBS' were able to avoid this sort of regulatory discipline because they could be created and managed without a large investment, and crucially,

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[317] See: Bruce Sterling (1992) *The Hacker Crackdown* (New York: Bantam/Doubleday); Paul A. Taylor (1999) *Hackers: Crime in the Digital Sublime* (London: Routledge).

[318] The first BBS software, the Computerised Bulletin Board System (CBBS), was developed by Ward Christiansen and Randy Suess in 1978. They opened their 'electronic posting network' to the public in 1979. The major BBS enthusiast and history websites currently online agree that it was the first online public 'messageboard' community. See: BBSing (2010) "BBS History", 14th December, http://www.bbsing.com/bbshistory/bbshistory.html; Textfiles.com (2010) "BBS Timeline", 14th December, http://timeline.textfiles.com/; Claire Walters (2005) "BBS FAQ – 10th Edition", *The BBS Organisation*, January, http://thebbs.org/bbsfaq/index.html

[319] Paul Craig, Ron Honick and Mark Burnett (2005) *Software Piracy Exposed* (Rockland, MA: Syngress Publishing), p.22.

without any need to make a return on the investment, often relying on freeware developed by other users: "…Basically anybody with a computer, modem, software, and a phone line can start a board. With second-hand equipment and public-domain free software, the price of a board might be quite small—less than it would take to publish a magazine or even a decent pamphlet."[320]

The conversational functionality of the BBS message boards and chat rooms brought new forms of social interaction into play, and the BBS as a dramatic forum for the exchange of ideas and the forging of relationships became the cynosure of BBS culture during the latter part of its heyday in the early 90's, with some boards, such as the *WELL* and *MindVox*, beginning to take the shape of the early internet message boards and chat rooms, garnering thousands of users in the process.[321] During its earlier development in the early-to-mid 80's, when the BBS Scene reticulated between private computer networks that were designed to exist separately from mainstream computing, the most infamous and influential BBS' were groups of highly skilled enthusiasts

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[320] Bruce Sterling (1992) *Op Cit*, p. 65.

[321] The largest and most well known BBS' of this kind, such as the Whole Earth 'Lectronic Link (WELL), and MindVox, largely focussed on the exchange of ideas through text interfaces in elegantly designed discussion forums and chat rooms and often required a small monthly fee to join. For WELL, see:

Howard Rheingold (2000*) The Virtual Community: Homesteading on the Electronic Frontier* (Cambridge, MA: MIT Press); John Seabrook (1997*) Deeper: A Two Year Odyssey in Cyberspace* (London: Faber & Faber); Katie Hafner (2001) *The WELL: A Story of Love, Death and Real Life in the Seminal Online Community* (New York: Carroll & Graf Publishers); Fred Turner (2005) "When the Counterculture met the New Economy: The WELL and the Origins of Virtual Community", *Technology and Culture*, Vol.46, No.3, pp. 485–512.

For MindVox, see:

 Andrew Hawkins (1992) "There's a Party in my Mind…MindVox!" *Mondo 2000*, Issue 8, http://www.mindvox.com/cgi-bin/WebObjects/mindvox.woa/wa/staticpage?pagename=Media/Mondo1.html; Patrick Karel Kroupa (1992) "Voices in my Head, MindVox: The Overture", February, http://wiretap.area.com/Gopher/Library/Cyber/mindvox.txt; Charles Platt (1993) "Mindvox: Urban Attitude Online", *Wired*, November, http://www.mindvox.com/cgi-bin/WebObjects/mindvox.woa/wa/staticpage?pagename=Media/Wired1.html

interested primarily in the mnemotechnique of computing, in how to engage in live contact with a computer and learn its productive capacity. They used the online interaction offered by BBS to create collective knowledge about how to talk to machines, rather than just to talk to each other. As we shall see later, this ethic of mnemotechnique was made manifest when the private BitTorrent infrastructure brought it into disparate contact with internet P2P culture. There are two broad traditions in this strand of BBS culture. Firstly hacking culture, where techniques of how to hack or 'reverse engineer' computer systems became the topic of exclusive, private BBS boards that would share computer programs and instructional files about how to find exploits and execute hacks.[322] Secondly the 'Warez Scene', in which commercial software was freely distributed within and between BBS'. 'Warez' is a computer-slang term used to describe copyrighted works that have been shared freely and have resulted in a violation of copyright law. The Warez Scene is distinct from commercial counterfeiting insofar as the works are not shared for profit, and it usually refers to those works that originate from loosely organised entities known as 'release groups'. The larger release groups had their own BBS' sometimes known as 'Warez Boards' or more commonly 'Elite Boards' which they used to share and distribute software (usually games) and information about software cracking. [323]

Standards of quality and 'netiquette' on elite boards

Elite boards are the earliest example of the style of filesharing we can now find in private BitTorrent communities, and it was accepted practices around the movement of files that came to form the first standards of 'netiquette'. These early standards,

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[322] See: Thomas Douglas (2002) *Hacker Culture* (Minnesota: University of Minnesota Press); Katie Hafner and John Markoff (1991) *Cyberpunk: Outlaws and Hackers on the Computer Frontier* (London: Corgi Books), pp. 17-177; Kevin Mitnick and William L. Simon (2002) *The Art of Deception: Controlling the Human Element of Security* (Indianapolis, IND: Wiley Press).

[323] In the USA, the pioneering groups appearing around 1980 were Apple Mafia, Untouchables and Dirty Dozen, focusing on software for the Apple II home computer. In Europe, groups such as Fairlight and Razor 1911 emerged around 1982 and 83, when the Commodore 64 became the most popular games machine. See: Red Ghost (1986) "The Apple Mafia Story", http://www.skepticfiles.org/cowtext/100/applemaf.htm ; and Tamas Polgar (2008) *Freax: The Brief History of the Computer Demoscene* (Winnenden, Germany: CSW-Verlag). pp. 62-70.

although not codified in any one document, centred around notions of quality, encryption and efficiency in information encoding and distribution, and were learnt by users through the transfer of not only software through BBS', but also through the transfer of instructional files, known as 'philes', that gave information on cracking, hacking, and standards of the use of different protocols and the efficient use of bandwidth in file transfer.[324] This notion of making the mnemotechnique of complex systems integral to participation in online interaction stands in total contrast to the statement that came to define early standards netiquette on the corporate, increasingly HTTP-focused Internet – Intel's *RFC 1855 – Netiquette Guidelines*, produced in 1995, which was designed to give the massive influx of new internet users quick and easy access. The introduction of the document states that new users "…don't need to know about transport and protocols" and all that is required is a "…minimum set of behaviours which organizations and individuals may take and adapt for their own use."[325] Whereas Intel's version of netiquette envisaged a world where humans interacted with others through the regulated text interfaces of corporate-owned websites, the Elite board version of netiquette attempted to instantiate a sharing culture through a deep interaction with software and hardware, which users could use to determine the parameters of the interaction themselves.

Early standards of quality in filesharing were determined by the reputation of particular cracking groups, which spread across BBS' as links between localised boards started to develop. Global linkage and the subsequent development of an international scene very quickly became a reality in the mid 80's due to chat systems available through x.25 networks such as Altger, tchh and QSD, which dramatically lowered the cost of online services.[326] Although the bigger and better groups were careful to encrypt their offline identities, they were rigorous about promoting their online identities in order to show

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[324] Douglas (2002) *Op Cit*, pp. 90-91.

[325] Sally Hambridge (1995) "RFC 1855 – Netiquette Guidelines", *Intel Corp*, October, http://www.faqs.org/rfcs/rfc1855.html

[326] Various (1996) "International Scenes", *Phrack Magazine*, Vol. 7, Issue 48, Phile 17 of 18, 9th January.

off their skills and knowledge, and gain respect from others in the scene. This was done through adding 'intros' to cracked games, which would appear on-screen as the game loaded up.[327] Below is the intro for the Apple Mafia group. It shows a full member list and details of which members cracked the game. These names would have been known as a stamp of quality to other people in the scene through BBS' and through the two major magazines on the Phreaking/Warez Scenes, the print publication *2600: The Hacker Quarterly* and the online magazine, distributed through BBS' and on floppy disk, *Phrack*. The names were also there to create awareness of the members, so that anyone posing as an Apple Mafia member could be quickly identified. The bottom section indicates the three BBS' associated with the Apple mafia - Sherwood Forest, Sherwood Forest II and The Pirate's Chest - and the phone number required to access each BBS.

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[327] Eventually, the still intro screen was replaced by a short video, set to graphical effects and music, or a 'demo'. The ability of a group to achieve ever more spectacular standards with their demos became symbolic of how highly regarded that group was in The Scene. This eventually evolved into its own scene, known as 'Demoscene', which played a significant role in developing current hardware and software standards in digital sound design, digital graphic design and digital video. See: Polgar (2008) *Op* Cit; George Borzyskowski (1996) *The Hacker Demoscene and its Cultural Artefacts* (Perth, Australia: School of Design, Curtin University of Technology); Shirley Shor and Aviv Eyal (2002) "DEMOing: A new emerging art form or just another digital craft?" *Shirley Shor*, 16th June, http://shirleyshor.com/text/demoing.htm

Figure 7.1: Apple Mafia intro (Textfiles.com 2009)[328]

The barometer of quality was in part determined through the instructional phile documents that each group released via BBS, with reputations being made and unmade through the quality of information on the mnemotechnique of hacking and cracking released by particular groups and individuals. *Phrack* regularly included a column called 'Pro-Philes', which contained detailed profiles of groups, members and their reputations, with Apple Mafia, which morphed into a new group called Legion of Doom/Hackers around 1985, often receiving praise. In 1986 *Phrack* stated that: "…LOD/H is known for being one of the oldest and most knowledgeable of all groups. In the past they have written many extensive g-philes about various topics."[329] It also created clamour to join those BBS', which all contained detailed philes on phreaking, hacking and cracking. An extensive example of the access to mnemotechnique that was

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[328] Textfiles.com (2009) "Apple Mafia intro", 2nd May, http://artscene.textfiles.com/intros/APPLEII/amafia.gif

[329] Knight Lightening and Taran King (1986) "Phrack Pro-Phile 3. Featuring: User Groups and Clubs", *Phrack Magazine*, Vol. 1, Issue 6, Phile 2 of 13, 10th June.

available through The Apple Mafia BBS' can be found in BIOC Agent 003's philes on how to use, modify and modulate telecommunications technology, which were uploaded to Sherwood Forest II in 1984.[330] High Technology, listed as one of the crackers in the above intro, also produced a detailed 5-part tutorial phile for Sherwood Forest and Sherwood Forest II on how to crack Apple II games, which was made available to all members of the Apple Mafia BBS' and was copied to hundreds more; all five parts can still be found on the internet.[331] This intra-group linkage between the provision of mnemotechnique and the cracking and dissemination of high quality files was a motif of the early Warez scene, with the dominant groups expected to instruct other users in the mnemotechnique of computer systems and software, and willing to do so to underline their reputations.

Encryption and efficiency

As commercial software became big business in the 1980's, the industry successfully lobbied for the disassembly, duplication and modification of commercial software to be made illegal in North America and Western Europe.[332] In 1988, a group of the biggest commercial software developers, including Microsoft and Apple, formed the Business Software Alliance to pursue anyone who broke their commercial software licences through the courts, collecting millions of dollars in damages, and establishing ever more

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[330] BIOC Agent 003 (1984) "BIOC Agent 003's Course in Basic Telecommunications Part IV", 15th June, http://www.textfiles.com/100/basicom4.phk

[331] High Technology (1982a) "High Technology's Cracking Tutorial Part I", http://www.textfiles.com/apple/CRACKING/krack1.app
High Technology (1982b) "High Technology's Cracking Tutorial Part II", http://www.textfiles.com/apple/CRACKING/krack2.app
High Technology (1982c) "High Technology's Cracking Tutorial Part III", http://www.textfiles.com/apple/CRACKING/krack3.app
High Technology (1982d) "High Technology's Cracking Tutorial Part IV", http://www.textfiles.com/apple/CRACKING/krack4.app
High Technology (date unknown) "High Technology's Cracking Tutorial Part V", http://www.textfiles.com/apple/CRACKING/krack5.app

[332] Brian Clough and Paul Mungo (1992) *Approaching Zero: Data Crime and the Computing Underworld* (London: Faber & Faber), Ch. 3.

stringent and complex licensing terms.[333] This brought the issue of encryption into sharp focus as the early Warez Scene developed. One of the first methods of encryption was 'elite scripting', or 'leetspeak', that emerged from the FBI's pursuit of the first hackers and crackers in the early 80's. The FBI would attempt to track traffic through phone lines, modems and BBS networks, and used computers that would filter out specific keywords they thought were related to piracy. The Warez and hacker groups simply worked out what words were being filtered, and stopped using them, or more precisely, 'encrypted' the lexicon. For example, the original word for pirated software was 'wares', which then became 'warez' and was sometimes written as 'w4r3z'. 'Hacker' became 'haxxor' and then 'h4xxor', and 'elite' became eleet, eleete or even 313373.[334]

 As pursuit from the software companies and authorities intensified, particularly after 1988, it became necessary for all elite boards to engage with password protection, with potential users having to either apply to the SysOp for a username and password, or wait for a personal invite to the most exclusive elite boards. We can use the series of screenshots appearing below, from Dallas-based elite board 'Suburbia', which was one of cracking group Razor 1911's BBS' during the early 90's, to illustrate how the Warez Scene used encryption to increase the efficiency of filesharing. From the point of view of our theory driven method, by focusing on a series of Suburbia screenshots we can interrogate the extent to which the modes of reflection, action and interaction of its users became part of its desiring infrastructure, and how it operationalised mnemotechnique in the processes of disparation that were inculcated between its technical operation and the sharing of digital artefacts between its users.

 The first screenshot below is the login screen, where you could access Suburbia if you already had a username and password. If you didn't have this, choosing the option

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[333] See James E. Gaskin (2006) "Business Software Alliance: Outright Liars or Just Truth Challenged?" *Network World Inc.,* 29th June, http://www.networkworld.com/newsletters/sbt/2006/0626networker3.html and Erica Chickowski (2008) "After 20 Years, Critics question the BSA's real motives", *Baseline*, 25th January, http://www.baselinemag.com/c/a/Enterprise-Apps/After-20-Years-Critics-Question-the-BSAs-Real-Motives/

[334] Polgar (2008), *Op Cit*, p. 70.

'apply for access' would usually involve messaging the SysOp asking for an invite, stating your skills and what you could bring to the group. Elite boards did not just host files cracked by the release groups they were affiliated with, they welcomed the uploading of other cracked software that originated from reputable groups. Users that spread files from one BBS to another were known as 'couriers' or 'traders' and some formed their own groups that competed for reputation with each other. The reputation depended on the ability to upload high quality Warez quickly, and before other groups and independent couriers. Users applying for access would usually have to prove that they could fulfil some sort of trading function, or were part of a reputable courier or release group in order for the SysOp to determine that they could contribute to efficient distribution of Warez between BBS'.[335]
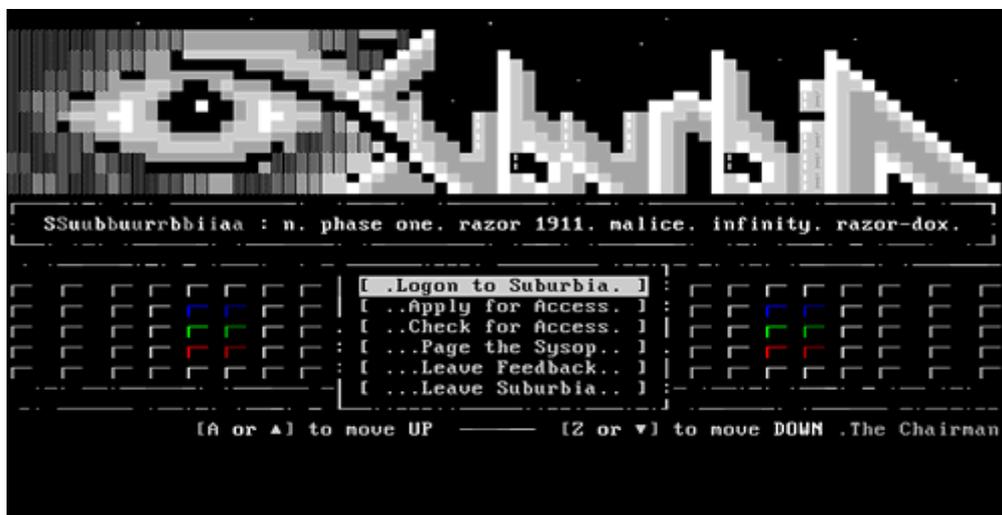
Figure 7.2: Suburbia BBS 'logon screen' (defacto2.net, 2010a)[336]

The next two screenshots below show the rankings for the top overall uploaders and the top weekly uploaders of Warez on Suburbia respectively. All Elite boards would have these tables, and couriers would compete to get their names up the list, with the

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[335] AboutTheScene (2008a) "The History of The Scene: Bulletin Board Systems and Couriers", http://web.archive.org/web/20080506140357/www.aboutthescene.com/thescene/scenehistory.html, archived from original on 12th August 2008, retrieved, 2nd April 2010.

[336] Defacto2.net (2010a) "Suburbia BBS logon screen", 2nd April, http://www.defacto2.net/images/bbs-scenes/suburbia/ANSIVI01.gif

incentive of being known as a top trader encouraging couriers to upload large quantities of Warez as soon as they could, and also to restrict their uploads to Warez that had been properly cracked by a reputable group. The most significant incentive for couriers was cemented by the culture that developed around ratio systems on elite boards. Most elite boards had what was known as '2X' or '3X' ratio systems, meaning that for every one megabyte (mb) a courier uploaded, they could download either 2 or 3mbs of new Warez.[337] This surplus download allowance is known as 'credit'. This ensured the efficient movement of Warez both within and between elite boards, with boards receiving a steady upstream of new software from different affiliated courier groups and independent traders, and also supplying the Scene with Warez that couriers would download with their ratio credits.
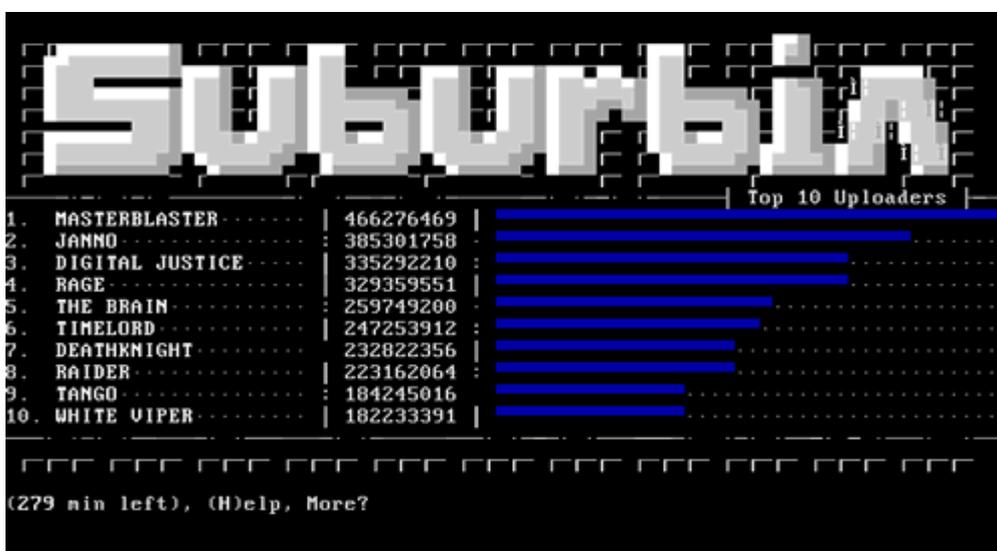
Figure 7.3: Suburbia BBS 'top 10 uploaders' (defacto2.net, 2010b)[338]

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[337] Unknown (1995) "A Day in the Life of a Warez Hacker", *Phrack Magazine*, Vol. 6, Issue 47, phile 20 of 22; Ndetroit (1999) "Stats - Ndetroit's Weekly Stats, and comments on Sites", *NetMonkey Weekly Report*, Issue XXXVI, 22nd February.

[338] Defacto2.net (2010b) "Suburbia BBS 'top 10 uploaders'", 2nd April, http://www.defacto2.net/images/bbs-scenes/suburbia/ANSIVI03.gif

Figure 7.4: Suburbia BBS 'Top Uploaders For This Week'(defacto2.net, 2010c)[339]

 The final Suburbia screenshot shows the available file and 'conference' areas of the BBS, and differential levels of access to each area. The 'conference' function is comparable to what we would now call 'message boards' or 'forums' on the web. It shows that all of the areas of the board are public, apart from the message boards and file areas of the affiliated courier and release groups and one area 'PCB support', which provided help with the PCBoard software used to run the BBS for the SysOp. The only public area that also has a file area is the 'main lounge'. Couriers would initially gain access to the files in the main lounge, and different levels of access would be granted to couriers, usually based on the amount of uploading they had done. It was common for elite boards to heavily encrypt the file areas but leave the discussion areas open to all members. Here we can see that 'main lounge', 'politics', 'board ads' and, most importantly, 'wares forum' are all public. These open areas presented an opportunity to newer members to learn about the quality and distribution standards adhered to by the more experienced members, and is another example of the centrality of open access to mnemotechnique to the operation of the Warez Scene.

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[339] Defacto2.net (2010c) "Suburbia BBS 'Top Uploaders For This Week'", 2nd April, http://www.defacto2.net/images/bbs-scenes/suburbia/ANSIVI09.gif

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Figure 7.5: Suburbia BBS 'Available Conferences' (defacto2.net, 2010d)[340]

 Elite boards and the users that comprised them instantiated a rigorous system of private filesharing between home computers, upholding durable standards of quality, efficiency and encryption, defined by users themselves and ensuring that all those that took from the system would also contribute to it in an active fashion through uploading. Bearing in mind our theory-driven method, they created mystique and a clamour around the mnemotechnique of cracking and trading by encrypting exclusive file areas, but allowing new members access to the mnemotechnique of cracking and trading through the chat/message board areas. They separated the functions of file hosting, cracking and trading so that communities emerged around each mnemotechnical function, and each developed its own set of quality standards and differential levels of access dependant on contribution to cracking, uploading or distribution. Finally, they developed a ratio system giving an incentive for the efficient uploading and downloading of Warez distributed between all the different BBS' affiliated with cracking and trading. Although these standards and systemic functioning are still very much in operation today and have undergone a resurgence via BitTorrent culture, they were noticeably absent from

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[340] Defacto2.net (2010d) "Suburbia BBS 'Available Conferences'", 2nd April, http://www.defacto2.net/images/bbs-scenes/suburbia/ANSIVI08.gif

the P2P culture that saw the number of filesharers multiply from a few thousand to tens of millions of people before BitTorrent came to the fore, between 1999 and 2005.

'The Scene': 1999-2004

As desktop computing, the internet,[341] and early generations of P2P rapidly became ubiquitous, and as new ways to digitally encode audio, such as mp3,[342] and to rip and encode that audio from CD[343] became available towards the late 1990s, there was a massive increase in both the scope and the structure of the Warez Scene. It now could reach a much larger amount of people because thousands of copies could be made and distributed quickly across internet protocols and, after 1999, would inevitability end up on P2P networks used by millions of people.[344] Before BitTorrent, the filesharing hierarchy through which music ended up on P2P concentrated the uploading of music either at the very top of the hierarchy – stemming from the most exclusive and encrypted plateaus of the internet – or at the very bottom – stemming from home internet users making their file directories available for upload to public P2P applications.

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[341] The popularity of desktop computing and the internet in the home is seen by many to coincide with the ubiquity of Microsoft Windows 95, its simple 'start button' GUI and the fact that it was bundled with a free copy of Microsoft Internet Explorer by 1996. See: David Reed (2008) *A Balanced Introduction to Computer Science* (Upper Saddle River, NJ: Pearson Prentice Hall), pp. 49-55; Ina Fried (2010) "Windows 95 turns 15: Has Microsoft's OS peaked?" *CNET*, 24th August, http://news.cnet.com/8301-13860_3-20014543-56.html

[342] mp3 is a file compression algorithm based on a psycho-acoustic model that eliminates sound frequencies that are inaudible to the human ear. mp3 can fit songs into files that were over 12 times smaller than the .WAV file information found on CD's with a relatively minimal loss of sound quality. See John Alderman (2001) *Op Cit* and Mark Coleman (2003) *Op Cit*.

[343] The most popular mid-to-late 1990's mp3 encoding and ripping software solutions were Xing mp3 encoder and Audiograbber. The former was proprietary software and eventually bought out by Real Networks in 1999, the latter was freeware, capable of higher encoding standards, and continues to be used by some today, due to its simple user interface, features and no cost. See: mp3Converter.com (2010) "Xing mp3 Encoder", 4th June, http://www.mp3-converter.com/xing_mp3encoder.htm; HydrogenAudio (2010a) "Audiograbber", 25th September, http://wiki.hydrogenaudio.org/index.php?title=Audiograbber

[344] See: Oram (2001) *Op Cit*; Miller (2001) *Op Cit*; Haupt (2008) *Op Cit*.

The first, or 'top-down' channel operated through the Warez Scene, now more usually referred to as 'The Scene'. Broadly, The Scene had now become a globally organized network that was, and still is, responsible for the distribution of a large amount of the pirated, pre-release software, film and music that exists on the internet.[345] Specifically before BitTorrent, The Scene was responsible for uploading almost all the pre-release mnemotechnics to the internet. The few that have taken the trouble to investigate it[346] have labelled it 'The Darknet'[347] and 'The Shadow Internet'. There is no centralised control and command that enforces order in The Scene, but it is united by a series of accepted standards related to how the releases are encoded or 'packaged', which must be met if the collection of people involved are to be recognised as a release group by The Scene at large.[348]

The vast majority of Scene releases occur either on the day that the commercial-legal version is released or much earlier, as the incentive, or more appropriately, the thrill for the release groups is to compete with other groups to see who can distribute the Warez

[345] Ernesto (2010f) "Former Movie Piracy Scene Member Speaks Out", *TorrentFreak*, 29th October, http://torrentfreak.com/former-movie-piracy-scene-member-speaks-out-101029/; Enigmax (2010a) "The Significance of the Huge European Warez Scene Raids", *TorrentFreak*, 17th September, http://torrentfreak.com/the-significance-of-the-huge-european-warez-scene-raids-100917/

[346] Possibly due to difficulty of access, there has been barely any Scholarly work done on The Scene. The two best introductory pieces on how The Scene worked before BitTorrent were written by investigative journalists working for *Wired* magazine. David McCandless (1997) "Warez Wars", in *Wired*, April, Issue 5.04; and Jeff Howe (2005) "The Shadow Internet", in *Wired*, Jan, Issue 13.01.

[347] In computing, the term 'Darknet' refers to a small, closed, encrypted group of users sharing information between themselves. Although difficult to access, The Scene is not completely closed so cannot be considered a Darknet in the computing sense. A truly encompassing Darknet would encrypt its borders completely using software such as Freenet or Nullsoft's WASTE. See Paul Boutin (2004) "See You on the Darknet: Why we don't want internet security", 28th January, http://www.slate.com/id/2094336/ and Peter Biddle, Paul England, Marcus Peinado, Brian Willman (2002) "The Darknet and the Future of Content Distribution", *ACM Workshop on Digital Rights Management*, 18th November, http://www.bearcave.com/misl/misl_tech/msdrm/darknet.htm

[348] There is a full list of text files containing Scene rules for all types of text/audio/visual releases here: sbytes (2010) "Scene Release Rules", 14th December, http://www.sbytes.info/wp/?page_id=151

the quickest. The competition is not financial in nature, as the entire endeavour is typically not for profit. The groups mainly compete for reputation within the Scene community, and for privileged access to highly exclusive, highly encrypted servers known as 'Topsites' that only the most well connected and trusted members of The Scene can access, and which they can use to distribute their Warez and access other Warez before most other people. Alf Rehn has described this era of The Scene as a "…hypermodern gift economy"[349] in his virtual ethnography of The Scene, where honour and prestige is the currency, and the race to be the first to release games, films and music determines who becomes rich, where 'becoming rich' means being able to access the higher echelons of The Scene and to trade for other new releases. David McCandless compares this aspect of it to a game, as something more indicative of play or pastime than work or enterprise: "…It's a hobby, an act of bloodless terrorism. It's "Fuck you, Microsoft." It's about having something the other guy doesn't. It's about telling him that you have something he doesn't and forcing him to trade something he has for something you don't."[350]

The Scene pyramid

The Scene is the de-centralised, inter-connected network of release groups that manage the ripping, cracking, encoding of Warez, and the eventual trickle-down of these releases through what is often called 'The Scene pyramid' (see below: **Diagram 7.1**); starting from the release of just a few copies onto different Topsites, eventually leading to the proliferation of millions of copies on P2P networks.[351] The Topsites are the successors of the 'invite only' BBS systems we looked at earlier, with 'SysOps' who manage the sites, 'couriers' who copy files between Topsites, and 'affiliates' from a number of release groups who provide the original copies, but with much higher levels

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[349] Alf Rehn (2003) *Ordered Misbehaviour: The Structuring of an Illegal Endeavour* (Stockholm: Royal Institute of Technology, Department of Industrial Economics and Management) http://www.pinkmachine.com/PMP/nr12.pdf

[350] McCandless (1997) *Op Cit*.

[351] See: *Ibid;* Howe (2005) *Op Cit*; Rehn (2003) *Op Cit.*

of security and encryption than the BBS era.[352] This is due to the fact that they now handled a much wider remit of Warez (music, film, TV, software, computer games) and held a much larger amount of data on their servers, making them both a much bigger target for both the entertainment industry and law enforcement.[353] The Topsites are File Transfer Protocol (FTP) servers with very fast internet connections (between 10-100 bit in 1999-2004; 1000+ bit in 2010) and huge storage space (at least 200-500gb in 1999-2004; 30-40+ terabytes in 2010).[354] FTP is a standard application layer of the internet, working over TCP/IP connections, and is used to transfer data through a client/server architecture, where files are typically stored on a large FTP server, and downloaded by smaller clients, such as home computers.[355] Topsites are usually hosted in countries with high bandwidth speeds, low bandwidth costs and liberal intellectual property laws. Sweden, Germany and the Netherlands were popular host sites around 2004.[356] Like the BBS Warez groups, the couriers would operate a credit system, which was now

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[352] Topsites use Secure Sockets Layer (SSL) encryption, which requires a keyed message authentication code to gain entry. They announce new Warez on 'invite only' IRC channels (see next pages for definition of IRC) which are encrypted using the Blowfish algorithm. The Blowkey password can only be obtained from the Topsite, otherwise the IRC channel cannot be read. See: Enigmax (2007) "Top Pirate Reveals Warez Scene Secrets, Attracts MPAA Lawyer's Attention," *TorrentFreak*, 19th November, http://torrentfreak.com/top-pirate-reveals-warez-scene-secrets-071119/

[353] There have been a number of internationally coordinated 'takedowns' of Topsites. See 'Operation Buccaneer': United States Department of Justice (2002) "Operation Buccaneer," 12th July, http://www.justice.gov/criminal/cybercrime/ob/OBinvest.htm; 'Operation Fastlink': Associated Press (2004) "U.S. Moves Against Online Pirates", *Wired*, 22nd April, http://www.wired.com/entertainment/music/news/2004/04/63178

[354] See: b-bstf (2004) "A guide to Internet Piracy", *2600: The Hacker Quarterly*, Summer 2004, pp. 26-29, http://web.archive.org/web/20061023070731/old.wheresthebeef.co.uk/show.php/guide/IMG.HTM; AboutTheScene (2008b) "The Warez Scene Hierarchy", http://web.archive.org/web/20080514025707/www.aboutthescene.com/thescene/hierarchy.html, archived from original on 12th August 2008, retrieved, 2nd April 2010; Scenenotice.org (2006) "Report.of.US.Busts.20060608.READ.NFO-SDE", http://scenenotice.org/details.php?id=656; Thomas Mennecke (2009) "BREIN Takes 'Loop' Top Site Offline", *Slyck News*, 27th November, http://www.slyck.com/news.php?story=1882

[355] Tim Berners-Lee, Larry Masinter, Mark McCahill (1994) "RFC1738 – Uniform Resource Locators (URL)", December, http://www.ietf.org/rfc/rfc1738.txt

[356] See: b-bstf (2004) *Op Cit*, p. 26-29; About the Scene (2008b) *Op Cit*.

standardised at 1:3, so if a courier uploaded 300mb, they would receive 900mb download credit.[357]

In the mid-to-late 90's The Scene Topsites began to expand their operation due to the growth of large high-bandwidth business and university online computing networks, and the capability to exploit their often poor FTP security, in order to spread files quickly. The Scene used a method called File eXchange Protocol (FXP) to exploit a vulnerability that enabled files to be moved from one FTP server to another, thus changing the architecture from 'client-server' to 'server-server', and enabling The Scene to spread its 'Topsite' files widely across fast servers. Individuals involved in this 'second level down' of The Scene would congregate on 'FXP boards' – BBS-style message forums - and each person would have one of three roles: 'scanner', 'hacker' and 'filler'. 'Scanners' would search for vulnerable University/business networks, 'hackers' would then break into the network and load FTP/FXP client software onto the targeted computer, 'fillers' would then receive the admin login data from the hacker, fill the computer with the latest Warez, and then post 'leech logins' for the filled computers on the FXP board, which members could use to download the warez.[358]

Once the FXP board members had downloaded the files they wanted, the files then usually found their way onto 2 internet application layers: Internet Relay Chat (IRC) and USENET. Often FXP would be bypassed, and files would be copied straight from Topsites to the more exclusive IRC channels and USENET groups. The IRC protocol is a form of text messaging that takes place between multiple users in what resembles an internet chat/conferencing room called a channel or 'chan'. There are two types of Warez IRC chans. *XDCC chans* are server-to-user and have broadly the same scene status as the FXP boards. They typically utilise the same scanning/hacking/filling procedure as FXP. *Fserve chans* are user-to-user and involve users sending warez to each other from their own hard drives. These chans are typically easier to gain access to, have slower speeds, and

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[357] *Ibid.*

[358] See: b-bstf (2004) *Ibid*; About the Scene (2008b) *Ibid;* fantasymick (2002) "Warez Guide: FXP boards", *The Core*, 23rd August, http://core-knowledge2.tripod.com/wg_fxpboards.htm

have a much lower status in the Scene than XDCC.[359] USENET became popular as an internet messaging system following the decline of BBS. It is similar to BBS, but differs insofar as there is no centralised server or administrator, and the messages are spread across a myriad of 'newsgroup servers'. The user typically subscribes to a server and uses it to browse newsgroups, which contain different types of threaded discussion. Users can also browse 'binary groups' which allow the transfer of data rather than text, which is still a very popular way of spreading Warez.[360] Although it is difficult to encrypt binary groups to make them Scene-only, they imply a level of encryption insofar as they require the user to subscribe to a newsgroup server, which often involves a small fee, and configure a newsgroup client.[361] Furthermore, they combine encryption with efficiency in that firstly, files are typically broken down into parts, spread across different servers and are then collated by the user's own server, making it difficult to identify the upload source. Secondly, and although there is sometimes a problem with missing file pieces, the better newsgroup servers are amongst the fastest and most reliable file transfer solutions on the internet.[362]

P2P exclusion from The Scene pyramid 1999-2004

At this point, The Scene was responsible for 'uploading' a large proportion of the music that was shared on the internet from Topsites to FXP boards, IRC channels and newsgroups. The music that was shared on the dominant P2P networks of the time, Kazaa and Limewire, would often originate from a Scene upload and/or from IRC/USENET groups, but the casual P2P filesharer would typically have no idea where the file had come from. Between the advent of Napster and the establishing of BitTorrent as the most popular P2P protocol, roughly between 1999 and 2004, the

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[359] b-bstf (2004) *Ibid*; About the Scene (2008b) *Ibid*.

[360] Paul Stamatiou (2008) "How to: Download with Newsgroups", *Paul Stamatiou Blog*, 12th February, http://paulstamatiou.com/how-to-download-with-newsgroups

[361] Janko Roettgers (2007) "Essay: Usenet, the Original Piracy Hotbed", *GIGAOM*, 2nd June, http://gigaom.com/video/usenet/

[362]Afterdawn (2008a) "How to Download Files from USENET Newsgroups", February, http://www.afterdawn.com/guides/archive/how_to_download_files_from_usenet_newsgroups

process by which music Warez filtered from release groups down to P2P networks remained largely stable. The diagram below (**Figure 7.6**) shows how the system worked. The red boxes at the top indicate the 'originators' of the file, and those that have links to the originator. This was a tripartite relationship between the 'insider' – someone working within the industry that had access to pre-release CD's, DVD's or software – the release group, who once they'd received the release would remove any copy protection and rip and encode it to accepted standards, and the Topsites, where different release groups would be 'affiliated' with different Topsites and copy their Warez to them to begin the 'distribution pyramid'. The boxes in yellow indicate the Scene distribution network, where files are copied within and between FXP boards, public FTP sites, IRC and USENET. The blue box designates the P2P networks, which as far as The Scene was concerned, largely operated as the 'dumping ground' for Warez once they had been shared around other, less accessible protocols.

Insiders → **Release groups**

Topsites

Oval border indicates the internet protocols in the 'Warez Scene'

Release is copied many times within and between FXP boards and these 3 protocols

FXP Boards

IRC

Use net

FTP

Users make their file directories available for upload, which contain the downloaded Scene files and any other (usually older) music they have copied to their hard drives.

The many thousands of copies are fed into the P2P networks – Kazaa, Limewire etc.

P2P Networks

Users download the Scene releases and other music from each others file directories, creating millions more.

P2P Users

Figure 7.6: The Scene pyramid before BitTorrent (pre-2004)[363]

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[363] Adapted from thesis research.

There are a number of reasons why P2P was isolated from The Scene before BitTorrent. Firstly, the typical P2P user would only make a significant contribution to 'uploading' through what we shall call 'passive sharing'. The sharing was passive because the user was not required to actively upload files to a 'place' on the Internet; instead they had to 'make available' a sharing folder on their hard drive for others to access. There was an optional choice to fill this folder with music that already existed on the user's hard drive, but there was no clear incentive for the user to do this. Instead, most of the music in user's sharing folders was music they had downloaded using the P2P program, due to the fact that the default settings on both the two most popular P2P networks circa 2003-2004, Kazaa and Limewire,[364] were that all music downloaded was automatically made available to other users via the shared folder. Other default settings on both Kazaa and Limewire were that the filesharing program automatically loaded when the computer was switched on, and that the sharing folder was immediately accessible when the program started.[365] If a user didn't know how to change the settings, or was unaware of what the settings implied, they would often be 'uploading' music and other files to other users unknowingly, sometimes without even knowing that the filesharing program was running, or by virtue of the default settings rather than by an informed choice to do so. A 2003 user study of Kazaa found that many people were sharing private and personal information through unwittingly allowing access to certain file locations, and often assumed they were sharing no files at all, when in fact they were sharing *all* the files on their computer.[366]

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[364] Thomas Mennecke (2003) "P2P Networking Becomes Multi-Dimensional", *Slyck News*, 14th October, http://www.slyck.com/story271_P2P_Networking_Becomes_MultiDimensional; Eric Bangeman (2008a) "Study: BitTorrent sees big growth, LimeWire still #1 P2P app", *Ars Technica*, 21st April, http://arstechnica.com/old/content/2008/04/study-bittorren-sees-big-growth-limewire-still-1-p2p-app.ars

[365] These Kazaa and Limewire user guides make the default settings explicit: Kazaa (2010) "Changing your settings", 14th December, http://www.kazaa.com/us/help/guide_settings.htm Limewire (2010) "User Guide: Installation", 20th October, http://wiki.limewire.org/index.php?title=User_Guide_Installation

[366] Nathaniel S. Good and Aaron Krekelberg (2003) "Usability and Privacy: A study of Kazaa P2P Filesharing", *Proceedings of the CHI 2003 conference on human factors in computing systems*, Fort Lauderdale, Florida, April, pp 137–144.

Nevertheless, 'making available' on P2P was the practice that accelerated the amount of copies of a song from a few thousand Scene copies, to a few million copies proliferating around the world. The passivity of this practice, in particular the lack of precision by which one could confidently call it 'distribution', has been underlined by the legal contestation surrounding it. In the early 2000's, the Recording Industry of America (RIAA), who represent the major record companies, adopted a policy of aggressively pursuing individual P2P users, particularly those using Kazaa. The RIAA only managed to prosecute 2 filesharers, despite attempting to sue over 20,000 people between 2003 and 2006.[367] This failure is partly due to their struggle to prove that filesharing on Kazaa and Limewire constitutes 'wilful infringement', insofar as it is often unclear whether violation of copyright has occurred if a user 'makes available' particular files.[368] The inability to successfully prosecute was because the source of the perceived 'problem', at least until BitTorrent began to predominate, was not ordinary filesharers, but the much smaller structure of The Scene.[369] This point was also raised from within The Scene itself. The hacker b-bstf, in his detailed look at the structure of The Scene food chain circa 2004 in *2600: The Hacker Quarterly*, showed the typical P2P user was at the bottom of this food chain, almost never responsible for the uploading of music to the internet, and almost completely detached from the uploading practices of The Scene: "Harmless kids, costing no one any real money, pursuing their musical interest. Also, these people are being labelled 'pirates'. These are the ones who are being sued by the RIAA for thousands of dollars. *Sigh*."[370]

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[367] Electronic Frontier Foundation (2006) "How Not to Get Sued for Filesharing", July, http://www.eff.org/wp/how-not-get-sued-file-sharing

[368] Eric Bangeman (2008b) "RIAA fails again to get default judgement in uncontested case", *Ars Technica*, 25th February, http://arstechnica.com/tech-policy/news/2008/02/riaa-fails-again-to-get-default-judgment-in-uncontested-case.ars

[369] David Kravets (2007) "RIAA Trial Produces Playlist of the Century", *Wired*, 4th October, http://www.wired.com/threatlevel/2007/10/trial-of-the-ce/ and Michael Masnick (2009) "DOJ Doesn't Believe $80,000 Per Song Unconstitutional Or Oppressive", *Techdirt*, 14th August, http://www.techdirt.com/articles/20090814/1256505886.shtml

[370] b-bstf (2004) *Op Cit*, p.26.

Allied to the passive sharing issue, P2P was not taken seriously by The Scene as a method to distribute Warez during this period because the 'decentralisation' in Kazaa and Limewire allowed users to connect to only a small proportion of other users downloading the same file on the network. Also, those users would typically be able to utilise very low levels of bandwidth compared to the super-fast University and business FTP servers hacked by The Scene. They also struggled to provide efficient solutions for the uploading of large files, such as large mp3 files and films, because the uploads had to be managed solely by the original seeder until the file had been completely download by at least one other peer, which could take hours or even days, depending on the size of the file.[371]

Furthermore, Kazaa and Limewire relied on *openness* – on the anonymity of its users and no control over standards, in order to attract huge traffic numbers - and this was exploited by the owners of these P2P networks in order to make money, at the expense of the user experience. Kazaa and Limewire installed Malware (or 'malicious software') on the user's computer, resulting in pop-up ads, redirection to unwanted websites and virus threats. The owner of Kazaa, Sharman Networks, were paid significant sums of money by advertisers to bundle malware,[372] and Limewire's parent company, Lime Wire LLC, used its malware 'Limeshop' to monitor online purchases and redirect sales commissions to itself.[373] Often, the malware could not be removed by uninstalling the P2P software, and removing the malware could render the P2P software unusable.[374]

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[371] Nathaniel Leibowitz, Matei Ripeanu and Adam Wierzbicki (2003) "Deconstructing the Kazaa Network", in *Proceedings of the The Third IEEE Workshop on Internet Applications.* (Washington, DC: IEEE Computer Society), pp. 112-120; Matei Ripeanu, Adriana Iamnitchi and Ian Foster (2002) "Mapping the Gnutella Network", *IEEE Internet Computing*, Vol. 6, Issue 1, pp. 50-57.

[372] Ryan Naraine (2006) "Spyware Trail Leads to Kazaa, Big Advertisers", *Eweek*, 21st March, http://www.eweek.com/c/a/Security/Spyware-Trail-Leads-to-Kazaa-Big-Advertisers/

[373] ZeroPaid (2002) "LimeWire Trojan: Spyware Gone Crazy!!!" 1st January, http://www.zeropaid.com/news/440/limewire_trojan_spyware_gone_crazy/ ;

[374] Andrew Kalafut, Abhinav Acharya and Minaxi Gupta (2006) "A study of malware in peer-to-peer networks", in *Proceedings of the 6th ACM SIGCOMM conference on Internet measurement* (New York, NY: ACM**)**, pp. 327-332; Seungwon Shin, Jaeyeon Jung and Hari Balakrishnan (2006) "Malware prevalence in the KaZaA file-sharing network", in *Proceedings of the 6th ACM SIGCOMM conference on Internet measurement* (New York, NY: ACM**)**, pp. 333-338.

Unrestricted openness and anonymity left both systems open to external exploitation by organisations that also desired to force users down a particular route of monetisation. The global recording industry actively engaged with P2P systems by employing 'P2P content protection' companies, such as 'OverPeer'[375] and 'MediaDefender'[376] to pollute Kazaa and Limewire with thousands of spoof files that contained nothing, or decoy files that contained trailers, white noise, virus threats or adverts/popup links for payable content.[377] The procedure intends to make the real files harder to find and thereby make the P2P experience less enjoyable, whilst directing the user to content they have to pay for.[378] MediaDefender, now under the guise of 'Peer Media Technologies', continues to employ such procedures at the behest of the entertainment industries on popular 'public tracker' BitTorrent websites.[379]

Remembering our meditation on the role of *planning* and *organising* a system in the structuring of desire, the legitimacy of malware in P2P systems of this era is an example of an economy of desire that reproduces an end result which factors out the modes of reflection of those subject to it. Here, the desire to share mnemotechnics is recast in organisational terms that either fix the user experience within pre-planned monetisation techniques of Sharman Networks and Lime Wire LLC, or leave the user open to exploitation through the routinisation techniques of Overpeer or Media Defender. Furthermore, the 'passive sharing' issue underlines the fact that the users do not make

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[375] Thomas Mennecke (2005) "End of the Road for OverPeer", *Slyck News*, 10th December, http://www.slyck.com/story1019.html

[376] MediaDefender (2010) "About our Company and Industry", 14th December, http://www.mediadefender.com/aboutUs.html "MediaDefender has been contracted by every major record label and every major movie studio, video game publishers, software publishers, and anime publishers."

[377] James Maguire (2003) "Hitting P2P Users Where It Hurts", *Wired*, 13th January, http://www.wired.com/entertainment/music/news/2003/01/57112

[378] Nate Anderson (2007) "Peer-to-peer poisoners: A tour of MediaDefender", *Ars Technica*, 18th March, http://arstechnica.com/tech-policy/news/2007/03/mediadefender.ars/2

[379] Enigmax (2009) "Peer Media: MediaDefender and Media Sentry Rebranded", *TorrentFreak*, 18th August, http://torrentfreak.com/peer-media-mediadefender-and-media-sentry-rebranded-090818/

an active contribution to the desiring infrastructure, and that their experience is modulated by organisational hierarchies primarily intent on monetising, and thereby monostabilising, the storage and circulation of mnemotechnics through advertising, rather than making their filesharing systems responsive to the dynamic modes of reflection and action replete amongst users. It is unsurprising that a 2005 covert study uncovered a unanimous anti-P2P feeling amongst Scene members, with all those interviewed making a distinction between 'piracy', where reliability, quality and security are protected by the accountability of membership to FXP boards and release groups, and 'filesharing', seen as an irresponsible quest for 'free content' where users are not invested in the reciprocal exchange of information. It concludes: "File sharing is not piracy; it is not even close. It lacks order and class. P2P and other public mediums are the result of media leaking through the cracks of the scene… [of] the digital scraps of piracy, that end up on public sharing networks."[380]

Etree.org: Establishing the standards for lossless audio trading

Another much smaller culture of disparate groupings emerged alongside the piracy and filesharing technologies developing 'online' in the 1990's which also rejected pre-BitTorrent P2P – *lossless audio enthusiasts.* 'Lossless' is a form of data compression that enables the exact original data to be re-formed from the compressed data, so a lossless digital audio file encoded from a CD would be able to exactly replicate the original CD sound quality.[381] Any form of mp3 data compression, including that used by the Scene and also the aac encoding algorithm used by iTunes,[382] is considered 'lossy' rather than lossless because it loses some of the data in the encoding process, and thereby can

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[380] Paul Craig (2005) *Software Piracy Exposed: Secrets from the Dark Side Revealed* (Rockland, MA: Syngress), p. 125.

[381] Mat Hans and Ronald W. Schafer (1999) *Lossless Compression of Digital Audio*, Client and Media Systems Laboratory, HP Laboratories, Palo Alto, HPL-1999-144, November, http://www.hpl.hp.com/techreports/1999/HPL-1999-144.pdf

[382] HydrogenAudio (2007) "Advanced Audio Coding", 2nd December, http://wiki.hydrogenaudio.org/index.php?title=Advanced_Audio_Coding

never reconstruct the original CD quality.[383] The first popular format used to losslessly compress CD-quality audio files was 'Shorten' (shn), developed by Tony Robinson of SoftSound in 1992/1993, which was able to 'shorten' the audio data of CD tracks in the encoding process by between 30-50% without losing any quality.[384] The culture of online lossless music sharing draws on tendencies that can be observed in the interweaving impulses of 'audiophile' culture, with its focus on 'tweaking' audio components in order to achieve a 'hi-fidelity' experience, developing from the DIY "hi-fi starter kit" hobby in the 1950s and 1960s through the 'high-end' audio amplification and speaker systems that retailed in the 1980s and 1990s,[385] and also the culture of 'record collecting', where recorded music releases are collected, traded, archived and kept in good condition and which largely, though not exclusively, centres around vinyl records.[386]

 As the price of both desktop computers and hard drive storage decreased, and storage space and bandwidth capacity increased as the World Wide Web became ubiquitous in the late 1990s,[387] the potential for a coordinated and structured system for the online sharing of shn files was not taken up by piracy or filesharing groups, but by the long tradition of groups trading 'bootlegs' of live music recordings, usually the 'master

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[383] HygrogenAudio (2007) "Advanced Audio Encoding", 2nd December, http://wiki.hydrogenaudio.org/index.php?title=Advanced_Audio_Coding

[384] Tony Robinson (1994) *SHORTEN - Simple lossless and near-lossless waveform compression*, Technical report CUED/F-INFENG/TR.156 (Cambridge: Cambridge University Engineering Department).

[385] See: Jeffrey Tang (2004) "The Endless Quest for Fidelity: A portrait of the early audiophile community", Paper Presented at the 4S-EASST Conference in Paris, France, 25th-28th August, http://www.csi.ensmp.fr/WebCSI/4S/download_paper/download_paper.php?paper=tang.pdf; John D. Branch (2007) "Postmodern Consumption and the High-Fidelity Audio Microculture", in Russell Belk, Russell Belk Jr., John Sherry (eds.) *Consumer Culture Theory, Volume 11 (Research in Consumer Behavior)* (Oxford: JAI Press), pp. 79–99.

[386] Roy Shuker (2010) *Wax trash and vinyl treasures: Record collecting as a social practice* (Farnham: Ashgate); Brett Milano (2003) *Vinyl Junkies: Adventures in Record Collecting* (New York: St Martin's Press).

[387] Read (2008) *Op Cit*; Fried (2010) *Op Cit*; Edward Grochowski and Roger F. Hoyt (1996) "Future Trends in Hard Disk Drives", *IEEE Transactions on Magnetics*, Vol. 32, No. 3, pp. 1850-1854.

recording', taken from the sound desk of the concert.[388] Although bootlegs were often sold for extortionate amounts, this sort of trading was free and, before the internet, took place through a process called 'B+P' (blanks + postage) trading, where the 'seed' of the 'tree' (the trader with the master copy) would be mailed blank CDs (audio tapes in the 80s) and return postage by the 'branches' (those who wanted bootlegs). The branches would then offer B+P to 'leaves' lower down the chain.[389] This was an inherently slow process and it was impossible to guarantee the quality of CD burning down the branches and leaves, and so in 1998 the database *etree.org* transposed this tree structure to the internet, utilising a large network of FTP servers and some USENET newsgroups as stable and efficient 'seeds', and making efforts to standardise shn encoding so that no quality would be lost in the process.[390]

Etree strictly only provides database links to music by artists who are 'trade friendly' (that legally permit their live recordings to be recorded and freely traded[391]) and its aim is one of 'curation' – to distribute as many 'archival grade' (exact copies of the master) versions of live recordings as widely as possible in order to preserve them,[392] but it also played a major role in teaching 'non-piracy' people how to interact with less user-friendly communication protocols such as FTP/USENET and how to accurately encode and share lossless music.[393] It expanded from 10 people in 1998 to a database of over 300 FTP servers providing the 'trunk' to over 12,000 users in 2001. It contains both a

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[388] Clinton Heylin (2004) *Bootleg! The Rise & Fall of the Secret Recording Industry* (London: Omnibus Press).

[389] Ed McNichol (2010) "CDR B+P Beginners Page", 14th Dec, http://www.mcnichol.com/bnp/; Eric_R (2006) "The Genesis Bootleg FAQ: What's a B+P, tree, vine, weed, etc?" *Genesis: the movement*, 30th October, http://www.genesis-movement.org/bootfaq.htm#9

[390] Etree (2004) "About Etree Org", 27th November, http://wiki.etree.org/index.php?page=AboutEtreeOrg

[391] Etree (2010) "Trade Friendly", 12th April, http://wiki.etree.org/index.php?page=TradeFriendly

[392] Etree (2011) "Software You Need", 18th January, http://wiki.etree.org/index.php?page=SoftwareYouNeed

[393] Etree (2006) "Getting Started", 28th April, http://wiki.etree.org/index.php?page=GettingStarted

wiki and a forum community which provide lengthy FAQs on how to use FTP/USENET and lossless files, and through which a series of software tools (and accompanying FAQs) were developed to create, package, verify and play back lossless files.[394] This software support was crucial to the emerging lossless sharing culture, as it established and popularised high standards of Digital Audio Extraction (DAE), the process through which audio is extracted from physical media, such as CD or DVD, and encoded as a digital file (which had previously been notorious for injecting irregularities into digital audio[395]) through shn encoding programs such as 'Traders Little Helper'[396] and 'mkwACT'.[397] These programs also created md5 checksums for each file, which could be used to accurately verify the file against the original – a vital component in ensuring the proliferation of archival-grade copies.[398]

As we shall see in the final section of this thesis, many of the systemic traits of Etree – providing reliable sets of 'seeds' for efficient filesharing; developing standards of DAE and archival grade music collections amongst its users through FAQs and tutorials; creating a committed, user-managed digital community through sharing music - were cultivated within the desiring-infrastructure of OiNK. The seeds of this homology can be traced back to the development and early manifestations of the BitTorrent P2P protocol, with the shn bootlegging community being amongst the earliest adopters of the technology through some of the first BitTorrent tracker websites, such as sharingthegroove.org which started in early 2003 and garnered over 200,000 members by November 2004.[399] SharingTheGroove, and other shn bootlegging trackers that

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[394] Etree (2004) *Op Cit*.

[395] Brian Dipert (2001) "Digital Audio Gets an Audition. Part One: Lossless Compression", *Electronics Design, Strategy, News*, 4th January, pp. 48-61.

[396] EasyTree (2010) "Traders Little Helper", 18th April, http://tlh.easytree.org/

[397] Etree (2002) "mkw Audio Compression Tool", 6th June, http://www.etree.org/mkw.html

[398] The Traders Den (2010a) "FAQ: Audio Seeding and Trading: Checksum Types - st5s, ffps, and md5s", 14th Dec, http://www.thetradersden.org/forums/faq.php?faq=audio

[399] Sharing the Groove (2003) "Welcome to Sharing the Groove!" 1st April, http://web.archive.org/web/20030401190810/www.sharingthegroove.org/msgboard/ ; Dan

quickly appeared in its slipstream such as easytree.org,[400] were also amongst the first torrent trackers to require membership, and thereby some of the earliest examples of 'private tracker' communities, of which OiNK was a more advanced example. Furthermore the creator of BitTorrent, Bram Cohen, has gone on record stating that he wrote and designed BitTorrent for the Etree community, as way for them to more efficiently share the relatively large shn files between each other, rather than from FTP servers, which often became jammed with traffic.[401] Even further than that, Etree was listed as BitTorrent's only 'customer' on its FAQ between 2002-2005, and shn live bootleg files were the only files used in BitTorrent's testing and development stage.[402] Given the initial identification of this homology and the tenets of quality, efficiency and encryption we have discussed in relation to The Scene, the following chapter interrogates the internal algorithmic functioning, data structure and external deployment of BitTorrent, why it was suited to the archiving and sharing practices of lossless traders, and how it reconditioned the functioning of P2P to become a key distribution method of The Scene.

Leroy (2004) "If It's Live, It's Probably Already Online", *New York Times*, 12th September, http://www.echoes.com/greymatter/archives/00000140.html

[400] Leroy (2004) *Ibid*; jdelphi (2005) "easytree.org taken down!!!!" *Ultimate Metal Forum*, http://www.ultimatemetal.com/forum/anthrax/191008-http-www-easytree-org-taken-down.html

[401] Kim Peterson (2005) "BitTorrent file-sharing program floods the Web", *The Seattle Times*, 10th January, http://seattletimes.nwsource.com/html/businesstechnology/2002146729_bittorrent10.html

[402] Mark Schultz (2005) "What Happens to BitTorrent After Grokster?" *Eric Goldman Blog*, 25th June, http://blog.ericgoldman.org/archives/2005/06/what_happens_to.htm
The bittorrent.com FAQ stated:
"BitTorrent's customer is etree. Etree is a loose-knit community of people who distribute live concert recordings online…Etree suffers from not having nearly as much upload offered as there is download demand, a problem BitTorrent is intended to solve."

Chapter 8 - (Private) BitTorrent and the post-2004 P2P filesharing architecture

Before BitTorrent, P2P was a way to get 'free music'. However, if users wanted assurances of audio quality and efficient access to music - unless they had connections with the disparate Scene and audio enthusiast groups – buying a CD would often be a more reliable option than using P2P. The emergence of BitTorrent in 2004 reconditioned the operation of P2P, so that 'making available' could become active distribution without increasing the risk of prosecution, and so that those who had been passive sharers in the previous era of P2P had a vested interest in contributing to the upload process, and in ripping, encoding and uploading their own CD's to high standards. This in turn gave The Scene and audio enthusiasts an incentive to interact with P2P users, and spawned a nascent culture of non-Scene, non-FTP/USENET internet users actively engaged in uploading their music collections to private BitTorrent tracker websites. However, it was not the BitTorrent filesharing architecture alone that signalled this fundamental change, but a particular manifestation of its properties delineated by the external functioning of its components through *private BitTorrent communities* such as OiNK, which were emerging around BitTorrent tracker websites.

BitTorrent's data structure and its key algorithms, introduced briefly in chapter 1, provided the internal functioning that these groups of specialists needed to extend their membership to more people, without compromising on standards of quality, efficiency or encryption. This chapter embarks on a deeper discussion of the relationship between these algorithms and data structure, and how it played a role in individuating the OiNK-BitTorrent architecture, charting its history, application and the reasons why each algorithm contributed to an elegant optimisation of the aforementioned standards. It then moves on to a consideration of some of the inherent weaknesses in BitTorrent's data structure, and the tendency amongst computer scientists to look for an algorithmic solution to this, which implies a concomitant failure to find a solution in the *external deployment* of the BitTorrent architecture and its integration and communication with the application layers of the internet, software, hardware, and crucially, the socialised desire of users.

The second part of this chapter focuses on how private BitTorrent communities exploited the *space between* the BitTorrent client and the HTTP 'frontend' of the tracker website. This led to the development of BBS-style communities that, due to the algorithmic functioning of BitTorrent's data structure and its capacity for external integration with other communication and software protocols, stimulated the socialised desire of users and prompted them to utilise the BitTorrent architecture in such a way that it was deployed in relation to a nascent set of properties, with members of such private communities having incentives to upload their own media collections, upload significant proportions of what they downloaded, and to keep sharing over long periods of time.

Algorithms in situ

As we observed in the opening chapter, there are three broad areas in which the BitTorrent architecture is different from previous generations of P2P. It breaks files down into small pieces, it can download pieces non-sequentially, and each peer in the swarm can simultaneously download *and* upload multiple pieces to and from multiple peers, even before their download has finished. We can elucidate the operation of these functions by looking at why the algorithms that make this data structure possible enabled both the Scene and specialist groups of audio enthusiasts to instantiate high levels of efficiency, quality and encryption.

When the BitTorrent client breaks down a file into pieces, through the making of a new torrent file, a small file called a 'hash' (also known as a 'hash value' or 'checksum') is created for each piece, and is recorded in the torrent file. As well as enabling each piece to be detected on that user's computer, the hash also plays a role in ensuring that the quality of each piece of the file being shared has not been corrupted or infected by viruses through the process of sharing. BitTorrent utilises a cryptographic hash algorithm called Secure Hash Algorithm 1 (SHA-1). The establishment of this algorithm was a culmination of research that had begun in the 1970's into using hash functions to

authenticate digital information.[403] It was designed by the National Security Agency (NSA) and was published by the National Institution of Standards and Technology as a US Federal Information Processing Standard (FIPS) in 1995.[404] It works by assigning both a 'value' and a 'key' to each piece of information, with the hash 'function' of the algorithm used to decrypt the key to retrieve the value, thereby enabling access to the piece. If the integrity of the data is changed, then the key will no longer correspond to the piece. In BitTorrent, when one peer in the swarm receives a piece of the file, the hash of that piece can be compared to the hash that has been recorded in the torrent file to test if the piece is error free.[405] This immediately gave the Scene and audio enthusiast groups a way to assure that levels of quality could be checked and maintained, and that the architecture had a robust defence against file corruption and virus infiltration. The inclusion of an internal authentication mechanism within the very kernel of the sharing architecture (the torrent file) gave BitTorrent an advantage over FTP, where true authentication could only take place after the download was complete, and USENET, where completion and corruption issues were a problem, and often had to be remedied after the fact using PAR and PAR2 files which replaced missing or corrupted pieces.[406]

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[403] Bart Preneel (2010) "The First 30 Years of Cryptographic Hash Functions and the NIST SHA-3 Competition", in J. Pieprzyk *Topics in Cryptology - Ct-Rsa 2010, Proceedings* (Berlin: Springer-Verlag), pp.1-14.

[404] See *Ibid* and Stephane Manuel (2009) "Classification and Generation of Disturbance Vectors for Collision Attacks against SHA-1", *International Workshop on Coding and Cryptography*, 11th May, Ullensvang: Norway, http://eprint.iacr.org/2008/469.pdf, pp.1-10

FIPS are standards used by the US Federal Government to regulate computer systems. See: FIPS (2008) "Federal Information Standards Publications", 2nd September, http://www.itl.nist.gov/fipspubs/geninfo.htm

[405] Bram Cohen (2002) "The BitTorrent Protocol Specification", http://www.bittorrent.org/beps/bep_0003.html, modified on 28th February 2008.

[406] Afterdawn (2008b) "How to Download Files from USENET Newsgroups: File Corruption, using PAR and PAR2 files", February, http://www.afterdawn.com/guides/archive/how_to_download_files_from_usenet_newsgroups_page_6.cfm

The 'rarest first' (piece selection) algorithm in BitTorrent is used to control the non-sequential downloading and uploading of multiple pieces between peers, and was developed by the author of BitTorrent, Bram Cohen. One of the major differences between BitTorrent and previous P2P protocols is that it makes a series of simultaneous data requests across multiple connections to multiple machines for pieces of data that do not follow each other in the file sequence, rather than a series of isolated requests for the next part of the file in the sequence. Furthermore, when leeching, each peer must be able to engage in this non-sequential multiple piece sharing both upstream and downstream at the same time. BitTorrent operates on a 'rarest first' principle, where the client chooses to download the pieces held by the lowest number of peers in the swarm.[407] This dramatically reduces the burden on the original uploader, as all the peers in the swarm share the responsibility of helping to circulate the least populated pieces, and also increases data redundancy, with the rarest pieces being available for download from multiple peers. This constitutes a massive increase in the efficiency of filesharing compared to older P2P, with multiple, asynchronous piece selection resulting in single files being copied to multiple destinations concurrently. In terms of advantages to the Scene, the fact that the uploading burden could now be distributed amongst all members of the swarm meant that P2P, through BitTorrent, had become the most efficient mechanism for making the highest number of copies of a release in the shortest possible time. Furthermore, the passage of time that a release group needed to host a file was greatly decreased, giving pro-copyright agencies far less time to locate the original source of the upload. Another efficiency bonus was the ability to distribute larger files more quickly, which meant that higher bitrate mp3's and lossless encoded music could be shared more efficiently.

BitTorrent optimises bandwidth and works to improve the uploading and downloading speeds of peers through its choking algorithm. This was designed by Cohen in the

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[407] Bram Cohen, 2002, *Op Cit*.
 In a new swarm when a peer has nothing to upload, the piece selection algorithm employs a 'random piece selection' technique when choosing the first piece of a file to download. Once this random piece has been chosen and checked, the 'rarest piece' strategy begins.

tradition of local optimization algorithms that seek to achieve 'Pareto Efficiency,'[408] where the allocation of resources between individuals in a system make some individuals 'better off' without making anyone 'worse off'.[409] In most BitTorrent clients it is possible to set the maximum number of simultaneous uploads per torrent (i.e. how many other peers you allow to upload from you), with a typical number being somewhere between 4 and 17.[410] Once a peer is uploading to the maximum number, it rejects requests from other peers, or 'chokes' them. When leeching, a client chooses which peers to 'unchoke' on the basis of how fast their download speed is. Every 10 seconds it orders all peers according to their download rate and picks the fastest to unchoke. When seeding, the client rotates the peers on the basis of how long they have been downloading, rather than their download speed. Every 10 seconds it chokes the peer that has been downloading the longest and unchokes a new peer. This means that seeding peers spread pieces of the file around all new peers, increasing both the redundancy and efficiency of the swarm, and the leeching peers ensure that they download from the fastest sources.[411] Peers with slower data transfer rates are protected by the 'optimistic unchoke' element of the algorithm, where one leecher is randomly unchoked every 30 seconds regardless of current transfer rates. This has two

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[408] Designing local optimisation algorithms on the basis of Pareto Efficiency is most closely associated with evolutionary algorithms, through which 'populations' (i.e. data sets, a tissue of cells, a group of individuals) are sorted and selected from on the basis of their 'fitness' for a particular task. See:
Tassos Dimitriou and Russell Impagliazzo (1996) "Towards an analysis of local optimization algorithms", in *Proceedings of the twenty-eighth annual ACM symposium on Theory of computing* (Philadelphia PA: ACM)**,** pp. 304-313; Sanaz Mostaghim and Jurgen Tiech (2003) "Strategies for finding good local guides in multi-objective particle swarm optimization (MOPSO)", in *Swarm Intelligence Symposium, 2003. SIS '03. Proceedings of the 2003 IEEE* (Philadelphia PA: ACM), pp. 26-33.

[409] For a classic account of Pareto Efficiency in Economics, see: Stephen A. Ross (1973) "The Economic Theory of Agency: The Principal's Problem", in *The American Economic Review*, Vol. 63, No. 2, pp. 134-139.

[410] The preferable max upload slot limit depends on how fast your internet connection is. See: Ernesto (2006a) "Optimising Your BitTorrent Download Speed", *TorrentFreak*, 26th June, http://torrentfreak.com/optimize-your-bittorrent-download-speed/

[411] Bram Cohen (2003) "Incentives Build Robustness in BitTorrent", in *Proceedings of the Workshop on Economics of Peer-to-Peer Systems* Berkeley CA: NetEcon, June, pp. 1-5.

other benefits. It allows existing peers to evaluate the download capacity of new peers in the swarm, and it gives new peers with nothing to share their first piece.[412]

The majority of scholarly work on BitTorrent has been done in computer science, and has largely focused on an analysis of the algorithms. Most papers have centred on potential deficiencies in BitTorrent's algorithmic functioning, identifying two major flaws in the protocol. Firstly, the problem of 'freeriding', where users leave the swarm as soon as their download is completed. Secondly, the lack of long term sustainability in swarms, where, particularly in smaller swarms, seeders leave after a period of time resulting in files dropping out of circulation all together. This body of work focuses largely on the robustness and scalability of single swarms, rather than multiple swarms connected under the rubric of a tracker community, and all put forward an algorithmic 'incentive' to replace or augment the choking algorithm which they believe will stop freeriding and/or extend the life of single swarms.[413] It is the conviction of this thesis that the most successful solution to these problems so far has not been to 'add' or 'replace' an algorithm, but to situate BitTorrent's data structure within the external functioning of private BitTorrent trackers. Crucially, these communities extend the notion of 'incentive' beyond the mere 'tit-for-tat' trading of data, and provide an incentive in terms of high

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[412] Legout et al (2006) *Op Cit*.

[413] Seung Jun and Mustaque Ahamad (2005) "Incentives in BitTorrent induce free riding", *Proceedings of the 2005 ACM SIGCOMM workshop on Economics of peer-to-peer systems* (Philadelphia, PA: ACM) pp. 116-121; Legout et al (2006) *Op Cit*.

Andrade, Nazareno, Miranda Mowbray, Aliandro Lima, Gustavo Wagner and Matei Ripeanu (2005) "Influences on cooperation in BitTorrent communities", *Proceedings of the 2005 ACM SIGCOMM workshop on Economics of peer-to-peer systems*. (Philadelphia, PA: ACM**),** pp. 111-115.

Li, Ke, Wanlei Zhou and Ping Li (2009) *Reliable Downloading Algorithms for BitTorrent-like Systems* (New York, NY: IEEE).

Shin, Kyuyong, Douglas S. Reeves, and Injong Rhee (2009) "Treat-Before-Trick: Free-riding Prevention for BitTorrent-like Peer-to-Peer Networks", *2009 IEEE International Symposium on Parallel & Distributed Processing, Vols 1-5*. (New York, NY: IEEE), pp. 278-289.

Wang, Jian, Ruimin Shen, Karsten Ullrich, Heng Luo and Changyong Niu (2010) "Resisting free-riding behaviour in BitTorrent", *Future Generation Computer Systems-the International Journal of Grid Computing-Theory Methods and Applications* Vol. 26, No. 8, pp. 1285-1299.

quality data, efficient transfer rates, sophisticated encryption, community involvement and wide file availability because many of them are maintained and managed by those with a background in or understanding of Scene ethics, and in the case of private music trackers, a background in or understanding of high quality lossy and lossless file trading.

Moreover, the audio enthusiast and Scene groups did not use BitTorrent due to the potential of the algorithms and data structure alone, nor did they overcome problems of freeriding and transient swarms by altering its internal functioning, but through the *actualisation* of these algorithms and commensurate data structure by way of the external, metastable operation of private BitTorrent filesharing groups such as OiNK, the individuation of which was largely managed by the members of these communities. Bearing in mind our theory driven method, it is not the total *capacity* of these algorithms that govern the individuation of data structure within private BitTorrent communities, it is the *set of properties* that this functioning comes to express in relation to its integration within and between the application layers of the internet and different constellations of hardware and software configurations, brought together by the modes of reflection, actions and intentions of the members of these communities that makes the deployment of these algorithms and data structure, and also the individuation of these communities, *metastable.*

Private and public trackers: Communication between clients and trackers

As we touched on in the first and sixth chapters, whereas older P2P protocols used a single application interface which listed files in a convenient single window, BitTorrent relies on a relationship between torrent tracker websites, where the download is initiated, and a torrent client application, desktop software which manages the uploading and downloading of information to and from the hard drive. Bram Cohen's decision to equip BitTorrent with the ability to send information from the client to the tracker "…just for statistics gathering"[414] has proved crucial in how private trackers

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[414] Bram Cohen (2003) *Op Cit*, p. 2.

mitigate the problems of freeriding and transient swarms. It is the difference between how this separation of functions is managed on private and public trackers (defined below) that highlights the diversity of potential functioning that was able to individuate through the private tracker environment.

Public trackers do not require any form of registration and let users browse arbitrarily and anonymously. Around the time of OiNK's demise, the five most popular public torrent trackers were Mininova, The Pirate Bay, Torrent Portal, Torrent Reactor and BT Monster, with these five sites alone linking to over 8 million torrents.[415] These sites do not monitor the quality of their torrents or the filesharing behaviour of their users; consequently users download the torrents at their own risk. A related issue is that there is no way of controlling the quality of file encoding, leading to the possibility of low bit rate audio and video that play back at a significantly lower quality than CD/DVD. Furthermore, the public sites offer no incentive for users to keep their clients open and seed torrents once they have finished downloading, which means that download speeds can be slow and unreliable and freeriding is rife, with users often dropping out of the swarm as soon as their download is complete. These four problems – infection, low quality, low reliability and poor speeds – account for why such browser solutions are not utilised by The Scene or audio enthusiast traders. However, this sort of download-only 'wild west' torrenting is not completely detached from the private echelons of the filesharing scene, as its earlier Napster/Kazaa/Limewire counterparts were, as we shall see later in this chapter.

Private trackers require users to either sign up or receive an invite before they can use the website, and therefore typically have far fewer members and link to fewer torrents than public trackers. The vast majority also impose ratio systems, where the member must upload a proportion of what they download, in order to give their members an incentive to upload and seed torrents. The similarities to 1980's/90's BBS filesharing we looked at in the previous chapter do not end there – private trackers have a 'SysOp'

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[415] Chao Zhang, Prithula Dhungel, Di Wu, and Keith W. Ross (2009) "Unravelling the Bit-Torrent Ecosystem", in *Technical Report, Polytechnic Institute of NYU*, May, http://cis.poly.edu/~chao/bt-ecosys/bt-ecosyste-TR.pdf, p. 9.

(which can be more than one person, and is often accompanied by a team of developers, administrators and moderators) who owns and manages both a BitTorrent indexer - the 'search engine' website which members use to 'discover' torrents - and the tracker software - which manages the communication between peers sharing torrents that were downloaded via the indexer. 'Private tracker websites' are almost always a combination of these two elements.[416] Private trackers do not typically each develop and code their own torrent indexers and trackers, but use one of the many open source templates available via the web, which they then heavily modify and run. The template used by OiNK, which was the most popular around 2005-2007 was TBsource, that was developed by one of the earliest private torrent trackers, torrentbits.org, which closed down in December 2004.[417]

Once users register on a private tracker, they are issued with a 'passkey', which allows permission for that member's client to access the tracker. For example, if a member of OiNK wanted to download the Captain Beefheart 'Trout Mask Replica' album we used as an example in Chapter 1, they would browse the torrent indexer and click on the appropriate torrent file. The torrent file would then download and appear in the member's client. Torrent files have two metadata sections, an 'information' section, a dictionary which describes the name and directory structure of the files and contains all the SHA-1 hash values, and an 'announce' section.[418] When the torrent is downloaded from OiNK, it comes with that member's 'announce URL' inserted into this second

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[416] Chao. Zhang, Prithula Dhungel, Di Wu, and Keith W. Ross (2010a) "Understanding and Improving Ratio Incentives in Private Communities", in *Distributed Computing Systems (ICDCS), 2010 IEEE 30th International Conference* (New York: IEEE), p. 611.

[417] Tbsource (2010) "TBsource PHP/MySql Bit-Torrent tracker", *Sourceforge*, 14th December, http://sourceforge.net/projects/tbsource/

Popular open source templates in 2010 include XBTIT tracker, which is utilised by less sophisticated trackers and requires little coding knowledge, and Gazelle, which was written by a team from one of OiNK's private music tracker successors, and is intended to be a more lightweight, secure and feature-laden improvement on TBsource. See:
Project Gazelle (2010) "Project Gazelle", 14th December, https://ssl.what.cd/gazelle/index.php
xbtit (2010) "xbtit", 14th December, http://www.xbtit.com/

[418] Joseph Hawes (2008) "The BitTorrent Protocol", *moreHAWES Blog*, 24th April, http://www.morehawes.co.uk/the-bittorrent-protocol

section, which is the URL of the tracker (i.e. oink.cd) combined with the member's passkey. The client then reads the torrent file, contacts OiNK and then submits the member's announce URL to the tracker for authentication. OiNK then sends the client details of all the seeds and leechers in the swarm for that torrent, and through a peer selection algorithm, provides a random initial subset of peers (there is usually an upper limit of 50 peers, which the algorithm selects using a random graph generator) for the client to download from and upload to.[419] All of the available peers will also be registered members of OiNK, as no peer is able to join the swarm without OiNK passkey validation.

This manifestation of the separation of functions on private trackers contributed significantly to both an alleviation of freeriding and the temporal extension of swarms, and also a reverberation of Scene ethics and audio enthusiast standards throughout a reconditioned P2P structure. The remainder of this chapter will focus on how the two previously separate music filesharing groups, the 'enthusiasts' in The Scene and audio trading groups on the one hand, and 'casual' P2P users on the other, were brought into disparate connection by this separation of functions. Firstly, we shall look at the 'top' of the BitTorrent filesharing structure, at some of the processes involved in building private tracker communities, considering the role of email, IRC and HTTP in the client-browser relationship, and why this external functioning was amenable to Scene and audio trading groups and enabled them to extend their reach 'downward' to much larger communities. Secondly, we will focus on the lower end of the structure, on the public and semi-public tracker sites used by millions of filesharers, and how the gentler learning curve and the fluid structure of the BitTorrent tracker hierarchy made it easier for these users to reach the private echelons of the BitTorrent filesharing community.

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[419] Bram Cohen (2003) *Op Cit*, p. 2.

The private BitTorrent filesharing structure

To date, there has only been one major study of the broad picture of the BitTorrent tracker landscape, that from Zhang et al at the Polytechnic Institute of NYU, which split its findings into two papers, one on the public tracker landscape[420] and one on the private tracker landscape.[421] The paper on private trackers takes a macro overview of over 800 trackers and estimates that as of 2008 there were about 4.4 million torrents, 20 million registered accounts and over 24 million active peers in these private communities.[422] It also takes a microscopic look at the user behaviour on one private tracker and concludes that both the seeder-to-leecher and upload-to-download ratios on private trackers are much higher than on public trackers, with the 'carrot and stick' philosophy of the ratio system identified as the major incentive for user uploading. Whilst we take on board this general overview, the research by Zhang et al does not thoroughly explore the different levels of access within the private tracker structure, which is vital in order to distinguish the sort of filesharing that took place on OiNK from other types of private BitTorrent filesharing.

There are broadly four levels of private BitTorrent trackers. At the bottom of the food chain are 'open sign up' trackers. These communities only require the user to 'sign up' with a username and password to gain membership, and are open to anyone. The next level up is 'open-closed sign up' trackers. These sites will sometimes be closed to new sign ups and sometimes be open. There are two sublevels at this level – those sites that are usually closed and those that are usually open. The former sublevel tends to have the trackers with better content, speeds and reputation. It is these two levels that were the focus of Zhang et al. There are many hundreds of these sites and some, such as torrents.ru, had over 4 million members.[423] Our concern in this thesis are the two levels

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[420] Zhang et al (2009) *Op Cit*.

[421] Chao. Zhang, Prithula Dhungel, Di Wu, and Keith W. Ross (2010b) "BitTorrent Darknets", in *INFOCOM, Proceedings IEEE* (San Diego, CA: IEEE), pp. 1-9.

[422] *Ibid,* p. 4.

[423] Enigmax (2010b) "Torrents.ru fights back after Domain Name Seizure", *TorrentFreak*, 28th February, http://torrentfreak.com/torrentsru-fights-back-after-domain-seizure-100228/

above this because, in terms of recorded music, this is where the most of the files are 'originally uploaded' from in the private torrent structure. Second from the top are 'invite-only' trackers. They are never open for sign up, and the only way to gain membership is through being invited by a current member. OiNK was one of these communities, and all the best lossless and high quality lossy music trackers operate at this level. At the very top level are 'Scene trackers', which are invite-only trackers with Scene Topsite access. Whilst all members can usually upload new content at the lower three levels, only some members of these highest level sites are given permission to upload – those with personal access to the Scene. Scene private trackers and the most exclusive invite-only trackers can have anything from just a few thousand to around 250,000 members.[424]

There is also variation across each access level in terms of the different types of files on offer from different private trackers. The website *FileshareFreak* offers the most extensive list of private trackers, which is carefully collated using an analysis of web forums, IRC invite channels, tracker monitoring software, tracker checker websites and filesharing blogs.[425] Although the list inevitably misses out the few stealth-orientated private sites that are completely hidden from public view, the list is comprehensive and is updated regularly to prune sites that have closed and to add new sites. As of 15th October 2010, the list identifies 956 active private trackers. As we can see from the adapted table below (**Figure 8.1**), it splits the trackers into 14 categories. 'General' is the largest category, which refers to trackers that offer a mix of either all or most of the other content on offer in the remaining 13 categories. The content available in the other categories is broadly focused on audio/visual mediums and specialisms within those mediums, delineated by genre distinctions, file-types and interest groups. For example, there are music trackers that offer many different genres and file-types, such as OiNK, but there are also sites that specialise only in electronic dance music, or that only allow lossless files.

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[424] Although Scene trackers are more exclusive in terms of who can/cannot upload and therefore sit atop the pyramid in **Figure 8.2**, non-Scene invite-only trackers have increasingly been seen as higher-quality, more efficient providers of content than The Scene in recent years. See 'concluding thoughts' section of this thesis: p. 306.

[425] FileshareFreak (2010a) "Tracker list", 15th October, http://filesharefreak.com/trackers-list/

Category	Number of Trackers	Category	Number of Trackers
General	477	TV	29
Apps/Software	12	Misc.	28
Anime	23	Movie/DVD	36
Desi	25	Music	100
E-learning	28	Scene/0-day	33
Games	30	Sport	48
Porn	43	HD	44

Figure 8.1: Private tracker specialisation[426]

The diagram below (**Figure 8.2**) shows, in basic terms, that the tracker structure resembles a pyramid of access levels, with all types of tracker specialisation available at each of the four private levels. Notice that the bottom level ('public trackers' in this case) does not appear in blue as it did in **Figure 7.6** in chapter 7 because it is not isolated from the rest of the infrastructure – it is possible to access some of what is being shared at higher levels, and to learn about and access these higher levels from the practical experience of downloading at that level, as it is at all the other levels.

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[426] Adapted from *Ibid*.
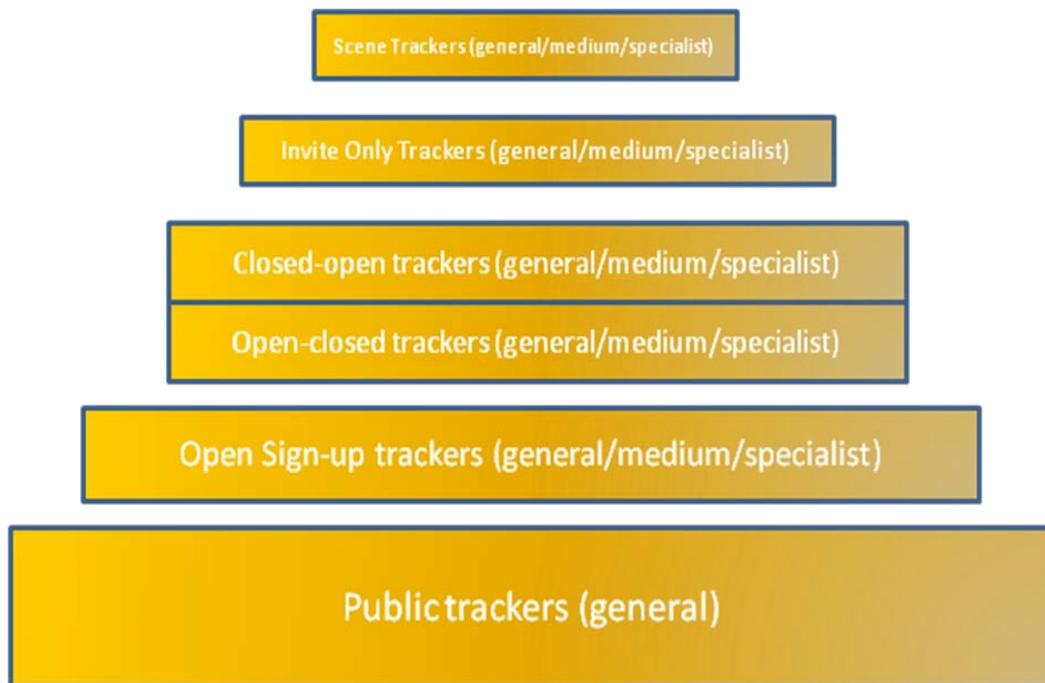
Figure 8.2: BitTorrent tracker pyramid[427]

This fluid structure, where porous borders exist between the different levels, owes its existence in no small part to the capacity of the torrent tracker structure and the client-tracker relationship to securely privatise tracker websites and incentivise those that used them to upload and share. This enabled both The Scene and audio enthusiast communities to engage with a BitTorrent-based filesharing system that relied on many of the same elements as the old BBS environments – invite only/membership, encryption, ratio systems – but it also enabled them to implement that system with much higher levels of precision and control, and to cast the net of users much wider without leaving the system vulnerable to infiltration by pro-copyright bodies and virus/malware attacks, whilst ensuring that high standards of quality and efficiency were adhered to. It is to the intricacies of this structural relationship at the highest two levels of the pyramid to which we now turn.

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[427] Adapted from thesis research.

Scene and invite-only trackers: Encryption and inviting core members

Below is the front page of a Scene affiliated private tracker (**Figure 8.3**) - what the new member gets to see once they have received their invite, registered with the site and logged in. The stark, basic design aesthetic is indicative of a general trait of the more exclusive private trackers, to reflect the idea that they prioritise the elegant movement of information over graphical flourishes and complicated, showy functionality.
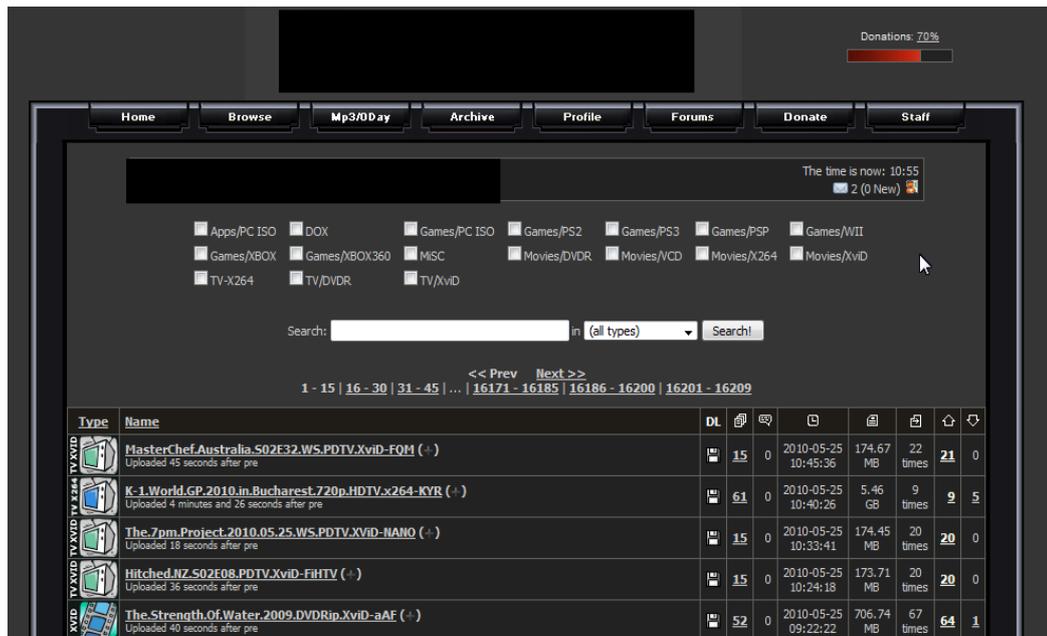
Figure 8.3: Frontpage of Scene private tracker (Scene Private Tracker 2010)[428]

The most obvious advantage of using the http-based tracker websites to The Scene and audio traders is the capability to use http username/password encryption, in order to ensure that only those that could adhere to the required standards are allowed access. In one sense, Scene and invite-only trackers function like most other websites that require membership log-in; each user has a unique username and password that they must input to log into the site. Private trackers operating at the highest two levels usually have log-in pages that, unlike those we saw from the BBS era, give non-members no way of knowing how to become members and leave no clue as to the nature of what

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[428] Scene Private Tracker (2010) "Frontpage of Scene private tracker", 14th December [private URL].

might be inside. Below is the log-in page from an invite-only private music tracker (**Figure 8.4**). What can be seen is the entirety of the webpage with only the name of the tracker blocked out. There are only two choices, 'home' which is shown below and 'log in'; there is no option to message the SysOp, look around at public areas of the site or register for an invite as there often was on private BBS boards. The rather overblown cryptic message seems obtuse, but it does imply a connection that is vital to the operation of all private trackers, that between 'criteria' and the notion of exposing something 'hidden'; the idea that becoming cognisant of how something works, how it is produced, its *mnemotechnique* can 'reveal' what is hidden about it, or as the message states 'something like a utopia'.
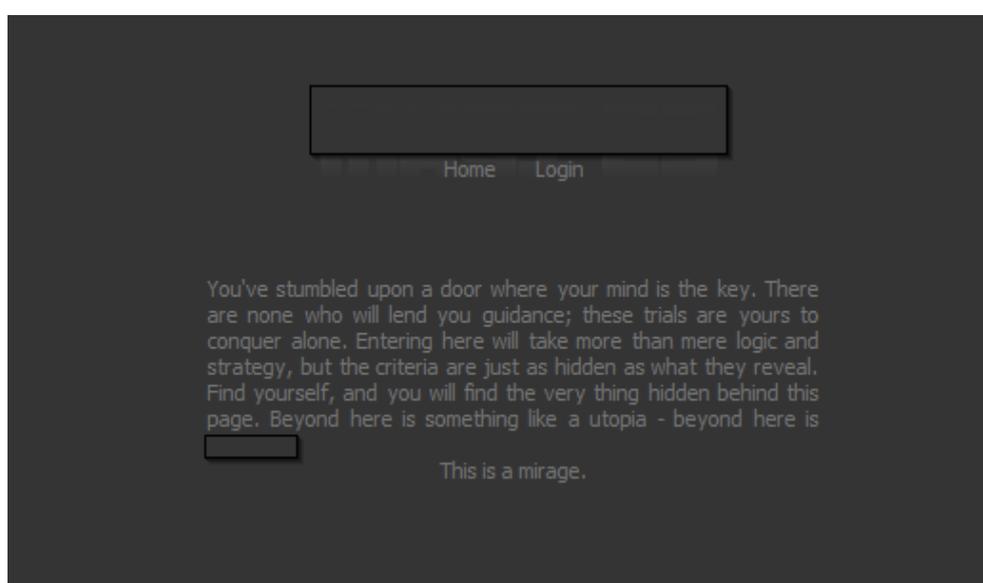
Figure 8.4: Login page of an 'invite only' music tracker (Private Music Tracker 2, 2009)[429]

As we can see below (**Figure 8.5**), some Scene trackers are even more secretive. I have blocked nothing out from this general invite-only tracker's log-in page; it chooses only to display a black screen with a tiny log-in link in the top-middle of the page, with an even smaller 'forgotten your password?' link in the top left.

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[429] Private Music Tracker 2 (2009) "Login page of an 'invite only' music tracker", 14th December [private URL].
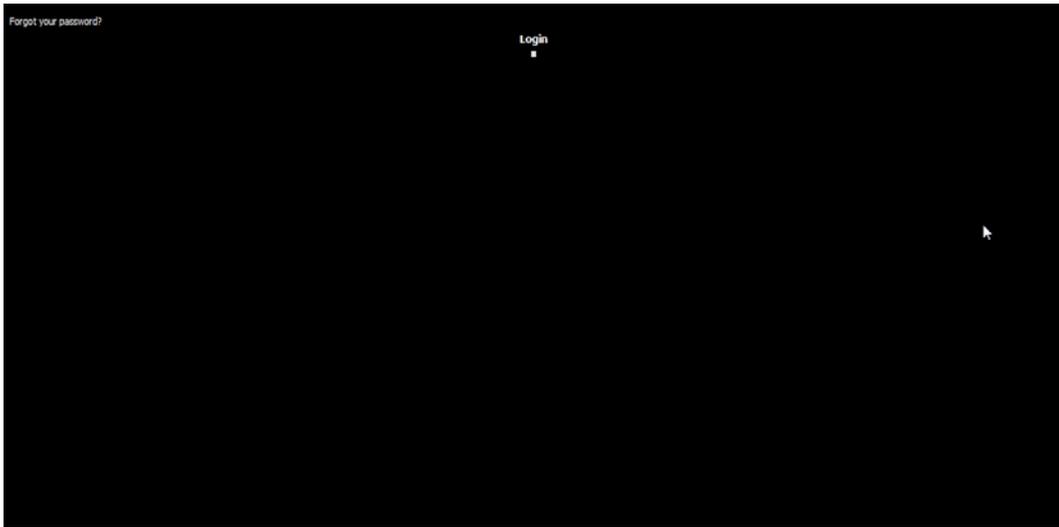
Figure 8.5: Login page of an 'invite only' general tracker (Private General Tracker 2010)[430]

 The existence of a secure, globalised and efficient email system enabled The Scene and invite-only trackers to manage large membership numbers through an invite system without necessitating time consuming messaging between the SysOps and potential members, and which more or less eliminated the potential problem of the widespread begging to SysOps and other staff members for invites. Private tracker invite emails can be sent out in a number of ways. It is common to utilise IRC when an 'invite only' private tracker is in the early stages of development. The tracker would set up an IRC chan and publicise it on other private trackers and other more clandestine parts of the internet, such as other IRC chans and the USENET. Potential members could then come to the chan and ask to be emailed an invite to the tracker. The screenshot below (**Figure 8.6)** shows the clamour for invites on the IRC chan of a new private music tracker, which was widely seen as the replacement for OiNK. The advantage of publicising a tracker on IRC, particularly to The Scene who were looking to utilise the upload capacity of new users, was that the ability of an individual to navigate IRC, which in itself involves the negotiation of a few non-commercial software applications and learning some of IRC's

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[430] Private General Tracker (2010) "Login page of an 'invite only' general tracker", 14th December [private URL].

simple command prompts, immediately implied a level of knowledge that was at least above the level of most casual downloaders.
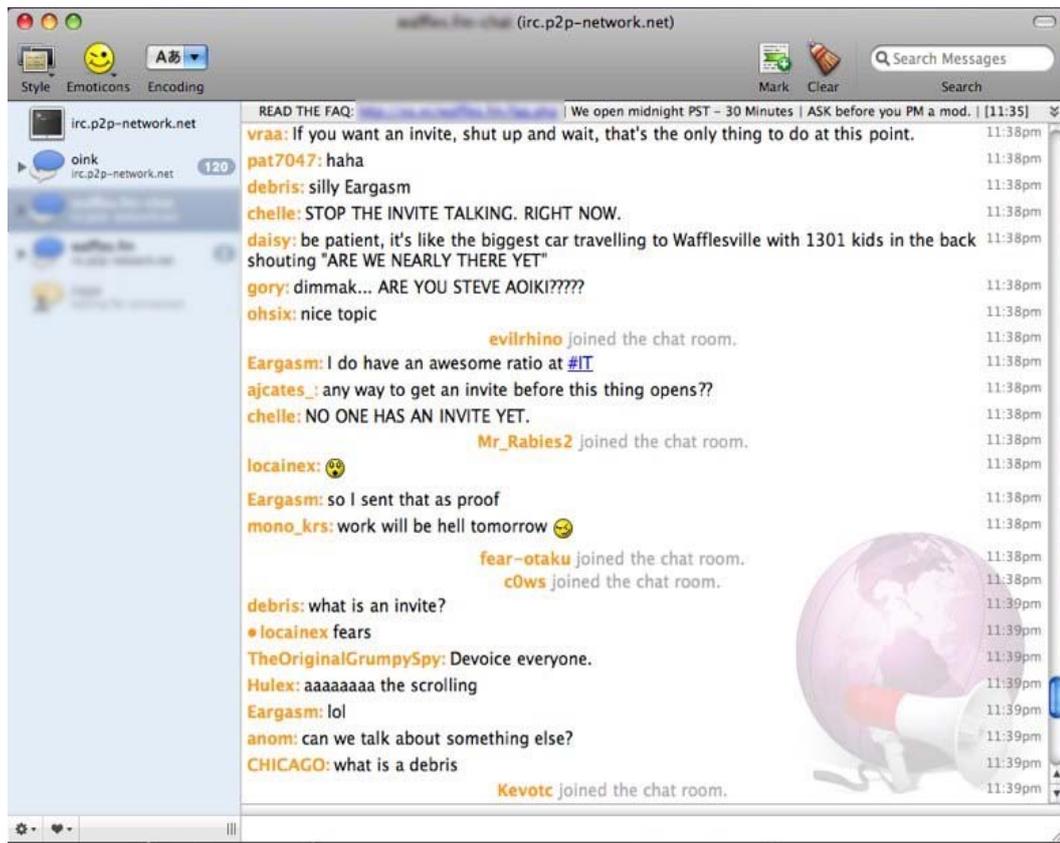
Figure 8.6: IRC channel for a new private music tracker (IRC channel 2007)[431]

Below is an invite to a private tracker (**Figure 8.7**), emailed to me because a user of that private tracker decided to invite me. Once a user invites someone, the system sends out an automated email to the invitee that contains a link, sometimes known as an 'invite code' that the invitee must click on in order to register with the tracker and confirm their membership. The email shows how closely the invite-only private trackers guard the movement of their invites and is typical of the general private tracker policy to exclude anyone that breaks the rules. It also indicates how sought after membership is for the more exclusive private trackers, alluding zero tolerance on the practice of invite

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[431] IRC Channel (2007) "IRC channel for a new private music tracker", 1st November [private IRC group address].

selling and trading. The last sentence: 'We urge you to read the RULES and the wiki immediately after you join', gives an initial sense to the prospective member that the operation of the private tracker system depends on opening up the mnemotechnique of its system and encouraging its members to play an active role in it. Reams of rules, FAQ'S and guides on how to rip, encode and upload mnemotechnics to Scene and/or audio enthusiast standards are available on most private music trackers. We shall focus on the specific workings of that system of distribution and the openness of its mnemotechnique in relation to recorded music in the following chapters on OiNK.
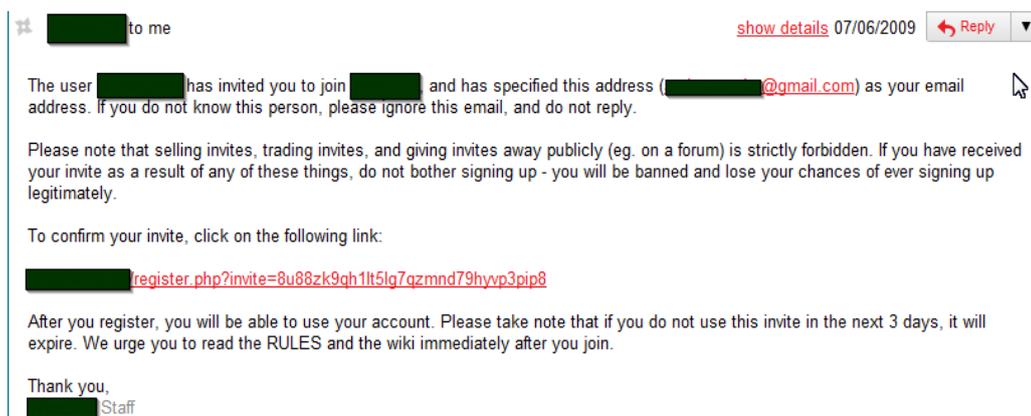
Figure 8.7: Email invite to an 'invite only' private tracker (Private User 2009a)[432]

[432] Private User (2009a) "Email invite to an 'invite only' private tracker", 7th June [private URL].

Power Users, 'secret forums' and friends on the web: Moving up the private tracker chain

BitTorrent became popular at around the same time as broadband became commonplace in Western Countries and parts of Asia, and at a time when speeds were rapidly multiplying from 1mb, to 2mb, 8mb and beyond in family homes in these parts of the world.[433] Global bandwidth space was no longer at a premium, connections were constant rather than 'dial-up', anyone with a broadband connection had enough bandwidth to download larger music files encoded to higher standards much more quickly in relative terms, and, crucially, home users now had enough 'upstream' space to upload files to the internet in minutes or hours rather than days. This, coupled with the fact that even the smallest amount of upload speed could now increase efficiency rather than throttle it, gave the more exclusive private trackers an incentive to open up their borders, in order to utilise this new bandwidth and enhanced upload capacity. Therefore, once an invite-only tracker has established its core membership of experienced filesharers, the most common way that it expands is by allowing some members to invite people. On most private trackers any member, regardless of whether they are Scene affiliated or experienced file traders, can attain a position whereby they are granted the ability to send invites. This position is usually reached once the member has uploaded a certain amount of data and/or a certain number of files, and is known in the private tracker scene as 'Power User' status. Below is a screenshot of some of the 'user classes' of one of the private music trackers that succeeded OiNK (**Figure 8.8**). A tracker will typically reward Power Users with between 1-5 invites, access to more features on the site and usually provide access to a secret 'Power User' or 'invites' forum, where elite members of other private trackers offer invites to those trackers. This is the private torrent scene's way of rewarding members that take the time to upload new content to the high standards demanded by experienced traders and Scene members. It also serves as a way for invite-only trackers to control their population, and

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[433] OECD (2010) "Evolution of Broadband speed and prices over time (2005-2008)", *OECD Broadband Portal*,
http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html#Servic es_and_speeds

make sure they have an intake of new members that have a proven history in uploading new files and seeding torrents over long periods.

User - The Default.
Requirements - None.
Perks - None.

Member - The First Rung.
Requirements - Been here for at least 1 week, has uploaded at least 10GB and a ratio above 0.7.
Perks - Can make requests and can edit Collages.
Demotions - Demoted to User when their ratio drops below 0.65.

Power User - Those With a Little Power.
Requirements - Been here at least 2 weeks, has uploaded at least five torrents and 25GB, ratio above 1.05.
Perks - Receives invites, can access notifications, the collector feature, create new collages and access Power User & Invites forums.
Demotions - Demoted to Member when their uploaded amount drops below 25GB, their ratio drops below 0.95 or their current uploaded torrent total is less than five.

Figure 8.8: User classes in an 'invite only' private music tracker (Private Music Tracker 2, 2010)[434]

Below a screenshot from a thread on the Power User forum of an invite-only music tracker, which has been started by one of the staff members, who is inviting staff members of other private trackers to 'advertise' their sites on the thread, and offer invites to Power Users (**Figure 8.9**). Threads like this are common on all private trackers regardless of their access level, and they enable filesharers who are already in the private tracker 'system' to move both 'horizontally' between trackers of the same access level (i.e. closed-open to closed-open, or invite-only to invite-only) or 'vertically' between different access levels (i.e. open sign-up to invite-only, or invite-only to Scene). This isn't just about moving up the hierarchy and gaining status; filesharers would often use these threads to gain invites to trackers with lower security levels. For example, an invite-only secret forum might contain invites for a closed-open tracker that specialises in content that cannot be found elsewhere.

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[434] Private Music Tracker 2 (2010) "User classes in an 'invite only' private music tracker", 14th December [private URL].

There was increased demand for this type of thread, so here we go.

This thread **is not** for offering a few invites and/or one-offs as you get them.

This thread **is** for staff members of other sites and/or or those with unlimited invites to other trackers.

If a tracker is offered here, it will be considered an official and unlimited offer until such time as the inviter requests that the post(s) be removed.

- When offering invites, please include a brief description of the site's content

If you do not do this, I will delete your offer.

- Do not make requirements and/or stipulations for your invitees - they are PU here, trust that.
- No XXX/Adult/Porn trackers allowed.

Figure 8.9: Invite thread on an 'invite only' music tracker 'Power User' forum (Private Music Tracker 1, 2009a)[435]

As well as providing Power Users with invites to more private trackers and encouraging them to upload, it meant invites were being sent out by these Power Users to their friends, often to those who had little experience of Scene ethics or performing DAE's to high standards. This is where we can see how utilising a HTTP frontend enabled the private torrenting structure to implement a more fluid hierarchy than the previous USENET/FTP/IRC dominated landscape, and how the 'invite tree' blossomed outwards and began to subsume a wider net of P2P users looking for a higher quality experience. Most casual web users were used to having to 'sign up' to websites, forums and chat rooms and provide a 'username and password', and then having to authenticate their membership via email,[436] and in this sense they were already familiar with the private tracker system. By 2005 there were innumerable public web communities – forums, messageboards, chat rooms, blogs, social media – where users could become 'trusted' members.[437] It was this new level of public online trust, with millions of users getting to know each other without ever meeting, from which private trackers were able to

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[435] Private Music Tracker 1 (2009b) "Invite thread on an 'invite only' music tracker 'Power User' forum", 5th May [private URL].

[436] John Palfrey and Urs Gasser (2008) *Born digital: Understanding the first generation of digital natives* (New York, Basic Books); Don Tapscott, (2009) *Grown up digital: How the net generation is changing your world* (New York, McGraw-Hill). Despite being overly journalistic, these two texts contain some insightful quantitative and qualitative data and analysis on growing 'web literacy', particularly amongst younger people.

[437] See Jenkins (2006) *Op Cit* and Rheingold (2003) *Op Cit*.

maximise a committed user base. The following chapters will concentrate on interviews with ex-OiNK members, many of whom were invited through being 'trusted' on various parts of the public web, as we can see from some of their comments:

> *I got my invite to OiNK probably in February of last year. I was a moderator at an emo music forum and one of the other moderators said he had invites to OiNK and at the time I had no clue what it was… (AJtheSloth)*

> *… I heard about it on a message board, there was a topic going and I just posted my email. I frequent that board so they were helpful (beardownboilerup)*

> *I got invited by a friend of mine from a hip hop music forum I go on regularly. We were playing X-Box Live together and he told me about it. I got involved in OiNK by pure fluke really, I didn't know what it was before that conversation. (MrJONeZ)*

It was much easier for people to gain access and work out how to use the registration-only and invite only sites because they were web-based and didn't constitute having to learn how to use an entirely different communication protocol, such as IRC, FTP and Newsgroups, which often meant learning new forms of netiquette and command prompts. Although BitTorrent was a new type of P2P protocol, it still followed a number of principles that P2P users already understood, such as uploading, downloading and peers.

Even on the public torrent sites, instead of the files appearing in a generic list as on older generations of P2P, each separate torrent has a web page which contains a significant amount of metadata, with an option to make comments just below. These torrent pages often contain detailed information on how the release was encoded and what is contained within the torrent file, and often originate from The Scene or from an experienced trading source. This gives a sense to a casual user browsing a public tracker of what the accepted standards for uploading are, what type of software is used. The picture below is part of the webpage for a scene torrent of Lil Wayne's 'Rebirth' album, released by the 'NitrousOxide' release group, which has found its way onto The Pirate

Bay, showing detailed information about the software used to rip the CD, the 'codec' used to encode the mp3, the bitrate at which the mp3 plays back, the size of the file and notification that the artwork is included.

Figure 8.10: Lil' Wayne 'Rebirth' torrent page on The Pirate Bay (The Pirate Bay 2010)[438]

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[438] The Pirate Bay (2009b) "Lil' Wayne 'Rebirth' torrent page on The Pirate Bay", 17th December, http://thepiratebay.org/torrent/5225058/Lil.Wayne-Rebirth-Retail.Deluxe.Edition%29-2010-%5BNoFS%5D

Below is the torrent page and comments section on The Pirate Bay for MGMT's 'Oracular Spectacular' album. There are comments about 'seeding' and the quality of the file, the speed of the download and the music itself, all of which those new to BitTorrent could observe and learn from by clicking through to the download page.

MGMT - Oracular Spectacular [2008]

Type:	Audio > Music
Files:	12
Size:	77.43 MiB (81186833 Bytes)
Tag(s):	MGMT Oracular Spectacular Oracular Spectacular Pop Electro Electro Pop Synth Synthesizer Hit 2008 2k8
Quality:	+22 / -3 (+19)
Uploaded:	2008-06-06 02:05:44 GMT
By:	micarone 🐸
Seeders:	1468
Leechers:	243
Comments	51

Download

Enjoy Movies, TV Shows, Music and Games on your browser!

⬇ DOWNLOAD THIS TORRENT (🧲MAGNET LINK)

```
* Complete Album @ 320kbps Variable Bitrate *
* CD-covers included *

TRACK LISTING:

01. Time to Pretend (4:21)
02. Weekend Wars (4:12)
03. The Youth (3:48)
04. Electric Feel (3:49)
05. Kids (5:02)
06. 4th Dimensional Transition (3:58)
07. Pieces of What (2:43)
08. Of Moons, Birds & Monsters (4:46)
09. The Handshake (3:39)
10. Future Reflections (4:00)
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227
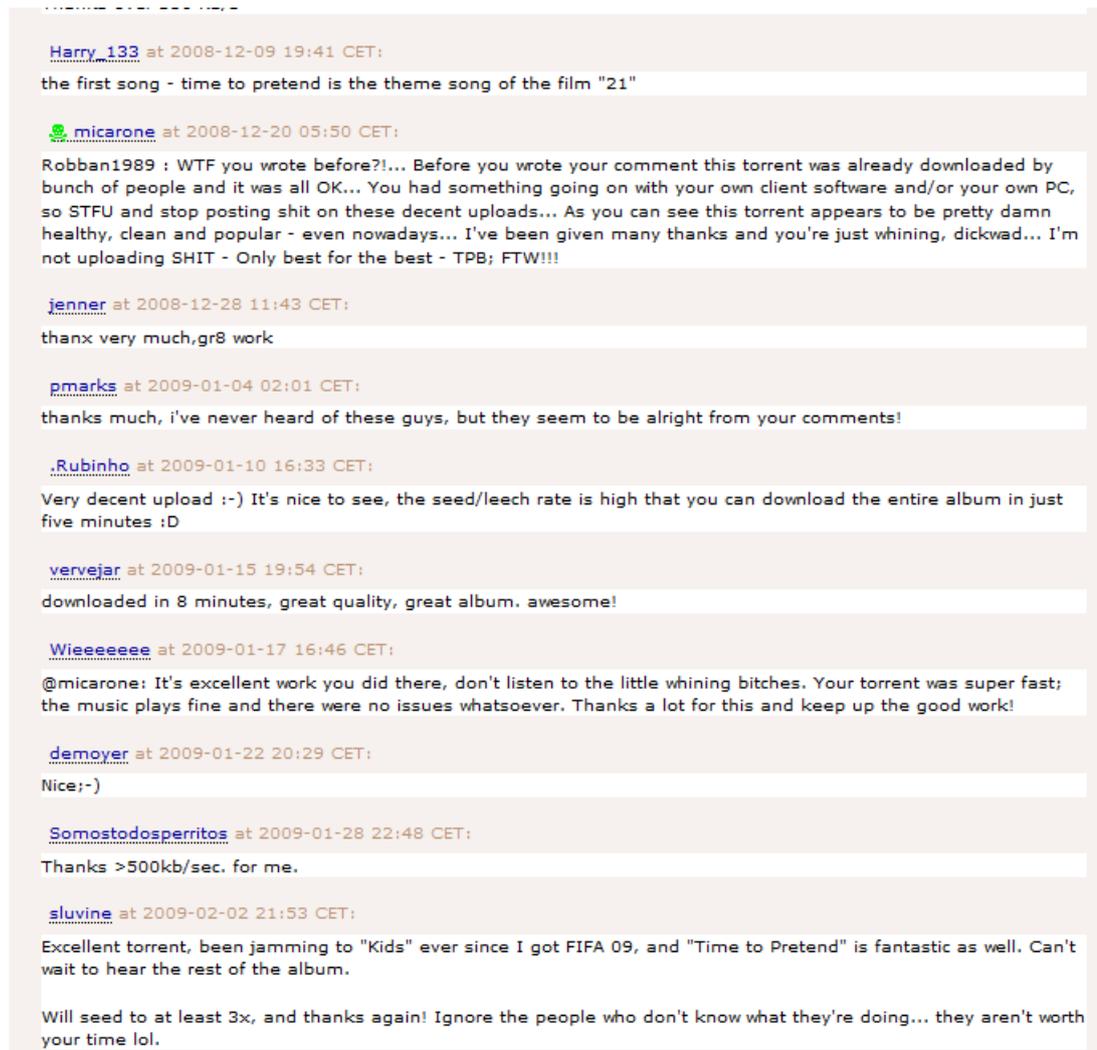
Figure 8.11: MGMT 'Oracular Spectacular' torrent page and comments section (The Pirate Bay 2008)[439]

There were also a series of public web resources that could be utilised to learn about the private tracker scene, such as websites like Zeropaid,[440] TorrentFreak,[441] and

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[439] The Pirate Bay (2008) "MGMT 'Oracular Spectacular' torrent page and comments section" , 6th June, http://thepiratebay.org/torrent/4223790/MGMT_-_Oracular_Spectacular_%5B2008%5D

[440] Zeropaid (2010) "Zeropaid.com – if it's free it's for me!" 11th November, http://www.zeropaid.com/

[441] TorrentFreak (2010) "TorrentFreak – Torrent News, Torrent Sites, and the Latest Scoops", 11th November, http://torrentfreak.com/

FileshareFreak[442] that provided news updates, tutorials and information regarding the operation of private trackers and how to use them. Zeropaid also had an 'open signups' forum, where users shared information regarding new private trackers that were offering registration, and also closed-open trackers that had temporarily become open for sign-up. There were a number of these 'open sign-up' checkers dotted around the web, the most thorough being BTRACS,[443] which indexed all the trackers currently open for registration on one web page. The capacity of the private tracker structure to provide incentives to upload through the Power User and invite system, to vertically and horizontally extend itself by spreading its own 'trusted' members across different trackers, to garner external membership through those members and due to experiences on the public web was one thing, but monitoring and controlling this behaviour was quite another. This was initially achieved through the *ratio system*.

The ratio system: Using statistics to encourage participation

Absolutely central to the operation of private trackers, and the means through which they determine and reward Power Users and control who is able to send and receive invites, is the ratio system,[444] whereby you have to give back or 'upload' a proportion of what you take out or 'download'. BitTorrent makes large scale ratio systems possible because each user's client software generates accurate statistics regarding how much they have uploaded and downloaded. The client sends this information to the tracker when it communicates with it to initiate any downloading or uploading. Below is a screenshot of the μTorrent client, showing the status of three albums downloaded using a currently operating private music tracker. The two columns on the far right - 'uploaded' and 'ratio' - show how much has been uploaded for each torrent and the ratio of upload to download. We can see from the second column from the left ('size')

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[442] FileshareFreak (2010b) "FileshareFreak - THE source for BitTorrent & P2P Tips, Tricks and Info", 11th November, http://filesharefreak.com/

[443] BTRACS (2010) "BTRACS - BitTorrent TRackers Automatic Checking System", 11th November, www.btracs.com/index ranking.htm

[444] There are some private, invite-only trackers that do not enforce ratio, but the vast majority do.

that the torrent for Quantic's 'Apricot Morning album is 83.3mb in size, but that just over twice that amount of data (170mb) from that torrent has been uploaded back to other people using the private tracker. This gives the torrent a 'ratio' of 2.045.
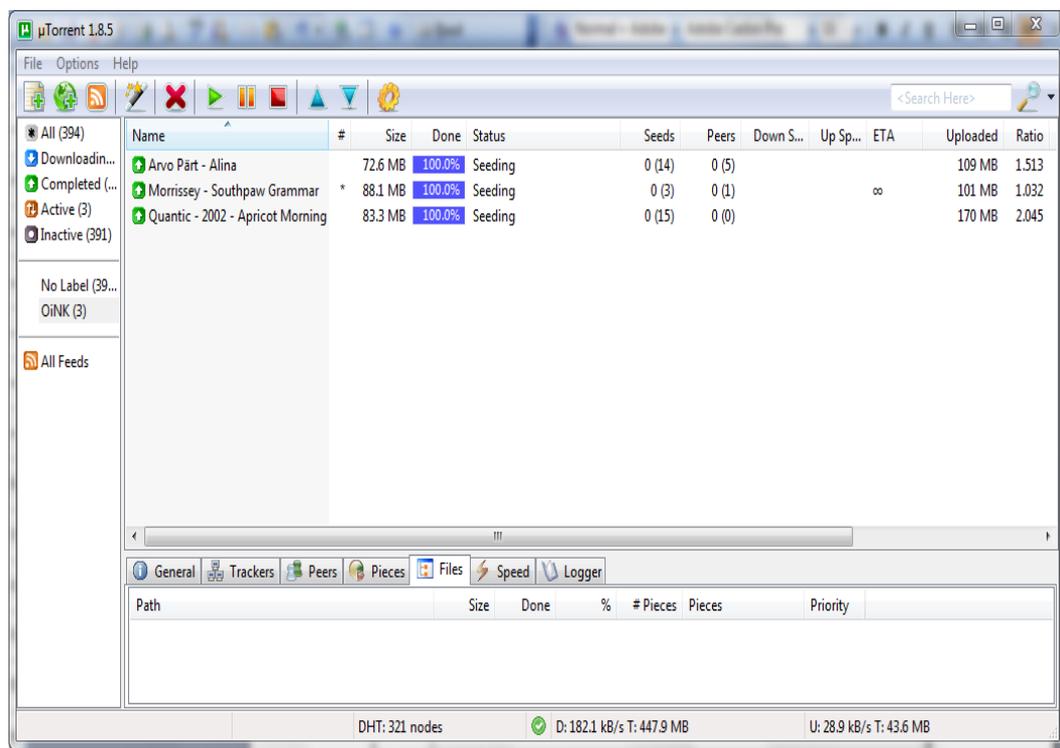
Figure 8.12: Three 'invite only' music tracker torrents seeding a member's µTorrent client (Private User 2009b)[445]

The screenshot below (**Figure 8.13**) is from a webpage on the private tracker used to download the torrent we have just looked at in µTorrent (**figure 8.12**). It shows the detailed statistical information that private trackers are able to collate from communicating with clients. If we look at the row for Quantic's 'Apricot Morning' album, we can see that the 'up' column shows the same amount of data uploaded as recorded in µTorrent, but with slightly more precise detail (170.49mb instead of just 170mb), which in turn means that the ratio recorded here is also more precise (2.046 instead of 2.045). The tracker is also able to record what sort of client the user uses (µTorrent version 1.8.5), that the torrent has been seeding for just over 60 days ('Seed Time'), that

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[445] Private User (2009b) "Three 'invite only' music tracker torrents seeding a member's µTorrent client", 18th June [private user location].

it took 11.07 minutes to download ('leech time') at an average speed of 127.96kB per second ('Rate').

Snatches for user ▮▮▮▮
Currently 339 snatches
<< Prev   Next >>
1 - 15 | 16 - 30 | 31 - 45 | ... | 121 - 135 | 136 - 150 | 151 - 165 | 166 - 180 | 181 - 195 | ... | 301 - 315 | 316 - 330 | 331 - 339

Torrent	Up	Rate	Down	Rate	Ratio	Completed	Seed time	Leech time	Completed at	Client
Quantic - Apricot Morning [2002/MP3/V0(VBR)/Log]	170.49 MB	0.03 kB/s	83.35 MB	127.96 kB/s	2.046	100.00%	60d 10:51:54	11:07	2009-04-14 13:00:55	uTorrent/1.8.5.0
Arvo Pärt - Alina [1999/MP3/V0(VBR)[LOG]]	101.30 MB	0.02 kB/s	72.66 MB	144.19 kB/s	1.394	100.00%	61d 10:28:17	8:36	2009-04-14 12:12:07	uTorrent/1.8.5.0
Morrissey - Southpaw Grammar [1995/MP3/v0(VBR)[LOG]]	101.16 MB	0.02 kB/s	88.10 MB	257.77 kB/s	1.148	100.00%	64d 03:42:01	5:50	2009-04-10 08:33:48	uTorrent/1.8.5.0

Figure 8.13: Statistical data collated by a private music tracker from the µTorrent data shown in figure 8.12 (Private Music Tracker 1, 2009b)[446]

 The private trackers are able to monitor such a vast amount of data so accurately because they implement the passkey system we discussed earlier, where each user is allocated a personalised announce URL that enables the tracker to 'talk' to and record all the information that passes between the tracker and each member's BitTorrent client. The personal announce URL also serves as a safety net for the Scene and audio trading groups, as it allows them to trace any activity that runs concurrent to their tenets of quality, efficiency and encryption to particular individuals, who are then usually warned or blacklisted. Private trackers also tend to have open communication lines with each other, so if a user is caught breaking the rules on one site, they are often blacklisted by the others.

 Each member has an overall ratio that must be kept 'healthy' in order to maintain continued membership on the site. For example, if I were to download an album file that is 235mbs in size from a private tracker, I would accrue a negative ratio score of -235mb.

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[446] Private Music Tracker 1 (2009c) "Statistical data collated by a private music tracker from the µTorrent data shown in figure 8.12", 18th June [private URL].

In order to maintain my membership of the site, I would need to 'seed' or upload a significant proportion of that to improve my ratio. I would do this by leaving my computer on and my BitTorrent client open, in the hope that people will download the file from me. My ratio is calculated by the proportion I've downloaded (leeched) against the proportion I have uploaded (seeded). So, if I had downloaded 2GB and uploaded 1GB on a private tracker, I would have an unhealthy ratio of 0.5 and would be in danger of losing my account. If I had downloaded 1GB and uploaded 2GB, I would have a healthy ratio of 2.

Some private trackers are stricter than others in their 'acceptable ratio share' rules. Some demand a ratio that is a lot less than one, some demand that is at least one after a few weeks of membership. Here is a 'required ratio' table, taken from a currently operating private music tracker, which has similar requirements to those on OiNK:

Download (up to)	Required Ratio
5 GB	none
15 GB	0.15
» 30 GB	0.25
45 GB	0.30
60 GB	0.35
100 GB	0.40
125 GB	0.45
>125 GB	0.50

Figure 8.14: Required ratio table for an 'invite only' music tracker (Private Music Tracker 1, 2009c)[447]

The above rules are quite lenient in relative terms, and we can observe how the requirement goes up the more you download, reflecting the fact that the more music you have available to seed, the more chance there is that someone will leech from you.

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[447] Private Music Tracker 1 (2009d) "Required ratio table for an 'invite only' music tracker", 18th June [private URL].

One thing immediately apparent is the massive amount of data changing hands – this site allows 5GB of data to be downloaded before any ratio requirement is imposed. That equates to approximately 62 albums worth of music encoded to the most common mp3 standard for the site. A user who had leeched 5GB would be considered a beginner. On this site, an experienced user would be someone who has seeded at the very least 25GB of music, but more likely around 100GB, and leeched less than they have seeded in order to keep their ratio healthy. There are around 45,000 users of this site, and the 'top 250' users – those that have uploaded the most data - have uploaded, as of 4[th] June 2009, a total of just over 66TB's of data. Although the tracker contains a number of different file formats, that amount of data hypothetically equates to 4 million albums encoded in the most common mp3 format, or 1.5 million albums encoded in the FLAC 'lossless' format that offers perfect, undiminished CD quality – and that is just the top 250 uploaders from a total of 45,000 on just one music tracker which is among two or three offering a similar set up. As we shall see in the following chapters on OiNK, the difficulty of keeping a healthy ratio, the desire to build a large ratio buffer in order to be free to download, and the basic desire to contribute to a site that the member felt part of meant that the 'original uploader' of torrents on private trackers was often not The Scene or an experienced digital enthusiast, but the previously casual P2P downloader who had learnt how to upload to Scene/audio enthusiast ethics and standards by developing *productive knowledge* through using the private torrent structure.

Initial incentives. Deeper incentives.

In conclusion, we have propounded here the organisational vicissitudes of the private tracker system, how it relates to the internal algorithmic structure of the BitTorrent protocol, and how the 'space' between the tracker and the client creates the conditions for efficient, encrypted and reliable filesharing, where torrents are seeded over long periods of time and where there is a commitment to uploading and sharing torrents. However, as we shall see, incentives such as ratio, invites and Power User benefits put users into disparate connection with each other, but are not necessarily incentive enough to guarantee long-term participation, nor are they necessarily the primary reason why users choose to upload and share. Attempting to find these reasons merely through these structural relationships would be to fall into the same trap as the 'single

swarm' studies we looked at in the first part of the chapter, which locate the 'total experience' of using private trackers within the allocation of system resources between the client, the tracker and the members. This would propound a limited notion of incentive, as if the reason people use these sites is shorn of all desire and is merely an incentive to engage in 'data transfer'. Through a detailed exposition of OiNK, this thesis will show how these initial incentives led to the transduction and disparation of transindividual collectives where the locus of engagement is a collective desire to share, discuss, download, rip, encode, store and upload the 'data' that is changing hands, and where the members of these collectives have *productive control* over these processes.

Section 4: OiNK - The making of a transindividual collective

OiNK I – Methods and statistics

Retail or OiNK?

In 2007 I tried to buy *The Complete Prestige Recordings* 16 CD box set by John Coltrane on the internet, the CD and vinyl version of which was out-of-print. I had a look on Amazon and there were 2 used copies available from Amazon marketplace. Both were around £210, had slight damage to the artwork and were being shipped from the USA, so would have taken at least 3-4 weeks to arrive, with no guarantee that the CD's were in perfect condition. The box set was not available on eBay. I had a look on iTunes and predictably it wasn't there. Even if it was I would not have bought it because at this point they only sold AAC files encoded at 128kbps and the minimum I wanted was a FLAC encoding – over ten times the iTunes bit-rate and perfect 'lossless' CD quality – a file type still not offered by the major digital music retailers in the world, such as iTunes, Amazon and Wal-Mart.

Defeated by online retail (and I really would have preferred the physical box set and was willing to pay a fair price) I clicked my browser to OiNK. I typed in 'John Coltrane' and his entire back catalogue came up, including all his work with Miles Davis and other artists. All the albums were available in various formats, all superior formats to those found on iTunes. My box set was on there in a number of formats including FLAC, and was clearly well seeded enough for me to guarantee that the file would download in 2-3 hours, despite being 16 CD's and 5.5GB's. I clicked on the specific file link and accessed a screen that gave me detailed information on the file, the box set and the artist. It had been uploaded by another OiNK user, who had provided all artwork scanned in at a high quality, full track listings and .log files for each CD that proved that all files had been ripped from the CD with 100% confidence of being perfect FLAC rip, thus ensuring the quality I was looking for. A greasemonkey script (greasemonkey is a Mozilla Firefox add-on that enables 'on the fly' changes to html sites) I had previously installed called 'OiNKPlus' automatically embedded a MySpace player and a last.fm player into the page so I could try a few songs before I downloaded. It added links to other places the file was available in the public and private torrent hydra, a long biography of Coltrane, links to similar artists and links to all the John Coltrane content on YouTube, imeem, Google and

thehypemachine, amongst many other places. This greasemonkey script had been written by another OiNK user simply to improve the experience of other users of they wanted to run it, and was made freely available, as was everything on OiNK.

Retail or OiNK? I was left with little choice.

OiNK was seen by many as the most extensive freely available online cache of commercially released music ever comprised,[448] and most of the content was being shared and uploaded by ordinary people, using ordinary home internet connections and living ordinary non-hacker, non-IT specialist lives.

The following chapters set out to explore how OiNK drew together an organised collective of filesharers which had strong overtones of community, and which developed a fierce commitment amongst its members to organising and managing the topological borders of that community between themselves, on the basis that this commitment could give them the choice, the diversity, the availability and the *closeness* to recorded music and to other lovers of recorded music that could not be found elsewhere. I do not mean to suggest here, by introducing OiNK in such a way, that it was primarily remarkable because it enabled its members to download music that was not available elsewhere. This was a major attraction, but it can be more precisely located through analysing some key processes within OiNK that enabled the modes of reflection, thought and action of its members to individuate through deeper levels of interaction with internet protocols, software, hardware and recorded music that had been previously accessible. Furthermore, the members were able to share and resolve these interactions through the transindividual collective operation of the OiNK community.

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[448] Almost every single observer of OiNK who used it and then wrote about it online, or acquired knowledge from ex-members and then wrote about it online, makes the assertion that there had never before been a more extensive and reliable online cache of freely available, commercially released music. See: Jon (2007) *Op Cit* ; Clayton (2007) *Op cit*; ernesto (2007) *Op Cit*; Fisher (2007) *Op Cit*; Goldmeier (2007) *Op Cit*; Moya (2007), *Op Cit*; Phan (2007) *Op Cit*; Sheridan (2007) *Op Cit*; Westoff (2007) *Op Cit*; *Deleon* (2008) *Op Cit*; sharky (2008) *Op Cit*; Benn Jordan in enigmax (2008b) *Op Cit*.

Methods – Interviews as 'sites of production', Power User insights, and mise en scène.

As intimated in chapter 1, this thesis focuses on a rearticulation of virtual methods underpinned by an interrogation of individuation theory, and aims to propound how OiNK contributed to a new settlement on the production and consumption of recorded music artefacts, in that it enabled members to manage reproduction, storage and distribution themselves. However, it does not go on to characterise the difference between the mnemotechnical objects of OiNK and the global recording industry as on the one hand 'virtual' and on the other 'real'. That is, OiNK and the set of practices it brought together are not an extension of or improvement upon those of the global recording industry, whereby the very same productive components are propelled into the digital stratosphere and undergo a 'virtual' form of enhancement. Rather, the set of components and practices under discussion here were conceived of through the internet, or more precisely, through the disparation between communication protocols, software, hardware and humans that occurred within and between BBS, The Scene, audiophile groups and eventually through the private BitTorrent pyramid.

Identifying components as being derived from the digital points us in the direction of the 'native digital methods' advocated by Richard Rogers,[449] which we discussed at the beginning of the thesis. However, whilst acknowledging that these properties were born out of digital interactions, this thesis does not consider them to be 'natively digital'. In line with the theory-driven method we have developed so far, this thesis considers such properties to be mnemotechnical artefacts that imply both a desiring infrastructure and an architecture of mnemotechnique, and the method employed utilises tools traditionally associated with virtual methods to 'generate' data by exploring the relationship within and between these properties as they individuate. In this sense, the thesis does not ground data within these properties, but interrogates the individuation of these properties and gleans results through that process.

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[449] Rogers (2009a) *Op Cit*.

The focus on 'generating' data can be contrasted with the notion of 'collecting' data, or the term 'harvesting' data that is used in digital methods.[450] Collecting or harvesting assumes that the researcher will deploy an impartial mechanism (i.e. WikiScanner[451] or the Wayback Machine[452]) that can collate statistical, keyword, demographic or 'post-demographic'[453] data, which then can be used as an 'analytic base' from which trends and tendencies can be identified. Whilst acknowledging the efficacy of such work, this thesis makes no such claims to impartiality. It attempts to capture the 'lived experience' of OiNK – the modes of reflection, intention, interaction and action employed by its members – that cannot be captured by aggregating user activity and/or technical functioning through a statistical, demographic or post-demographic overview. Instead, the thesis 'generates' data by actively constructing knowledge based on the metastable relationship within and between OiNK's mechanisms, its external relationship to software and hardware, and the position of both the research participants and the researcher in relation to these mechanisms and elements.

The main thrust of the research operates through the individuation of my own 'fully active' participant observation of OiNK and one of its successors over four years. Between July 2006 and OiNK's shutdown on 23rd October 2007, I collected screenshots and tutorial documents that OiNK members used to learn how to meet OiNK's exacting standards of DAE, netiquette and file uploading, downloading and sharing. Shortly after

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[450] Richard Rogers makes clear his methods for harvesting links with the 'Issue Crawler' software and harvesting 'post-demographic' information with the 'Elfriendo' tool on the digital methods initiative website. See: Richard Rogers (2010) "The Link", *Digital Methods Initiative*, 25th June, http://www.digitalmethods.net/Digitalmethods/TheLink
Richard Rogers (2009c) "Post-Demographics", *Digital Methods Initiative*, 11th March, http://www.digitalmethods.net/Digitalmethods/PostDemographics

[451] WikiWatcher (2010) "WikiScanner", 14th Dec, http://wikiscanner.virgil.gr/

[452] Internet Archive (2010) "Wayback Machine", 14th December, http://www.archive.org/web/web.php

[453] 'Post-Demographic' is a term coined by Richard Rogers to differentiated the 'traditional' demographics of age, race, gender, disability etc from the type of demographics that populate 'online profiles', particularly on social networks, such as tastes, likes and dislikes. See: Richard Rogers (2009d) "Post-demographic Machines", in Annet Dekker and Annette Wolfsberger (eds.), *Walled Garden* (Amsterdam: Virtueel Platform) pp. 29-39.

OiNK's shutdown I was invited to a new private music tracker set up largely by OiNK members and encompassing a re-articulated manifestation of OiNK's set of practices, considered by many to be the 'new OiNK' and spent two years building trust and generating a sample of ex-OiNK members (there were many on this new site) to engage in a series of interviews. This new site shall be hereafter described as 'Successor'.[454] By 'fully active' I mean that I participated as a member, interacted with other members and tried to learn the accepted standards of participation and the filesharing practices common on the site. As James and Busher have observed, the researcher-becoming-a-member of an online community can create two tensions, one between 'lurking', where the researcher observes the conversation and practices of other members without becoming involved, and participating fully in the action.[455] A concentration on the former can lead to shallow or detached results and observations that lack credibility,[456] whilst over-reliance on the latter runs the risk of influencing the behaviour of participants.[457] A related tension is between covert and overt observation. If the researcher chooses not to reveal their intentions this can lead to similar problems to those created by lurking. If one is too open about being a researcher, this can lead to participants losing trust or changing their behaviour under the gaze of research.[458] I sought to avoid these pitfalls by adopting a strategy of what Rutter and Smith have called 'presence and absence', where the researcher finds a technique of participating that balances being open about the research to participants and observing/interacting without impinging one's own assumptions on the community.[459] For most studies of

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[454] The new site has worked hard to preserve its anonymity from both the IFPI and casual filesharers, and as such shall be accounted for in this thesis as 'Successor'.

[455] Nalita James and Hugh Busher (2009) *Online Interviewing* (London: Sage), pp. 21-22.

[456] Jason Rutter and Gregory W.H.Smith (2005) "Ethnographic presence in a nebulous setting", in C. Hine (ed.) *Virtual Methods: Issues in Social Research on the Internet* (Oxford: Berg), pp. 81-92.

[457] Teela Sanders (2005) "Researching the online sex community", in C. Hine (ed.) *Virtual Methods: Issues in Social Research on the Internet* (Oxford: Berg), 67-80.

[458] Dag Elgesem (2002) "What is special about the ethical issues in online research?" *Ethics and Information Technology*, Vol.4, No. 1, pp. 195-203.

[459] Rutter and Smith (2005) *Op Cit*, pp. 87-90.

online communities and interaction between users on the internet, particularly those conducted during the early 'cyberspace' days of internet popularity, the focus has been on interpretation of text and interaction between different texts, due to the fact that the structure of interaction is usually that of the message board, chat room or forum, where community involvement is largely delineated by public or private text messages between users.[460] Although text-based interaction and community involvement was important on OiNK, a member did not have to post comments in the forums to engage with the community. The pivotal layer of interaction was learning how to rip, encode, upload and share music to high standards, and OiNK provided an inventory of 'tutorial' and 'FAQ' tools which members could use to learn how to get involved, some of which appear as appendices to this thesis.[461] This was crucial to my technique of presence and absence, as it enabled me to involve myself in the processes of OiNK (uploading, ripping, encoding, sharing etc), without having to maintain a 'high visibility' presence on the forums.

The construction of trust in researching online communities has often been couched within the transition from inexperienced 'lurker' to experienced 'elder' through posting text comments on bulletin boards and chat rooms, or through 'playing with' other users in online gaming environments.[462] On OiNK, the most reliable way to build trust was not through posting on forums or engaging in 'play' with other users, but through engaging in the practices we touched upon in the previous chapter – building a healthy ratio and attaining 'Power User' status by uploading new torrents and sharing torrents over long periods of time. OiNK and Successor both required members to have downloaded at

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[460] Nick Fox and Chris Roberts (1999) "GPs in cyberspace: the sociology of a 'virtual community'", *The Sociological Review*, Vol. 47, Issue 4, pp. 643-671; Sarah N. Gatson and Amanda Zweerink (2004) "Ethnography Online: 'Natives' Practising and Inscribing Community", *Qualitative Research*, Vol. 4, No. 2, pp. 179-200 .

[461] See: 'Appendix C', p. 331 and 'Appendix D', p. 344.

[462] Jonathan Bishop (2006) "Increasing participation in online communities: A framework for human–computer interaction", *Computers in Human Behaviour*, Vol. 23, No. 4, pp. 1881-1893; Simona Isabella (2007) "Ethnography of Online Role-Playing Games: The Role of Virtual and Real Contest in the Construction of the Field", *Forum: Qualitative Social Research*, Vol. 8, No. 3, www.qualitative-research.net/index.php/fqs/article/download/280/616

least 5gb and uploaded at least 25gb to attain Power User status, and I achieved this on both sites. It took me 6 months on each site to reach Power User, and I stayed 'covert' until I'd reached that status on Successor. This year and a half of observing and building my ratio meant I was able to experience firsthand the practices that other members were engaging in. It also provided me with a much wider level of access, increased opportunity of informed consent and added credibility to the research, as each member's ratio is visible to all other members, so there was solid evidence of my experience. Consent, and the issues of privacy and confidentiality that surround it, is particularly important for researching a site like OiNK, where there are grey areas regarding legality and/or where members wish their 'offline' identities to remain private.[463] Many of the people I approached to be interviewed had reservations about talking about OiNK outside of the OiNK/successor community, and proof that I was running the same risks as them created an interview environment where data could be generated on the basis of shared knowledge and experience, and without fear of reprisals. This also enabled me to position the interviews as metastable, rather than monostable, *sites of production*, where the relationship between the researcher and researched took of the dynamic form of a relational catalysis, with both parties having knowledge of the mnemotechnique of OiNK, and being able to build knowledge with each other about the lived experience of the site and the set of practices it brought together.

Once I'd reached Power User on Successor, and after reflecting on how much OiNK and Successor had changed my experience of music and information sharing over time, I settled on a method of repeat interviews with 'core' participants, 6 in total,[464] who were interviewed between 2 and 4 times over a 2 year period. The research is periodised to focus exclusively on OiNK (30th May 2004 - 23rd October 2007) and although its shutdown meant that I was unable to track the participants experience 'as it happened',

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[463] James Barker (2006) "Privacy and *thirdspace* in the research of gay online communities", *Exploring Online Research Methods*, 13th August, *http://www.geog.le.ac.uk/orm/ethics/ethprivacy.htm*

[464] The 6 main participants are referred to as: *AJtheSloth; beardownboilerup; B-Random; LordShaft; MrJONeZ;* and finally *TU.*

I was interested in the opportunities identified in the research literature for building recursive narratives through repeat online interviewing,[465] something I deemed necessary in order to achieve the required depth of data generation in relation to the lived experience of engaging with each component of OiNK's system of recorded music reproduction, storage, distribution and consumption. In keeping with my strategy of presence and absence, I did not go 'wading in' and make my identity as a researcher public on Successor's forums. A number of researchers have spoken about the difficulty of engaging in 'private talk' in a public space.[466] This was mitigated somewhat by OiNK and Successor being 'invite only', and also by the 'private message' (PM) system on both sites, where each member had an email-style 'inbox' and 'outbox' and could send and receive private text messages from other users. One strategy I used was to locate potential participants from lurking on the forums and from observing member's ratios and filesharing behaviour over 18 months, and I used the PM system to send them an initial message explaining the focus of the research and the three key areas that we would be talking about, which I had identified from my participant observation of the site – how the aesthetics and design of OiNK was 'produced' in conjunction with its members; the software tools and articulation of hardware that OiNK brought together; and finally OiNK's impact on member's interaction with music and related technology. The participants *LordShaft* and *TU* became involved this way, but it proved difficult to generate participants through this strategy, as Power User status alone often wasn't enough to persuade individuals for whom privacy and encryption were critical factors. A more successful approach was to use my Elder status on some public online communities external to OiNK and Successor, but where I knew there were a number of people who had used OiNK. This enabled me to find ex-OiNK members that were not using Successor, such as one of the participants *B-Random*, and I also found that those

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[465] Nalita James (2007) "The use of email interviewing as a qualitative method of inquiry in educational research", *British Journal of Educational Research*, Vol. 33, No. 6, pp.963- 976.

[466] Tom Buchanan, Carina Paine, Adam N. Joinson and Ulf-Dietrich Reips (2007) "Development of measures of online privacy concern and protection for use on the Internet", *Journal of the American Society for Information Science & Technology* Vol. 58, No. 2, pp. 157-165; David J. Houghton and Adam N. Joinson (2010) "Privacy, Social Network Sites, and Social Relations", *Journal of Technology in Human Services* Vol. 28, No 1-2, pp. 74-94.

who I knew from my forum Elder status on other sites and whom were also members of both sites were much more receptive to engaging with data generation over time. I found this was because they could 'triangulate'[467] their construction of trust – they already trusted me from our 'Elder' interactions on public forums, they could observe my Power User status on Successor, and I was able to talk about OiNK as someone who had productive knowledge of it during our interviews. *MrJONeZ*, *beardownboilerup* and *AJtheSloth* became involved in the research through this process of triangulation.

The data was generated through a combination of 'asynchronous interviewing' – where participants answers questions in 'non-real' time by responding to messages at their convenience, for example through email – and 'synchronous interviewing', where participants engage with the researcher in 'real time', for example through instant messaging or chat rooms. Selecting interview methods was a process delineated by being responsive to how the participants wanted to construct their narratives over time. For example, the two participants with whom I used asynchronous methods (*TU* and *LordShaft*) came from an academic background, and felt more comfortable expressing their views through taking time to construct and edit their responses into coherent paragraphs. Joëlle Kivits has argued that this approach can give participants the time and space to reflect upon their own opinions and their place within the research, leading to a more attentive and nuanced process of data generation.[468]

Using synchronous methods keyed into a vital part of OiNK culture – that ex-OiNK members like talking about OiNK with other ex-OiNK members. The interviews with the other four participants, at their request, were conducted through one-to-one text-based 'instant messaging' (IM) software. The spontaneous and conversational nature of synchronous communication enabled me to situate the data generation within a more informal setting within which participants (including the researcher) were experienced in the topic of discussion. This 'real time' form of online interviewing enabled me to generate data that brought out more emotive modes of reflection and interaction

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[467] Norman K. Denzin (1970) *The Research Act in Sociology* (Chicago: Aldine).

[468] Joëlle Kivits (2005) "Online interviewing and the research relationship", in Hine, C. (Ed.) *Virtual Methods: Issues in Social Research on the Internet* (Oxford: Berg), pp. 35-49.

regarding how ex-members felt about their time on OiNK, leading to more intense, responsive discussions that brought a less reflexive, but more impulsive quality to the data generation; various studies have reached similar conclusions.[469] A challenge for the synchronous online interviewer is what software to use.[470] Again, this choice was prompted by a methodological conviction to provide the participants with the desiring infrastructure that would be most conducive to the metastable individuation of their narrative production over time. *MrJONeZ and B-Random* were regular users of MSN messenger,[471] and *beardownboilerup* and *AJtheSloth* 'signed in' to AIM (AOL instant messenger[472]) on a daily basis. I found that their interaction with these software packages constituted the location of much of the 'online discussion' they engaged in, therefore it made sense to use the infrastructure of IM as the 'site of production' for these interviews. They had a high degree of familiarity with the software, as did I, which allowed for an open, recursive interplay of discussion unencumbered by a disparity between the researcher and the research in knowledge of the 'method'. Another major advantage was that both parties had a real-time online window where they could see the data being generated and which could be saved to their computers,[473] adding to the notion of the interview as a metastable site of production, as opposed to the researcher generating data in the online world and then 'writing up' the results in an offline world, detached from the research participants.

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[469] Peter Chen and S. M. Hinton (1999) "Realtime interviewing using the world wide web", *Sociological Research Online, Vol. 4, No. 3,* http://www.socresonline.org.uk/4/3/chen.html; Kate Stewart and Matthew Williams (2005) *"*Researching online populations: the use of online focus groups for social research", *Qualitative Research*, Vol. 5, No. 4, pp. 395-416.

[470] Fiona E. Fox, Marianne Morris and Nichola Rumsey (2008) "Doing synchronous online focus groups with young people: methodological reflections", *Qualitative Health Research, Vol. 17, No. 4,* pp. 539-547.

[471] Microsoft (2010) "Windows Live Messenger", 14th December, http://explore.live.com/windows-live-messenger?os=other

[472] AOL (2010) "AOL Instant Messenger", 14th December, http://www.aim.com/

[473] Stefan Stieger and Anja S. Goritz (2006) "Using instant messaging for internet-based interviews", *Cyberpsychology and Behaviour*, Vol. 9, No. 5, pp. 552-559.

I used two supplementary methods that made it possible for me to generate data regarding some of the individuative properties of OiNK that escaped thorough analysis in the operation of my main methods. Firstly, I wanted to expand the breadth of data regarding the lengths to which members would go to improve their ratio, so I started a discussion in Successor's 'Power User' (PU) forum, in which I posed the question: "What strategies did you use to improve your ratio when you first joined OiNK?" This was my first and only foray into what can be termed 'asynchronous focus group' methods, which in previous studies has often taken the form of a researcher starting and then 'moderating' group discussions on public bulletin boards, where respondents take turns to make comments.[474] I wanted to generate data about building ratio over time, so incorporating the PU forum into my method ensured that all respondents were speaking from experience. It also enabled me to maintain my 'active low –visibility' status, as only Power Users could read and post in the PU forum. I was able carry on participating and observing without my research impacting too heavily on the operation of Successor. Given that I was a Power User, the general response from the members on the PU forum was one of openness rather than suspicion. One approach to the reasons for this openness would be that they were receptive to being researched from the 'inside', given the number of mistakes made about OiNK by the media in the furore that developed in the wake of its shutdown.[475]

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[474] Katie J. Ward (1999) "The cyber-ethnographic (re)construction of two feminist online communities", *Sociological Research Online*, Vol. 4, No. 1, http://www.socresonline.org.uk/4/1/ward.html; Susi Peacock and Derek Jones (2006) "The analysis of interaction in online focus groups", *International Journal of Therapy and Rehabilitation*, Vol. 13, No. 12, pp. 551-557.

[475] For example, *The Guardian* claimed that OiNK was a movie downloading site, *The Telegraph* stated that users had to prove they had music to upload to gain membership, and continue to upload new music to retain membership and Reuters reported that all 180,000 users had to make donations in order to access OiNK's music library. See: Bobbie Johnson (2007a) "Police shut down website after two-year music piracy inquiry", *The Guardian*, 24th October, http://www.guardian.co.uk/technology/2007/oct/24/piracy.crime
(The article has since amended the error.)
Sally Peck (2007) "Illegal music sharing website shut down", *The Independent*, 23rd October, http://www.telegraph.co.uk/technology/3354865/Illegal-music-sharing-website-closed-down.html
Luke Baker (2007) "Music piracy Web site closed after UK, Dutch raids", *Reuters*, 23rd October, http://www.reuters.com/article/idUSL2315584520071023

Secondly, I wanted to find a method through which I could explore how OiNK reticulates user engagement through the 'production' of its website design, and through which I could compare it to other websites that link to recorded music content, such as iTunes and music artist websites. There are a number of methods used to investigate 'what is on the screen' in websites, and how this design layout is produced and interacted with. One is to use 'eye tracking' software, which has been used to research how vision tends to drift to the top-left of the computer screen or 'the golden triangle'.[476] Another popular method is feature analysis, where website design is evaluated on the basis of scope for 'interactivity', where interactivity is typically conceived of as the extent to which the user can engage with text, audio and video, often making the assumption that 'empowerment' is commensurate with the extent to which users can click on links and buttons, view mnemotechnics hosted on the site servers, and generate text comments.[477]

The method used in this thesis attempts to interrogate some of the components that come into focus through eye tracking and feature analysis, but shifts the focus from 'observing' and/or 'collating' data on feature distribution and interactivity to propounding *for what purpose* the feature distribution and interactivity is produced. In emphasising the 'productive' elements of website design, the thesis borrows a set of concepts that fall under the rubric of *mise en scène*, a concept used in cinema and cinema studies. *Mise en scène* means literally 'placing on stage' and was originally applied to the design of theatre production in terms of 'everything that the audience sees'.[478] In film, it is used "…to signify the director's control over what appears in the

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[476] Gord Hotchkiss, Steve Alston and Greg Edwards (2005) *Eye Tracking Study: An In Depth Look at Interactions with Google using Eye Tracking Methodology*, June, http://www.enquiroresearch.com/images/eyetracking2-sample.pdf

[477] Kirsten Foot and Steven M. Schneider (2006) *Web Campaigning* (Cambridge, MA: MIT Press); Xu Xiaoge (2008) "Engaging and Empowering News Audiences Online: A Feature Analysis of Nine Asian News Websites", *eJournalist*, Vol. 8, No. 1, pp. 35-53.

[478] Maria Pramaggiore and Tom Wallis (2008) *Film: A Critical Introduction*, 2nd Edition (London: Laurence King Publishing), p. 88.

film frame."[479] Of course, there are aspects of mise en scène that are pertinent to film but that are not factors in website production, such as lighting, costume, physical setting and set design, and the physical performance of human actors. However, the basis for a method to explore the *productive intentions* of website design can be found within the *post-production* aspects of mise en scène, specifically within the practice of *spatial composition*, or "…the visual arrangement of the objects, actors and space within the frame."[480] Indeed, the increasing dominance of digital methods in film making has put the design-production of mise en scène in film into disparate contact with that of website design. Jean-Pierre Geuens has outlined a shift in the spatial composition of films from shooting to post-production, as the art of ''composing the shot'' in mise en scène has given way to the skill of ''compositing'' layers of visual elements,[481] a process that is inherent within the spatial composition of all digital visualisations, including websites. We shall outline the elements of mise en scène used to interrogate OiNK and compare it with that of other websites presently, but we shall first clarify some statistical data regarding OiNK.

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[479] David Bordwell and Kristen Thompson (2001) *Film Art: An introduction* (New York, NY: McGraw-Hill), p. 156.

[480] Pramaggiore and Wallis (2008) *Op Cit*. p. 112.

[481] Jean-Pierre Geuens (2002) "The Digital World Picture", *Film Quarterly*, Vol. 55, No. 4, pp. 19–30.

OiNK statistics

Although the focus of the OiNK research in this thesis is on the 'lived experience' of using the site and the external components this disparate process brought together, it is useful to clarify how the site developed in terms of numbers of torrents and members over the three years it was operating. This brief section uses screenshots of the 'OiNK Statistics' box that was available to all members, which showed how many members, torrents, seeders and leechers were operating on OiNK at any one time, and some other screenshots in order to present how OiNK's membership and torrents total developed over time. **Figure 9.1** is the earliest screenshot of the OiNK stats, taken on 17[th] October 2005, and shows membership at 43,333 and the number of torrents at 23,506. **Figure 9.2** shows that the torrent count had reached 25,281 by 15[th] December 2005 (see red arrow), and **Figure 9.3**, taken on 20[th] February 2006, shows that membership reached 54,271 and the number of torrents was 32,624 by this time. There was roughly an increase of 10,000 members and 10,000 torrents in this four month period.

☐ Parašyta: 2005-10-17 9:46

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Oinko duomenys:

Registered Users 43,333
Torrents 23,506
Peers 89,407
Clever Users 7,251
Stoopid Users 3,814
Seeders 84,713
Leechers 4,694

Figure 9.1: OiNK statistics 17[th] October 2005 (Zebra.it 2005)[482]

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[482] Zebra.it (2005) "OiNK statistics 17[th] October 2005", 17[th] October,
http://www.zebra.lt/forum/viewtopic.php?t=27777
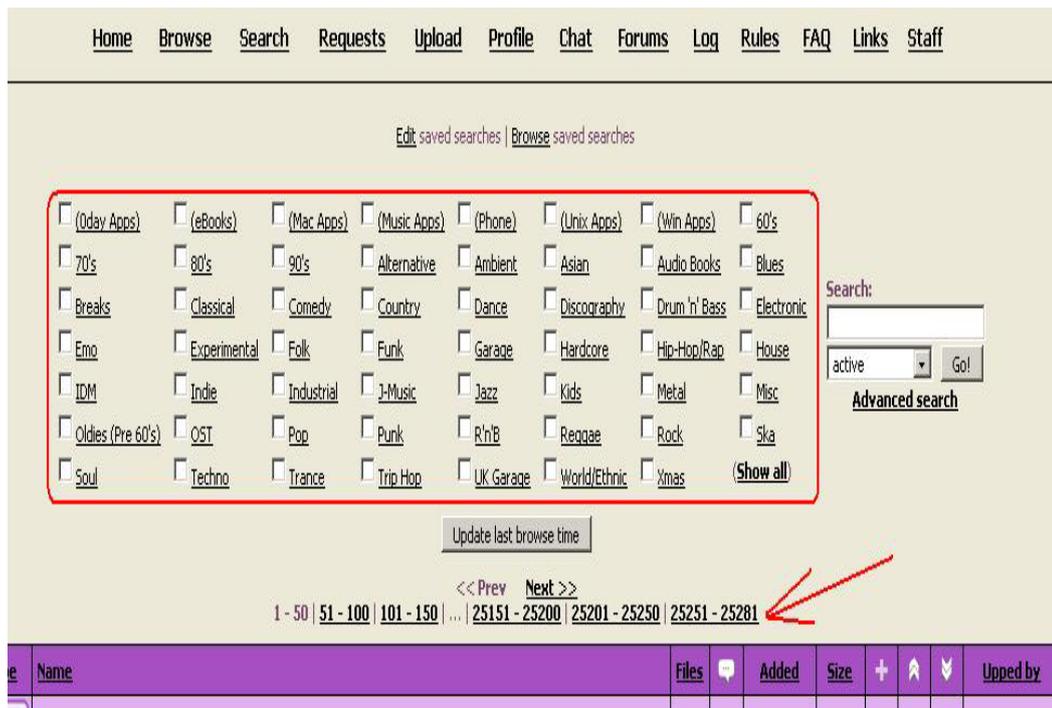
Figure 9.2: Total number of OiNK torrents 15th December 2005 (divx.net 2005)[483]

Figure 9.3: OiNK statistics 20th February 2006 (OiNK.cd, 2006a)[484]

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[483] Divx.net (2005) "Total number of OiNK torrents 15th December 2005", 15th December, http://forum.divxplanet.com/index.php?showtopic=43593

[484] OiNK.cd (2006a) "OiNK statistics 20th February 2006", 20th February [private URL].

Figure 9.4 shows us that in the 10 month period between February-December 2006, the number of OiNK members more than doubled to 144,759. We can also see that the number of torrents almost quadrupled to 122,232 and for the first time overtook the number of OiNK members, as more members became cognisant of how to upload and share torrents to OiNK's exacting standards.[485]

Registered Users	114,759
Torrents	122,232
Peers	1,787,945
Seeders	1,672,660
Leechers	115,285
Active Users in Last 15 mins	1,884
Active Users in Last 24 hours	50,281
Reports Made in Last 24 hours	152
Reports Made in Last 7 days	1,150

Figure 9.4: OiNK statistics 31st December 2006 (OiNK.cd, 2006b)[486]

Figure 9.5, Figure 9.6, **Figure 9.7** and **Figure 9.8** show a continuation of the pronounced upsurge in new torrents and new members between the beginning of 2007 and OiNK's shutdown in October 2007, with around 75,000 new members and around 90,000 new torrents. We cannot be certain of the final figure because OiNK stopped showing statistics in its final week, but the final recorded number of members was 189,408, and from that, if we assume that the number of torrents increased at the same rate relative to members, there were approximately **190,000 OiNK members and 215,000 torrents at the time of shutdown.**

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[485] See 'OiNK II' section of this thesis: p. 236.

[486] OiNK.cd (2006b) "OiNK statistics 31st December 2006", 31st December [private URL].

Figure 9.5: OiNK statistics 19th January 2007 (monkibo.com 2007)[487]

Figure 9.6: OiNK statistics 13th August 2007 (0-day Jack 2007)[488]

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[487] Monkibo (2007) "OiNK statistics 19th January 2007", 19th January,
http://www.monkibo.com/forum/forum_posts.asp?TID=1701

[488] 0-day Jack (2007) "OiNK statistics 13th August 2007", 13th August,
http://0dayjack.spaces.live.com/blog/cns!801E6B86818699A2!171.entry

Registered Users	183,715
Torrents	200,292
Peers	2,047,690
Seeders	1,975,450
Leechers	72,240
Active Users in Last 15 mins	2,826
Active Users in Last 24 hours	61,230
Reports Made in Last 24 hours	171
Reports Made in Last 7 days	1,682

Figure 9.7: OiNK statistics 22nd September 2007 (Forum.hr 2007)[489]

I started to keep track of the user-count on the front page of oink, until they took those statistics away about a week before they got closed down. These are the last data I recorded:

Date Users
07.10.2007 ---- 187.635
10.10.2007 ---- 188.399
15.10.2007 ---- 189.408

So 180.000, which seems to be the number everyone uses, is t0o low, if not a lot of accounts was deleted the last week.

2008-03-30 20:30:05 BST   Report Post - Quote

Figure 9.8: OiNK statistics 7th-15th October 2007 (Private Music Tracker 1, 2008b)[490]

 Figure 9.9 is a timeline graph charting the above statistics. Viewed in this way, we can observe firstly that a strong upsurge of torrents (pink line) begins in early 2006, and then a concomitant upsurge of members occurs in the latter half of 2006 and in to 2007, which can be seen as a response to OiNK's growing reputation for having a large library of torrents. The torrent number continues to outgrow the membership number right up until closure. Thus, we can conclude that the 'media buzz' of OiNK having 180,000 members obscures the true picture. OiNK can be more accurately conceptualised as a dynamic collective that underwent an accelerated period of growth between January

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[489] Forum.hr (2007) "OiNK statistics 22nd September 2007", 22nd September, http://www.forum.hr/showpost.php?p=10386385&postcount=36

[490] Private Music Tracker 1 (2008b) "OiNK statistics 7th-15th October 2007", 30th March [private URL].

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2006 and October 2007, with an increase in the amount of uploaded torrents impacted on membership growth, and where the subsequent membership growth led to more torrents being uploaded by members, as more and more members got to grips with the OiNK rules and standards.
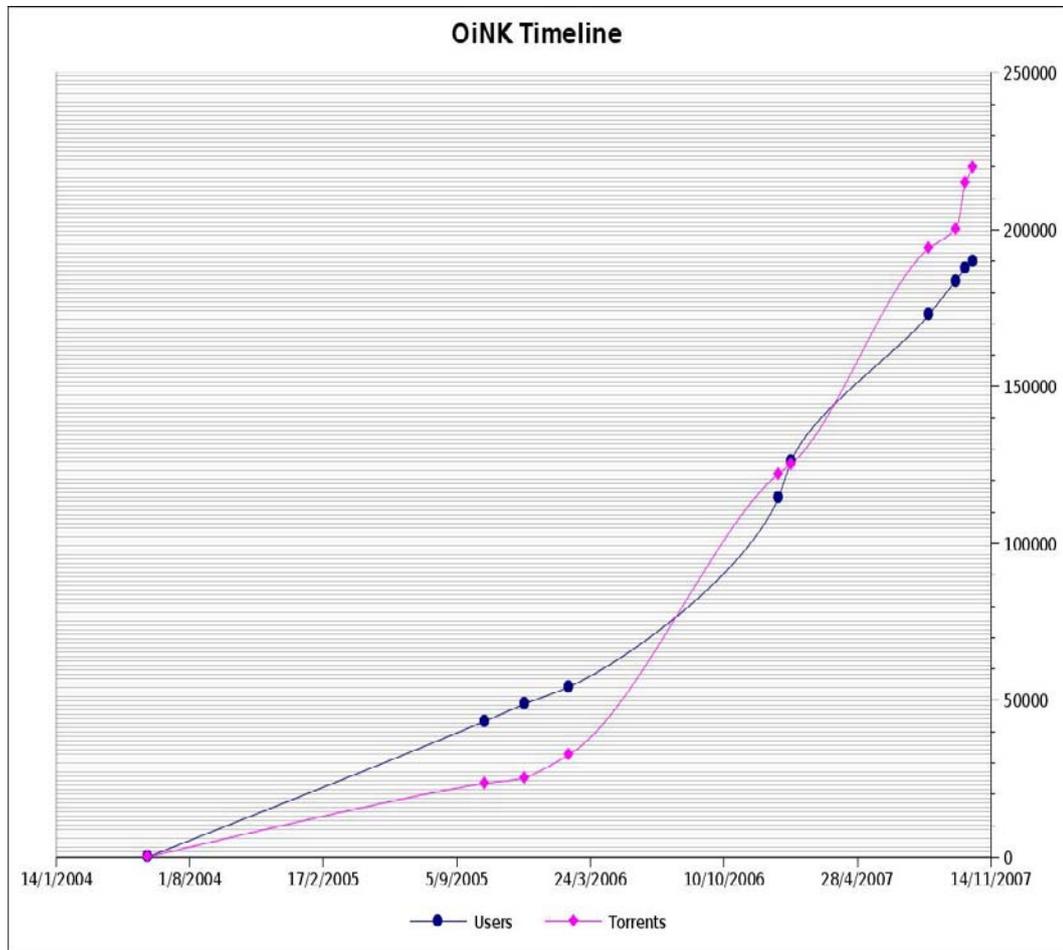
Figure 9.9: OiNK timeline[491]

With the statistical backdrop clarified, we shall now move on to looking at the outcome of my active participant observation of OiNK, using the screenshots, tutorial documents I collected during my time as a member, and through excerpts from the interview data I generated with ex-OiNK members in the years following its shutdown.

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[491] Adapted from Figures 9.1-9.8.

OiNK II - Mnemotechnique of design aesthetics: The 'mise en scène' of OiNK

 The first apprehension that a new member got of OiNK was through what was presented to them on the screen, and the ways in which they could engage with that information. They were confronted with an *interface*, the design logic of which sets the experiential limits at which their modes of reflection, action and interaction can individuate in relation to the capacities of the given interface. Lev Manovich, who has paid close attention to the contemporary human-computer interface (HCI), has observed that a myriad of cultural forms now travel through such interfaces, to the extent that websites, software applications and the menu screens of DVD's, mobile phones and computer games can be more accurately referred to as *cultural interfaces*.[492] These frontpages, layouts, icon sets and interactive systems delineate much of our digital engagement with mnemotechnics, and therefore play a significant role in material culture. Here we shall look at how the *design aesthetic* of OiNK impacted upon its capacity as a cultural interface; in terms of the assumptions this aesthetic made about its members and conversely in terms of how its members' experience of it gave them access to the *mnemotechnique* of the interface.

 We shall do this through comparing the *mise en scène* of its design-production to that of iTunes and some music artist websites, using the concepts of *colour contrast*, *on-screen size and figure placement, the layering of 'planes of space',* and finally *shallow-space and deep-space depth cues*. In cinema studies these concepts are used to explore the relationship between the intentions of the director (or often a directorial team: the director, production designer and cinematographer) and the elicited response of the viewer (how the viewer is 'produced'). In website studies we can add a third layer, using the concepts to interrogate the intentions of the website owners (which could be a corporation, a SysOp, or a team of moderators and administrators), the elicited response of the viewer/user (how the viewer/user is 'produced'), and also how the

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[492] Lev Manovich (2002) *The Language of New Media* (Boston, MA: MIT Press), pp. 65-68.

viewer/user is encouraged to 'produce' through their use of the site. Each of the concepts shall be defined below, through the operation of the comparison.

Mise en scène: Monostable and metastable cultural interfaces

Members often differentiate OiNK from other websites and other types of cultural interface in terms of how they *feel* they are being treated by the interface. As observed in some other works on 'Computer Mediated Communication ' (CMC), this is to do with what sort of assumptions they feel the layout and functionality of the interface is making about them; about their capabilities, about their knowledge and understanding of the subject matter,[493] in this case music, the internet and related technology. Furthermore it depends upon the spirit of reciprocity between the website and the users, and how the users thereby come to be positioned in relation to the website. One OiNK user, Trent Reznor from Nine Inch Nails, has discussed how using the iTunes store doesn't 'feel' good: "…iTunes kind of feels like Sam Goody to me. I don't feel cool when I go there. I'm tired of seeing John Mayer's face pop up. I feel like I'm being hustled when I visit there, and I don't think their product is that great."[494]

We can get a sense of this 'feel' by analysing the aspects of *mise en scène* at work within the screenshot of the frontpage of the iTunes store below. As intimated in the 'OiNK methods' section, we shall concentrate upon methods derived from the *spatial composition* of *mise en scène* in the practice of cinema, or how compositional space is organised 'on the screen' rather than 'on the set'. David Bordwell and Kristen Thompson have discussed how the geographical setting on a film screen can create a *mise en scène* that '…need not only be a container for human events but can dynamically enter the narrative action,'[495] depending on how the compositional space is directed. They refer to

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[493] Crispin Thurlow, Laura Lengal and Alice Tomic (2004) *Computer Mediated Communication: Social Interaction and the Internet* (London: Sage), pp. 35-58; Luciano Paccagnella (1997) "Getting the seat of your pants dirty: Strategies for ethnographic research on virtual communities", *Journal of Computer Mediated Communication*, Vol. 3, No. 1, pp. 267-288.

[494] Eliot Van Buskirk (2007) "Trent Reznor: OiNK Was Better Than iTunes", *Wired*, 31st October, http://www.wired.com/listening_post/2007/10/trent-reznor-on/

[495] Bordwell and Thompson (2001) *Op Cit*, p. 159.

a distinction between a concentration upon actors and upon geographical space, but are also making a comment about the difference between a realist *mise en scène* that gives strong cues about the meaning of human action through focusing on immutable central objects, and a more experimental composition that provides the viewer with more space to formulate their own interpretations of meaning and action. Trent Reznor is reacting against the former in the earlier quote, which he had identified in iTunes, and preferred OiNK because it offered the latter. On a website, where the setting is digital rather than geographical and where the preoccupation with designing narrative objects or 'events' is with multimedia, hypertext, search and links, I would like to suggest that a website becomes a 'container of events' when the relationship between the objects it presents and those who view and/or use the objects becomes subject to a singular interpretation imposed by the director. It 'enters dynamically into the narrative action' when the director provides space for the viewer/user to formulate their own modes of viewing, patterns of use and articulation of meaning.

In the case of the iTunes Store (below - **Figure 9.10**), the 'director' of the compositional space is Apple Inc, who recently posted revenue of $15.65 billion and a net quarterly profit of $3.65 billion in the first fiscal quarter of 2010.[496] The iTunes store dominates the paid digital download market, with a 66.2% market share as of December 2010.[497] A few days before the below screenshot was taken (20[th] February 2008), it was announced that iTunes had signed an exclusive marketing deal with American Idol, which was at that time the most watched television show in the United States.[498] The deal made iTunes the sole online download supplier for American Idol content, the iPod the 'official

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[496] Apple (2010a) "Apple Reports First Quarter Results: All-Time Highest Revenue and Profit. New Accounting Standards Adopted", 25[th] January, http://images.apple.com/euro/cemea_en/pr/library/2010/01/25results.pdf

[497] MACNEWS (2010) "iTunes' market share continues to rise", 17[th] December, http://www.macnews.com/2010/12/17/itunes-market-share-continues-rise

[498] Jill Serjeant (2009) "FACTBOX: "American Idol" still most-watched U.S. TV show", *Reuters*, 17[th] May, http://in.reuters.com/article/idINTRE54G1D620090517

mp3 player' and the iPhone the 'official mobile handset' of the show.[499] Thus, Apple had an incentive to routinise the experience of its users in the direction of American Idol content, and the design-production of *mise en scène* in its web interface reflects this.

 In terms of spatial composition, a fundamental issue for a directorial team is how they compose *compositional balance or imbalance*, where areas of the screen can have evenly or unevenly distributed masses and points of interest, depending on what the designers want the audience to focus upon.[500] The first aspect of *mise en scène* we can see working within the iTunes design towards the goal of uneven compositional balance is the notion of *colour contrast.* Colour schemes can be polychromatic, using a number of different colours within the frame, or monochromatic, where only one colour is used (along with various shades of grey), but the hue of that colour can be made 'strong' through 'saturation' - adding black to give greater depth - or made weaker through 'desaturation' - adding white to create a paler 'washed out' look.[501] We can see that iTunes *mise en scène* is designed using the monochromatic scale of blue,[502] with a profoundly uneven balance created by saturating the three-in-one 'American Idol' banner at the top with deep blue-blacks and thereby shifting attention towards that area of the screen. This is emphasised by a de-saturated light blue background, and the white that is slightly foregrounded.

 Other aspects used to tip the balance unevenly in favour of American Idol content are the distribution of *onscreen size,* which works as a compositional cue on the basis that

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[499] Dave West (2008) "American Idol acts go on iTunes", *Digital Spy,* 19th February, http://www.digitalspy.co.uk/ustv/s91/american-idol/news/a89682/american-idol-acts-to-go-on-itunes.html

[500] Bordwell and Thompson (2001) *Op Cit*, p. 177.

[501] Bordwell and Thompson, *Ibid*; Pramaggiore and Wallis (2008) *Op Cit*, p. 118.

[502] Michael Martin (2008) "Make the Web a Less Colourful Place", *Pro Blog Design*, 21st May, http://www.problogdesign.com/design/make-the-web-a-less-colorful-place; Michael Shelton (2009) "50 Monochromatic Web Designs", *Web Designer Depot*, 17th March, http://www.webdesignerdepot.com/2009/03/50-monochromatic-website-designs/

the human eye registers larger shapes first then distinguishes smaller ones,[503] and *figure placement and behaviour*, which in cinema refers to where the characters are 'positioned' onscreen and how they 'act', which adds a compositional element to the development of motifs and the reinforcement of themes in the viewers experience.[504] This can be reconceptualised in website design by designating onscreen objects such as hypertext, multimedia and interactive buttons as the 'figures'. Unlike cinema, the 'behaviour' of the figures in websites cannot always create motifs and themes through expressions, character development or emotion, but they nevertheless do 'behave' insofar as they create cues, motifs and themes in the user experience because they are not only matters of 'viewing', but often 'interactivity', where users can 'click through' to further content or 'click on' to play embedded audio or video. The techniques through which these interactive objects are deployed to create an infrastructure of desiring-experience for the user can be considered as the 'behaviour' of such objects. In relation to onscreen size in the iTunes *mise en scène*, we can see that American Idol banner across the top is by far the largest object on the screen, taking up the three largest advertising spaces that are usually bought out by separate companies.[505] In terms of figure placement, the screen-length American Idol banner is placed across the top of the screen as if it is the 'title subject' of the composition of iTunes, and covers the 'golden triangle' top-left area identified by eye tracking research.[506]

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[503] *Voxfilm (2010) "Part 2: Mise en scène", Voxfilm: Filmmakers education archive*, http://www.voxfilm.com/film_school/mise-en-scene.htm; Bordwell and Thompson (2001) *Op Cit,* p. 179.

[504] Pramaggiore and Wallis (2008) *Op Cit*, pp. 100-102.

[505] C. C. Chapman (2008b) "McDonald's and American Idol Try Out New Angles", *Managing the Gray*, 18th February, http://www.managingthegrey.com/2008/02/20/mcdonalds-and-american-idol-try-out-new-angles/

[506] Hotchkiss et al (2005) *Op Cit*.
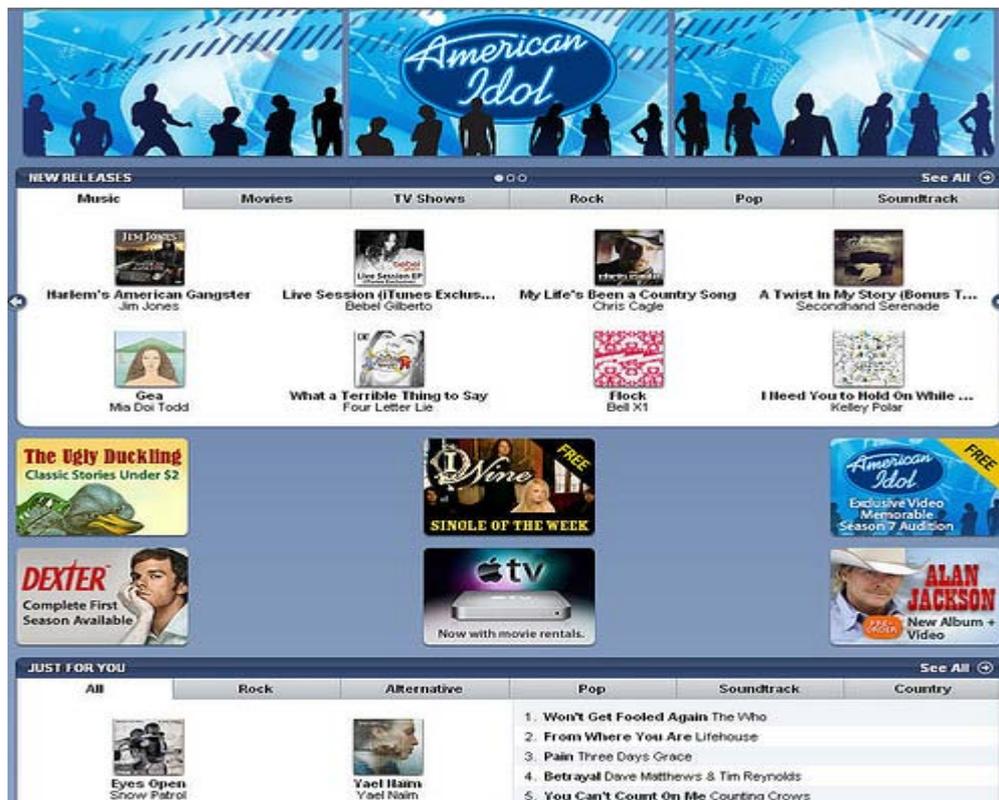
Figure 9.10: iTunes Store frontpage 20th February 2008 (C.C. Chapman, 2008)[507]

If we consider how the figures on the screen 'behave', all the onscreen interactive advertisements, pictures and buttons 'click through' to pages where users can purchase iTunes preferred content, the primary element of which is the result of an exclusive marketing deal, and all of which is stored on Apple's massive server farms.[508] It assumes that it can convince the consumer to download this preferred content through intrusive advertising, that the most meaningful interaction between the website and the user is

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[507] C.C. Chapman (2008a) "iTunes Store frontpage 20th February 2008", *Managing the Gray,* 20th February, http://www.managingthegray.com/2008/02/20/mcdonalds-and-american-idol-try-out-new-angles/

[508] The largest of Apples currently operative server farms is in Newark, California and stretches over a 100,000 Sq. ft. area. Apple have built and tested a new $1 billion server farm in Maiden, North Carolina which is 5 times the size of the Newark site, with plans to extend it to 1,000,000 sq. ft. For many, this indicates Apple's move into the cloud computing market. See: Josh Ong (2010) "Apple's North Carolina data center to open 'any day now'", *Apple Insider*, 25th October, http://www.appleinsider.com/articles/10/10/25/apples_north_carolina_data_center_to_open_any_day_now.html; Ray Willington (2010) "Apple's NC Data Center To Double In Size?" *Hot Hardware*, 25th October, http://hothardware.com/News/Apples-NC-Data-Center-To-Double-In-Size/

the transaction that enables the download, and that the user will uncritically accept the selection of content available in the iTunes library. It thereby monostabilizes the position or 'figure' of the user in the same way as the retail/broadcasting cartel we discussed in chapter 5 – as merely the end-of-the-line destination of a targeted marketing campaign.

Another way that *mise en scène* can be used in screen design is through foregrounding and backgrounding *planes of depth*. Planes are '…layers of space occupied by persons or objects'[509] used to create the illusion of 'volume', where volume is meant to delineate that an object is solid and appears to occupy a three-dimensional space. A vital technique in making the *mise en scène* of a screen appear to have layers of depth is the *overlapping of edges*, where one object appears to be 'in front' of the other because its edges obscure the object behind it.[510] *Shallow space compositions* are screens which contains little difference between objects in terms of the appearance of volume, and where there is little overlapping of objects and/or where the overlapping is unpronounced. *Deep space compositions* are screens where the volume of some objects appears to be greater than others, and where the overlapping of layers is pronounced and accentuated.[511] Looking again at the iTunes *mise en scène*, we can see that the appearance of volume and the layering of planes is ordered and accentuated by the aforementioned unbalanced composition of colour contrast, onscreen size and figure placement/behaviour. In the foreground are the largest objects, the American Idol banner across the top and the six colour advertising boxes in the bottom middle ('single of the week', 'American Idol', 'Apple TV' etc), the edges of which overlap onto the de-saturated light blue background. The layering of saturated black figures over bright blue inside the American Idol banner creates a further illusion of depth, as does the polychromatic colour scheme and layering of text in the advertising boxes, making them

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[509] Bordwell and Thompson (2001) *Op Cit*, p. 177.

[510] Bordwell and Thompson (2001) *Op Cit*, p. 179.

[511] David Bordwell (2009) "Observations on Film Art: Coraline Cornered", *David Bordwell's website on cinema*, 23rd February, http://www.davidbordwell.net/blog/?p=3789

both appear 'in front' of the smaller 'new release' and 'just for you' image links that are set against the clear background.

As we shall see below, OiNK did not set itself up as a product, and therefore did not promulgate a particular assemblage of what was presented, arranged and emphasised based on a monetised notion of spatial composition, nor did it enter into any proscriptive attempt to cajole its users into downloading particular files through its *mise en scène*, based on vested financial interests, of which it had none. OiNK's *mise-en-scène* (below – **Figure 9.11**) was held together thematically by the 'cute' or 'cuddly toy' aesthetic that we looked at in the first chapter. As we can see from the screenshot below, even the presence of cutesy element is minimal and restrained. The 'directors' of this site were an unpaid, dynamically growing group of members, who all contributed to the *mise en scène* in some way (we shall return to this idea below). The screen is largely populated by links to metadata searches and other textual metadata such as profile information, news, the top ten (similar to the ranking of uploaders and popular files that we saw on BBS elite boards), rules and FAQ's. Here we can also observe a monochromatic colour scheme, but with very little attempt to unevenly distribute balance through saturation/de-saturation. There is some slight saturation to accentuate the title of the website in the top-middle, and some polychromatic colouring to distinguish the 'user profile' information in the top left, but otherwise there is a simple contrast between a single hue of pink, a white background and some black hypertext links. There are no image links, as all images were banned aside from those of cuddly toys and cute animals,[512] and no advertising image boxes or advertising hyperlinks, as advertising on the site was also strictly prohibited (see below). There are only hypertext links, and neither the onscreen size nor the figure placement of the links and the three pink rectangles do not give any strong cues with regard to how users are 'supposed' to view or use the website, or which hypertext links should be clicked first. The white background and overlapping edges of the pink foreground give a cursory impression of two planes of depth, but the viewer/user is not directed toward any particular part of the foreground by depth cues alone. Put simply, OiNK assumed that its members *knew what they were doing*, or at least could work out how to learn to use the site without

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[512] See 'Introduction' to this thesis: p. 18.

strong directional cues. This reflects the distinction between a 'realist' approach to design-production we outlined at the beginning of this chapter, where the productive intent of the director monostabilises the experience of the viewer/user, and a more experimental, pared-back approach, where the viewer/user can formulate their own modes of reflection, action and interaction.
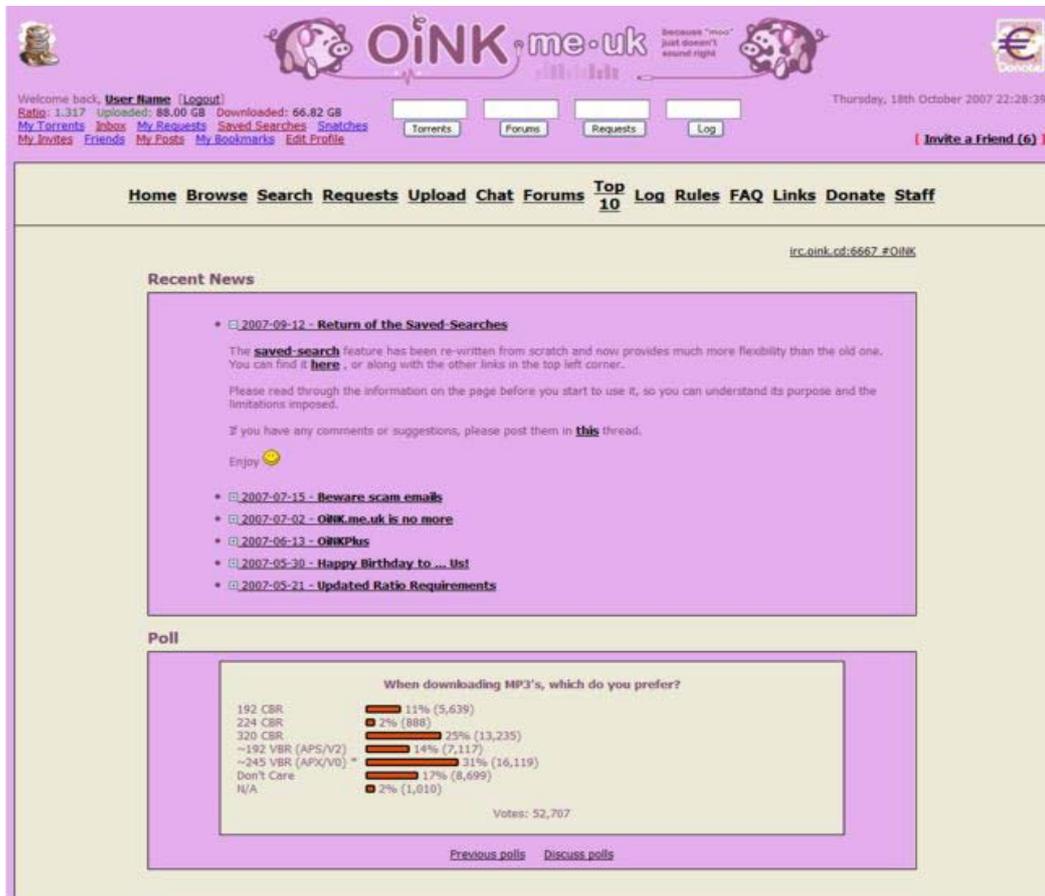
Figure 9.11: OiNK frontpage 18th October 2007 (OiNK.cd 2007e)[513]

Some of the OiNK members I interviewed accounted for the presence of the cutesy aesthetic as something that kept unwanted information off the screen. They felt that making the 'look' of the site uniform - with a basic, functional and inoffensive design - prevented any sort of visual statement being made that distracted from the only sentiments that really mattered on OiNK: the efficient distribution of high quality-

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[513] OiNK.cd (2007e) "OiNK frontpage 18th October 2007", 18th October [private URL].

encoded music by the users themselves. It also liberated OiNK from attracting a certain 'type' of person, making it welcoming to all those who were willing to follow the rules:

My take on that [the cutesy aesthetic] was again another form or ruling that kept it all in check & made the environment a pleasant one to be in, I've lost count of the amount of forums I've been into & people have some really offensive images as their avatars & whilst I'm no censorship Nazi who wants to see a old woman's pair of tits photoshopped huge & animated to bounce up & down? (MrJONeZ)

The aesthetic kept the site sanitized, which is hardly an easy affair on much of the internet. (TU)

Furthermore, the cutesy, sparing *mise en scène* was a way of letting new members know what *wasn't there* on OiNK – most of the pages on OiNK are conspicuous by the absence of flash video, hi-res photos, computer animation and high-end graphic design, and there was strictly no advertising on the site. This sets OiNK in direct opposition to the design aesthetics that we have become used to through computing and the web. Manovich has also pointed out that since the mid-90's the designs we have become accustomed to looking at through our computer screens have been increasingly characterised by a "…new hybrid visual language". The ability to combine design techniques through turning them into algorithms and the increasing compatibility between different file formats and software applications has created an environment that enables the "…remixability of previously separate media languages".[514] It is what Manovich calls *deep remixability,* in that the 'cutting edge' of design is to 'remix' different hi-end visual design techniques – those related to sound, video, typography, animation, graphic design and so on – into the same design space. OiNK completely rejects this metamedium, and we can get a sense of this by considering how 'deep remixability' has become manifest in the design of some of the biggest recorded music

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[514] Lev Manovich (2006) "Deep Remixability", *Remix Theory*, 8th December, http://remixtheory.net/?p=61

artist websites in the world, and how OiNK's design can be read as a flat out rejection of the techniques of compositional imbalance imbued within these designs.

 Madonna's website (below – **Figure 9.12**) focuses on a visual mix of typographical branding, hi res imagery and an overlaid video player. In terms of 'figure behaviour' video plays automatically and is placed in the top-left-middle of the screen, therefore the user has no choice but to be immediately presented with that particular video. The strong polychromatic saturation of red and blue around the video establish defined edges which create a strong sense of overlapping, with the black video backdrop pushed further into the background through the left-right screen imbalance of empty black on the left and the colour 'pop-art' sketch of Madonna on the right. This generates the illusion that the video object has a greater volume than the other objects. The *mise en scène* encourages users to passively accept an impression of Madonna's desire-brand, delineated by the behaviour of the onscreen objects, the positioning and layering of mnemotechnical planes of depth on the screen, and the use of monochromatic and polychromatic colour contrasts.

Figure 9.12: Madonna website frontpage September 20th 2009 (Madonna.com 2009)[515]

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[515] Madonna.com (2009) "Madonna website frontpage 20th September 2009", 20th September, www.madonna.com

Similar techniques are afoot on U2's website (**Figure 9.13**), which is characterised by a very busy and obtrusive layout. It is populated by figures in the form of images that 'behave' as links to video content, streaming audio pages, hi-res photography, all hosted and streamed from the website, and also to pages where users can purchase the latest releases. The largest object is again placed in the top left of the screen, and the pale shading of the monochromatic grey-cream background template serves to push the depth-plane of the polychromatic interactive images into the foreground.

Figure 9.13: U2 website frontpage 20th September 2009 (U2.com 2009)[516]

Many mainstream artist websites and commercial websites attempt to seduce the user into desiring information in a way that corresponds to a simulated notion of desire that the owners or moderators of that website's *mise en scène* wish to portray. Our analysis of colour contrast, sizing, figure positioning/behaviour and depth cues show how the information is placed strategically in the design space to elicit the 'desired' response, and held immovably on that site's servers. Practices related to user interaction are trammelled along pathways that lead either to these servers or to preferred digital retailers, denying the user of any productive knowledge related to how the information

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[516] U2.com (2009) "U2 website frontpage 20th September 2009", 20th September, www.u2.com

is being generated, or how the user could generate information through the site. Thus, they are *monostable cultural interfaces*, allowing both desire and mnemotechnics to reticulate only through an inflexible organisational infrastructure. OiNK inverted this process by making its visual aesthetic completely *innocuous* – it eschewed the notion of *trying* to create uneven balance to promote a specific assemblage of utility. Further than this, members were given a measure of control of the mnemotechnique of OiNK's design aesthetic. The most direct way in which users could interact productively with the aesthetic was through customisable monochromatic layouts and icon sets that users could submit to the moderators of the site, that all appeared in a pull down menu in each users profile screen. They could then mix and match layouts and icon sets to create an aesthetic they felt comfortable with. Some of the different layouts are pictured below in **Figure 9.14**, **Figure 9.15** and **Figure 9.16**:
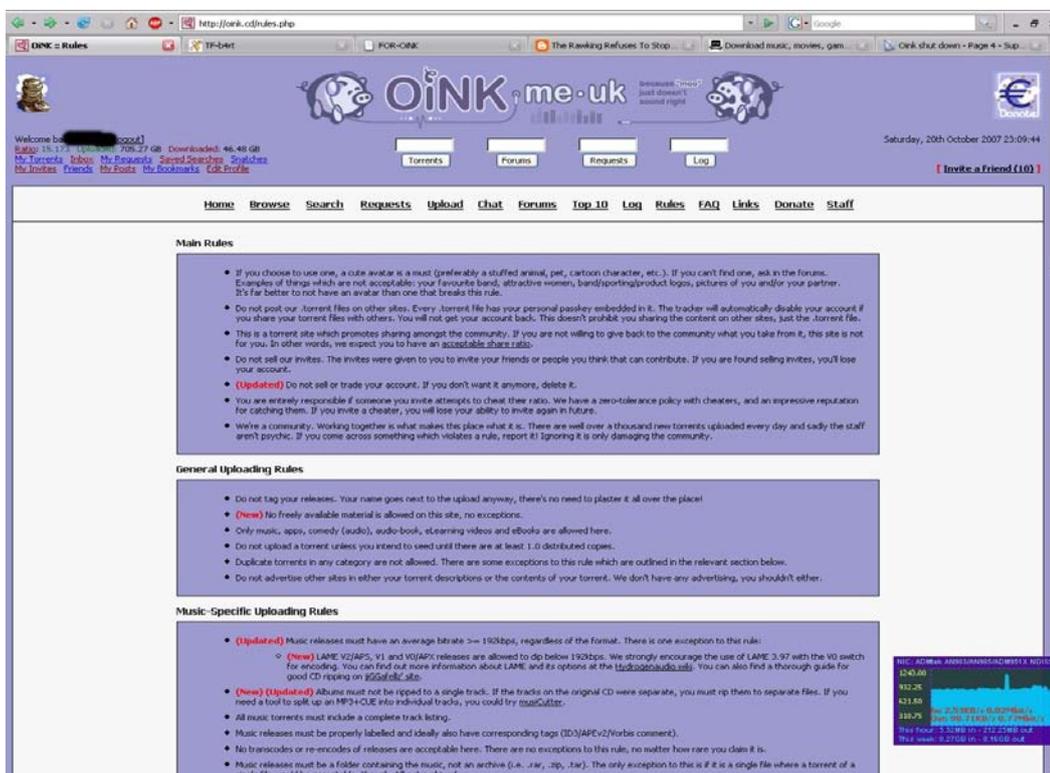
Figure 9.14: OiNK customisable layout: Example 1 (OiNK.cd 2007f)[517]

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[517] OiNK.cd (2007f) "OiNK customisable layout: Example 1", 20th October [private URL].
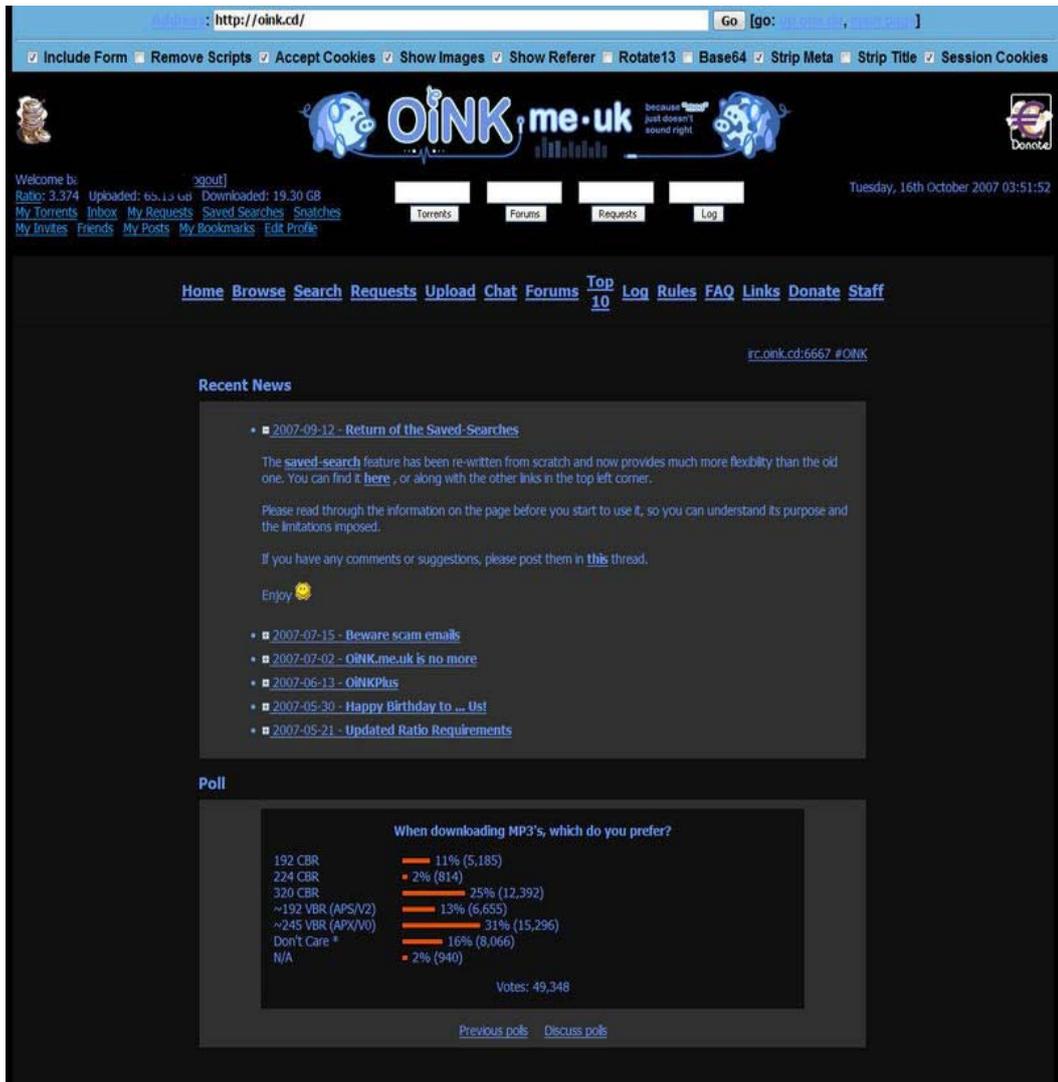
Figure 9.15: OiNK customisable layout: Example 2 (OiNK.cd 2007g)[518]

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[518] OiNK.cd (2007g) "OiNK customisable layout: Example 2", 16[th] October [private URL].
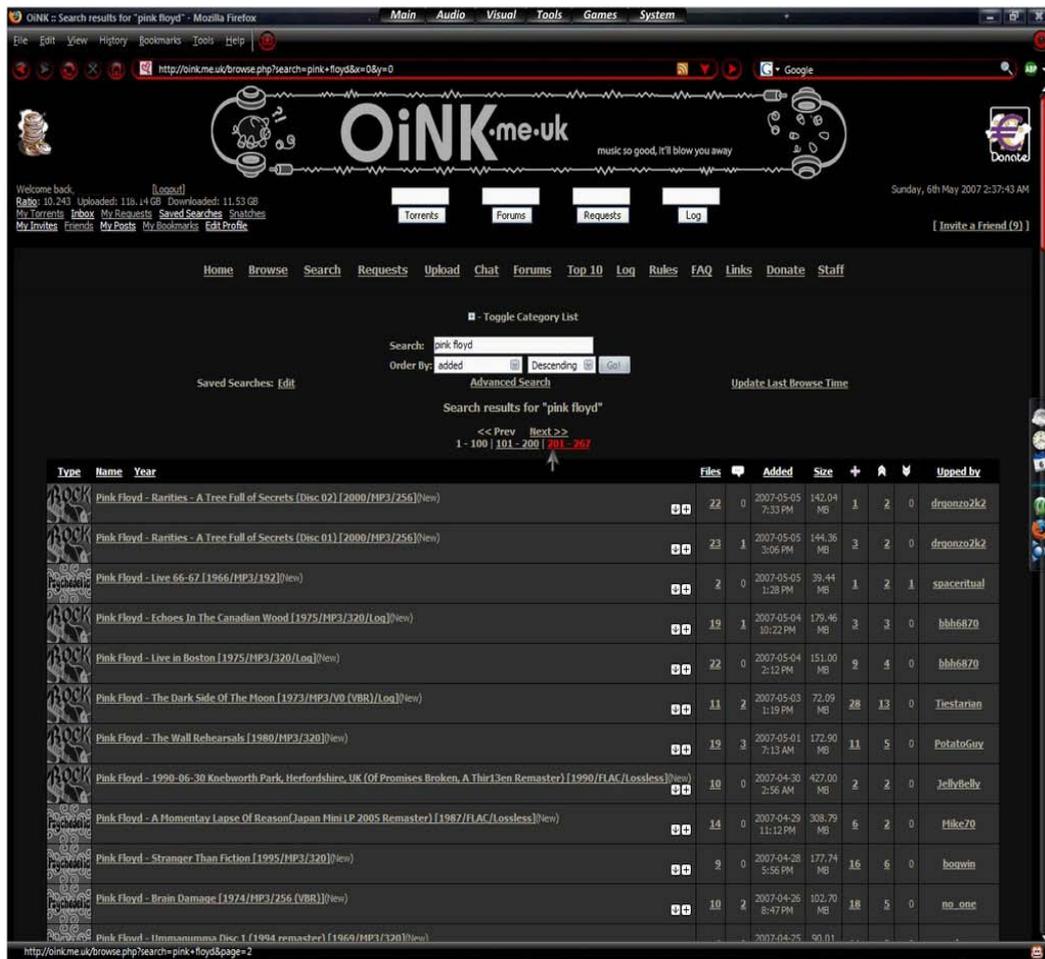
Figure 9.16: OiNK customisable layout: Example 3 (OiNK.cd 2007h)[519]

 OiNK's visual aesthetic and content design focussed on a minimal, pared-back *mise en scène* which prioritised uncluttered interactivity and efficient access to well seeded torrents, and which dismissed the visual seduction techniques common to commercial web design. This approach to design underlines that there was a *transductive relationship* between the collective desires of its members and the way in which OiNK enables those members to interface with information, which centres on a *transindividual ethics of extraction, encoding and sharing recorded music*. This ethics is founded on the idea that that the quality and efficiency of sending, distributing and receiving information within and between the layers of the internet and between people should replace the notion of providing a static http site where users are presented with the sum

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[519] OiNK.cd (2007h) "OiNK customisable layout: Example 3", 6th May [private URL].

total of information and are seduced into clicking buttons and downloading information from the links and servers that the designer has put in place, based upon the designers intentions. One of the reasons why it became popular and engendered such a reciprocal relationship with its members was because it gave them the *space* to make their own mind up about how the site could be experienced. This open, experimental relationship between the individuation of its design aesthetic and the modes of reflection, action and interaction of its members underlines OiNK's operation as a *metastable interface.*

The idea that a 'metastable interface' which prioritised certain techniques of information sharing could be partly instantiated by a minimalist attitude to what we have explored as *mise en scène* was prevalent in the attitudes of the OiNK member's I interviewed. Below, *LordShaft* talks about how the fact that OiNK was focussed on getting 'out of the user's way' gave him the space to move around the site and find the levels of quality he desired in digital music on the site.

> *I think a site like this needs to be streamlined and get out of the user's way. Ultimately, people are there to find content that appeals to them in a quality they find worthy to download. Myself, I've never downloaded anything but lossless content that's been provably and correctly "ripped" from CD.   (Lord Shaft)*

For *MrJONeZ*, the design aesthetic played a pivotal role in three areas – it kept away any notion of 'advertising banners' or the idea that OiNK members were going to be encouraged to use parts of the site, or to link to other 'advertising partners'; it allowed a modicum of customisability that created a vital productive link between members in terms of their input into how the site 'looked'; and lastly, the commitment to a spare design aesthetic allowed the design space to be filled by the productive activity of OiNK's members (which shall be explored in greater detail in OiNK III and OiNK IV), whether through uploading and downloading torrents, commenting on torrents or on the forum, making script add-ons like OiNKPlus, writing tutorials, or submitting logo designs:

> *I think your average OiNK user cares deeply about presentation & they also love to be able to customise their interface with their own ideas on how it should look. The total shunning of any corporate interest is*

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another amazing thing OiNK pulled off…no sponsorship banners, no
fucking annoying pop ups it just seemed to be able to keep itself valid
through its users input & efforts. (MrJONeZ)

MrJONeZ suggests that interaction with OiNK was often very much a matter of active engagement; that OiNK was something members learnt to use and invested in as such. Moreover, interaction with the sites design aesthetic was primarily with its *mnemotechnique* rather than *mnemotechnics*. Members were faced with productive knowledge of how to get what they wanted and how to contribute to the site, rather than with text/audio/video that the designers of a website presumed they wanted, or tried to convince them that they wanted. Making a connection between OiNK 'keeping itself valid through its users inputs and efforts' and the 'shunning of corporate interest' is perhaps most indicative of how the majority of members felt about OiNK's design. There was a general feeling that keeping advertising off OiNK was the best way to ensure that the commitment to sharing high quality digital music could be preserved. It was important that member's were not being 'led' anywhere, and that they could use OiNK's tools to construct their own techniques of sharing and participation between each other, without any sort of 'middle man' shuffling them down particular routinised paths of engagement. *Lordshaft* approach this issue from the point of view of being liberated from 'peddlers' and being guaranteed secure, encrypted usage of the interface:

Not having advertising is a given on such places, for many reasons. I
do believe the "ethos" of a "sharing for sharing's sake" is undermined
by peddling spamvertisements, not to mention the obvious security
implications as well. (LordShaft)

TU talks about how the lack of advertising prevented the site from becoming 'seedy' and that the overall design aesthetic was 'clean and professional':

OiNK did not feel like a seedy section of the internet in any respect:
from the main pages to the forums, the site was clean and
professional… The site was designed better than most of today's Web
2.0 services (TU)

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'Clean and professional' here does not mean 'corporate' but in fact the very opposite – the paring back of anything corporate to ensure quality and efficiency. 'Seedy' is intended to refer to profligacy, profiteering and poor availability and reliability at the expense of users, but not aimed at OiNK's incarnation of 'piracy'. The cuddly toy aesthetic and the simple, customisable layout gave a new OiNK member the idea that there was no 'content' on OiNK's servers, beyond the uploaded torrents and the written views and opinions of its members. It did not give members the opportunity to passively watch a video or rifle through endless hi-res photos and media until they got bored, or attempt to cajole the user into clicking onto obtrusive banners that linked to parts of the site that its owners and moderators wanted its members to view. It introduced the idea that you could not 'view' OiNK, you could only 'use' it, if you were willing to learn how.

In a sense, the incongruity between 'low' design aesthetics and 'high' functionality works as a parody of the website that orients its compositional imbalance on the basis of selling products, and of the millions spent on web design that nevertheless fails to utilise the http function as a flexible interface, delimiting and vulgarising it as a shop window or 'checkout'. The reduction of web art to basic cutesy drawings and photographs functions partly to obfuscate the identity of the site and partly to make the site welcoming, unobtrusive and customisable to all who followed the rules. This renders OiNK in opposition to corporate websites and belies a deeply nuanced notion of information circulation on the internet, whereby http sites function as scaled-down, ultra-efficient, largely anonymous mutable interfaces that enable the user to link to other users in order to distribute and receive large amounts of information quickly and with minimal loss of quality, and it is the intricacies of quality and efficiency in OiNK's carefully managed system of storage, reproduction and distribution that shape the contours of the following chapter.

OiNK III - Tool bearing: The mnemotechnique of technical standards on OiNK

Mnemotechnique of quality standards

Through the *tutorials and FAQs* OiNK made available, which were in the main written by its members, it brought together tools that gave its rapidly increasing membership productive knowledge of how to rip, encode, label, upload and share digital music at standards that had previously been the reserve of smaller pockets of USENET, FTP and 'face-to-face' bootlegging and shn enthusiasts we touched upon towards the end of chapter 7. OiNK drew together some of the most prevalent metastable currents in digital culture – rapidly increasing broadband capacity; BitTorrent filesharing; powerful, freely available software – into a transindividual collective of recorded music filesharing that became manifest through access to the *mnemotechnique* of the hardware, software, communication protocols and committed membership that OiNK enabled. As we indicated in chapter 8, the advent of private ratio-driven torrent trackers had opened up the practice of *uploading* to internet users that had previously only downloaded through applications like Napster, Kazaa and Limewire. For many, including the author of this thesis, OiNK was *the* filesharing collective through which the practice of user uploading became manifest in music filesharing,[520] and it will be put forward in this chapter that it represented the fulcrum of a movement that vastly increased the quality and the availability of online digital music, not just for OiNK's members, but also in the wider digital stratosphere. As OiNK member *TU* comments:

> [OiNK] profited from latching onto the rise of torrents and (necessarily) widespread broadband at the right moment. The site delivered the services required by the newest generation of pirating software in a fashion that made it feel like a community with much to

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[520] See Clayton (2007) *Op cit*; Benn Jordan in enigmax (2008) *Op Cit*; Rob Sheridan (2007) *Op Cit*.

give. The exclusivity also likely played a part - OiNK provided something that nothing else on the internet could claim. (*TU*)

The software tools that OiNK brought into communication were indicative of an emerging techno-social assemblage through which users could create their own utilities and interactions, and where users could prepare, modify and change the functioning in order to achieve different desired outcomes. Most of the tools were either freeware or free software published under the GNU licence, and all built outside of a commercial environment by individuals, usually students or ex-employees of companies, due to dissatisfaction with profit-focused (or designer-focused), rather that user-focused commercial alternatives. Countless constellations of software were synthesised through the processes of filesharing that OiNK comprised, but there were some key software applications that came to define its standards of sharing that were utilised in four different areas: **1) Sharing and uploading. 2) Ripping from CD. 3) Encoding. 4) Labelling and metadata.**

1) **µTorrent**, the freeware client that most members used to manage sharing and uploading on OiNK, and which is the most popular BitTorrent client in the world with an estimated 28 million monthly users.[521] It was written by 23 year-old Swedish student Ludwig Strigeus in 2005, out of a general discontent with bloated torrent clients that used up masses of RAM.[522]

2) **Exact Audio Copy (EAC)** was the freeware that OiNK recommended to rip music from CD and manage the subsequent digital encoding process. It was written by Andre Weitoff in 1998, a student at the University of Dortmund, because he was "fed up with other audio grabbers" and decided to write his own.[523] EAC

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[521]Ernesto (2008b) "µTorrent grows to 28 million monthly users", *TorrentFreak*, 25[th] December, http://torrentfreak.com/µTorrent-grows-to-28-million-monthly-users-081225/

[522] Ernesto (2006b) "µTorrent Interview", *TorrentFreak*, 15[th] March, http://torrentfreak.com/%C2%B5torrent-interview/

[523] Andres Wietoff (2010) "About Me", *Exact Audio Copy*, 14[th] December, http://www.exactaudiocopy.de/en/index.php/information/about-me/
And Wikipedia (2010) "Exact Audio Copy", 28[th] December, http://en.wikipedia.org/wiki/Exact_Audio_Copy

replaced earlier encoding programs around mid-2004 because it can encode .FLAC files (the latest standard in lossless encoding), improve DAE by automatically identifying, correcting and verifying errors, and automatically produce a log file that can 100% prove an accurate rip.[524]

3) Most OiNK torrents used the **LAME encoding engine** to encode the ripped music to mp3, or **FLAC (Free Lossless Audio Codec) audio compression** to encode music to the 'lossless' FLAC format.[525] LAME is generally considered the best 'lossy' mp3 encoder because it of its fast encoding, highly optimised presets, the fact it is supported by EAC and its ability to encode mp3 using the quality-optimised 'Variable Bit Rate' (VBR) method, where more bits are used in difficult-to-encode passages of audio, and fewer bits are used in less demanding passages.[526] FLAC is generally considered to have usurped shn as the highest quality lossless encoder because it is fully patent unencumbered, freely available for all platforms, can be freely integrated into EAC and, most crucially, its internal file structure enables the user to assert that the encoded .FLAC rip is bit-for-bit *identical* in quality to the original CD track.[527]

4) **Freedb** is an open source database of user-submitted tracklistings and other music-release metadata that was the source of much of the labelling of music files and tracklistings within torrent descriptions on OiNK. It was a reaction against the commercialisation of the previously open source CDDB (Compact

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[524] The Traders Den (2010b) "FAQ: Audio Seeding and Trading: EAC, using secure mode", 14th Dec, http://www.thetradersden.org/forums/faq.php?faq=audio

[525] LAME (2010) "LAME –about LAME", 14th December, http://lame.sourceforge.net/about.php

[526] HydrogenAudio (2010b) "Variable Bitrate", 16th June, http://wiki.hydrogenaudio.org/index.php?title=VBR; HydrogenAudio (2010c) "LAME", 15th August, http://wiki.hydrogenaudio.org/index.php?title=LAME; HydrogenAudio (2010d) "FLAC", http://wiki.hydrogenaudio.org/index.php?title=Flac

[527] This is possible because, unlike shn, the FLAC file stores the pre-compressed MD5 hash of the audio stream into the FLAC headers, thereby enabling the user to check the FLAC headers against the original .WAV files, which is a failsafe way of determining that the FLAC file has encoded at exactly the same quality as the CD original. I am indebted to the OiNK user LordShaft for this information. See also: Josh Coalson (2010) "FLAC – Comparison", 14th December, http://flac.sourceforge.net/comparison.html

Disc Data Base), which had been providing freely available, user-submitted tracklistings since 1996, but in 2001 was purchased by GraceNote, who started charging a licence fee to applications that wished to use it, and demanded that licence holders use the GraceNote database exclusively. Freedb is completely free to use and is one of a number of databases that emerged to oppose GraceNote's commercialisation, heavy patents and anti-competition clauses.[528] iTunes currently has a commercial licensing agreement with GraceNote.[529]

Guiding quality: client speed; creating and uploading; ripping and encoding

The key to building its cache of high quality-encoded music depended on OiNK's dynamic management of the disparation between these open source applications and source codes, and the extent to which it was successful in educating its users, many of whom did not have a 'Scene' or USENET/FTP background, in how to integrate these software processes into their filesharing behaviour. In terms of the four sets of tools we have outlined, there were **three sets of guides** available on OiNK that managed the disparation of the tools into one metastable mnemotechnical system where each member had a measure of productive control over the reproduction, storage and distribution of the recorded music they shared, received, discussed and listened to.

The first set included information on improving the speed of µTorrent in order to improve the efficiency of uploading and downloading between members. This could be done in two ways. Firstly, members could make sure they were engaging in what was known on OiNK as 'being clever'. This was done through a process called 'port

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[528] Robert Lemmos (2001) "Access Denied: Companies fight over CD listings, leaving the public behind", *CNET*, 24th May, http://news.cnet.com/2009-1023-258109.html
MusicBrainz is another database that developed out of the commercialisation of CDDB. It performs the almost exactly the same functions as freedb but with a slightly different software base and functionality.
See: MusicBrainz (2010) "MusicBrainzHistory", 14th December, http://musicbrainz.org/doc/MusicBrainzHistory

[529] Apple (2010b) "Apple Licensing Agreement", 14th December, http://images.apple.com/legal/sla/docs/itunes.pdf

forwarding'. For example, a member's BitTorrent client would correspond to a particular 'port' on their modem, and the process of port forwarding would 'open' that port to allow better connectivity. It will be remembered that µTorrent and the other BitTorrent clients were serving millions of torrent users on public and private trackers across the globe; therefore there was a wealth of information on how to port forward all over the internet. OiNK provided links to the best place to learn about it, namely portforward.com.[530] The second way to do this was to optimise the settings in the µTorrent client itself, and OiNK provided both an internal guide for this that was published on its forums, and links to the better guides from around the internet, such as the detailed guide at the Afterdawn forums.[531]

OiNK contained a number of extensive guides on how to make and upload torrents. The most popular guide was written by OiNK member *jiggafellz*, and is included as **Appendix C** of this thesis.[532] The guide details how to make torrents from the digital music on the member's hard drive using µTorrent, and then how to upload that torrent to OiNK correctly. It shows how software such as Audio Identifier[533] and Mr Question Man[534] can be used to find the correct bit rate and encoding quality of the digital music, thus underlining the importance of specific audio quality in the process of OiNK uploading. It showed the member the sorts of information that need to be tagged and provided in the torrent description and how freedb can be utilised to access and retrieve this information. It also contains a link to information about The Scene, enabling less experienced members to become cognisant of how the wider distribution of free online mnemotechnics worked and where it had emerged from.

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[530] See: Port Forward (2010) "Port Forward: FREE HELP setting up your router or Firewall", 14th December, http://portforward.com/english/routers/port_forwarding/routerindex.htm

[531] DVDBack23 (2006) "Guide: Max Out Download Speed Using µTorrent", *AfterDawn*, 25th April, http://forums.afterdawn.com/thread_view.cfm/335210

[532] See: p. 331.

[533] Miriam (2005) "Audio Identifier", *Hydrogenaudio Forums*, 28th March, http://www.hydrogenaudio.org/forums/lofiversion/index.php/t32799.html

[534] Burrrn.net (2010) "Mr QuestionMan", 14th December, http://www.burrrn.net/?page_id=5

The EAC guide to ripping and encoding largely determined and managed the key element of quality that convinced new members that OiNK was worth the effort: the quality of the digital music available through the site. There were a number of other ripping and encoding guides available on OiNK, but again *jiggafellz* guide to EAC was the one most widely used, and is included as **Appendix D** of this thesis.[535] The EAC guide taught the OiNK member how to generate digital music in the lossless .FLAC file format, and also two lossy mp3 file formats that are created using LAME – 'V0' .mp3 and 'V2' .mp3. These three audio file formats were by far the most popular on OiNK,[536] and when considered against the backdrop of 190,000 members, around 215,000 separate torrents[537] and over 21 million separate downloads (if the IFPI are to be believed[538]) by the time of closure, this constitutes a discernable impact on the standards of digital music available online. At the time of OiNK's surge in popularity, between 2006 and 2007, the standard for iTunes file encoding was 128kbps CBR (Constant Bit Rate, meaning that the bit usage stays the same, despite fluctuations between different passages of audio) and most music files found on then-popular P2P filesharing apps such as Limewire would be 128kbps CBR, or sometimes 192kbps CBR, if the user was able to avoid spoof and decoy files. On OiNK, uploading a false or virus-ridden torrent could have resulted in loss of membership. FLAC files are typically around 7 times the quality of 128 CBR, the V0 format has an average bit rate of 245kbps, which fluctuates higher and lower depending on the encoding needs of the audio passage, and the V2 format has an average bit rate of 190, and fluctuates on the same principle.[539] Also, FLAC, V0 and V2

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[535] See: p. 344.

[536] As we can see from the appendix, the EAC guide also teaches the OiNK member how to encode music into the 'Monkey's Audio' and 'Ogg Vorbis' file formats, but music encoded these formats rarely appeared on OiNK, therefore we shall focus on the V0, V2 and FLAC file formats.

[537] See the 'OiNK statistics' section of this thesis: p. 230.

[538] Jacqui Cheng (2010) "OiNK founder free after two-plus years of legal troubles", A*rs Technica*, 25th January, http://arstechnica.com/tech-policy/news/2010/01/oink-founder-free-after-two-plus-years-of-legal-troubles.ars

[539] HydrogenAudio (2010b) "LAME", *Op Cit;* HydrogenAudio (2010c) "FLAC", *Op Cit*.

versions of the same release were allowed to exist on OiNK at the same time, giving users a choice of what file format to download.

Figure 9.17: OiNK FLAC fan art (OiNK.cd 2007i)[540]

The EAC guide also enabled members to generate metadata in the ripping and encoding process in a way that ensured correct labelling, and which generated files that proved the accuracy of the process, enabled the music to be burned back to CD without a loss in quality, and made it easier to add the files to media players. The guide shows how to set EAC to automatically access the freedb database to get tracklistings and other information such as year and genre. EAC also allows the user to choose how the information derived from the database will be used to label the individual song files and the folder that contains the songs, once the music has been encoded. You can enter different commands in EAC that produce different results. Personally, I set EAC to label the folder' artist – year – title', as shown below in **Figure 9.18**:

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[540] OiNK.cd (2007i) "OiNK FLAC fan art", 26th September [private URL].
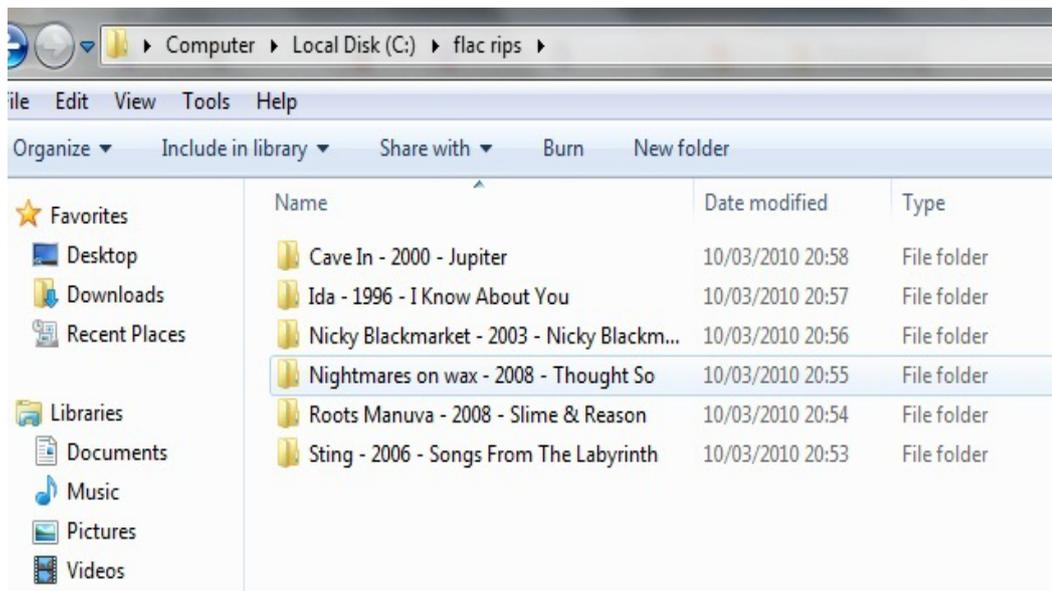
Figure 9.18: File root of FLAC rips on personal hard drive (Private User 2010a)[541]

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[541] Private User (2010a) "File root of FLAC rips on personal hard drive", 22[nd] September [private user location].

I set the individual songs, contained within each folder, to be labelled 'track number – track title',[542] as shown below in **Figure 9.19**:
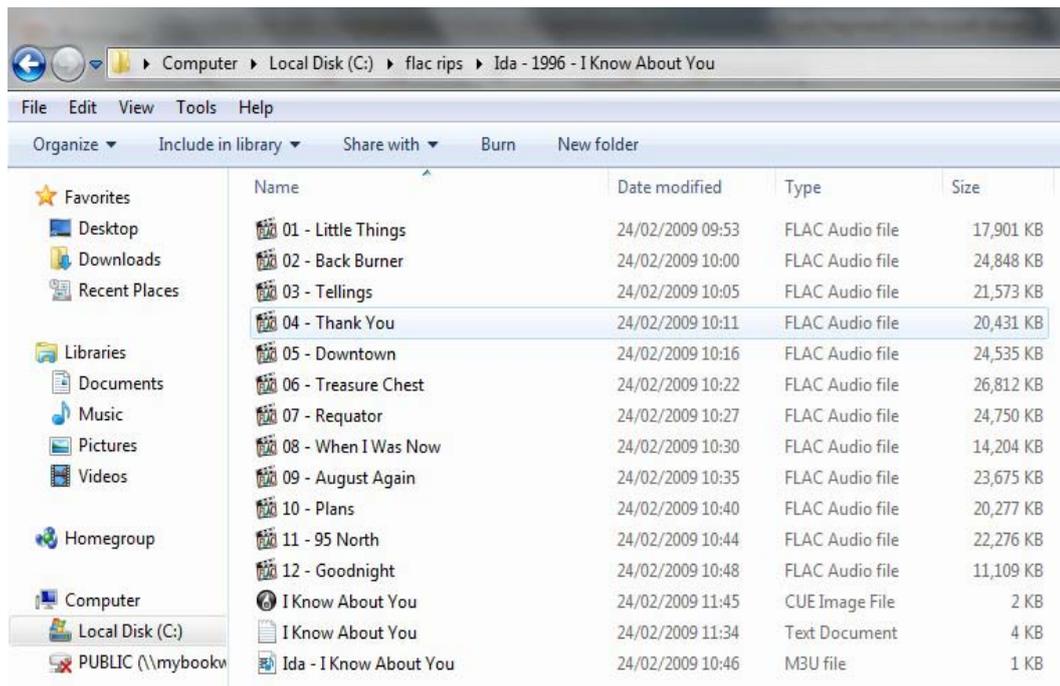
Figure 9.19: File root for Ida 'I Know About You' album on personal hard drive (Private User 2010b)[543]

If we look at the screenshot above we can see three files in the folder, below the 12 tracks of Ida's 'I Know About You' album, which were also generated during the EAC encoding process. The first is a .cue image file, which can be used to burn a CD of the audio data that preserves all the original data that was generated when the CD was originally ripped, such as track order, pregaps, and CD labelling text. The second is a log file, which documents the accuracy of the ripping and encoding process and can be used to determine how close the file is in quality compared to the original. The last file is an .m3u file, which can be dropped in to most media players and will load the all the songs in the correct order, without having to drag and drop all the files or through making the

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[542] The files are encoded in such a way that the numbering ('01' '02' etc.) disappears when the tracks are exported to media players, but still appear in correct album order.

[543] Private User (2010b) "File root for Ida 'I Know About You' album on personal hard drive", 22nd September [private user location].

media player search for them. Although including .log, .cue and .m3u files was not a requirement on OiNK, it was widely expected that these files would be included as the majority of rips came from an EAC source. Also, many members had their EAC set up this way because they had followed the guide, so any rips they uploaded would include this information as a matter of course.

Any OiNK member that followed the guides could apply these skills by contributing to the rapidly growing hydra of private torrent sites that in the coming years would multiply exponentially, which ranged from music sites, film, TV, e-books, e-learning, genre specific sites, quality specific sites and general Scene and non-Scene trackers that offer a mix of everything that can be encoded as text, audio and video.[544] This is particularly pertinent to OiNK because it was one of the first quality-focused 'invite only' music tracker sites to generate hundreds of thousands of members, and therefore it was one of the first sites responsible for diffusing these higher levels of mnemotechnique from the recondite world of FTP, USENET and The Scene through to the busy information pathways of http interfaces and large scale P2P filesharing.

Rising standards in digital music: Mnemotechnical artefacts on earlier P2P, iTunes and OiNK

The 'folder' of the Ida 'I Know About You' album that can be seen in the above screenshot (**Figure 9.19**) constitutes the contents of a typical music torrent on OiNK – high-quality encoded tracks from an album, single or EP, with cue, log and m3u files, added to which would often be hi-res scans of cover and inlay art. If we consider the OiNK torrent as a mnemotechnical artefact, which we expounded in chapter 5 as a *delivery system* that enables access to mnemotechnics, it becomes clear that OiNK contributed to a substantial change in what digital music 'delivers' to the consumer, and also to what consumers could do with what they received. This shift is underlined when the OiNK folder is contrasted with the two most popular mnemotechnical artefacts in

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[544] FileshareFreak (2010) *Op Cit*; BTRACS (2010) *Op Cit*.

relation to accessing digital music up to that point – proprietary retail sites such as iTunes and older generation P2P apps.

Purchasing an album from iTunes circa 2006-2007 offered the consumer a number of audio tracks, encoded at 128 CBR using iTunes .AAC format, which produced lower quality results than V0, V2 and FLAC files made with EAC using the LAME encoder.[545] This music was Digital Rights Management (DRM) restricted through Apple's 'FairPlay' software, which was built into iTunes from its launch in April 2003 in order to persuade the four major labels to sell their music through it.[546] FairPlay allowed music to be played only through the iTunes media player and QuickTime-compliant media players, on five computers that had been 'authorized' by the user that purchased them, and through FairPlay portable players (the only ones in existence between 2005-2007 being the iPod, iPod Touch, first generation iPhone and three Motorola mobile phones[547]), thus substantially limiting the opportunities to share or use the music, even as a 'legitimate owner'.[548] This isolated the experience of accessing, downloading and listening to the music within the restrictions of Apple-sponsored products, giving the user little or no flexibility in terms of how the music was encoded, how and where it could be played back, and its portability between storage and playback platforms, with many commentators underlining the lack of interoperability inherent within iTunes files.[549] If

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[545] Dead Star (2005) "MP3: EAC+LAME vs. iTunes encoder...is there really much of a difference?!" *iLounge*, 25th March, http://forums.ilounge.com/digital-audio-formats/86768-mp3-eac-lame-vs-itunes-encoder-there-really-much-difference.html

[546] John Borland (2003) "Apple's music: Evolution, not revolution", *CNET*, 29th April, http://news.cnet.com/2100-1027-998675.html

[547] Tony Smith (2004) "Apple licenses iTunes to Motorola", *The Register*, 27th July, http://www.theregister.co.uk/2004/07/27/apple_moto_itunes/

[548] Carlisle George and Navin Chandak (2006) "Issues and Challenges in Securing Interoperability of DRM Systems in the Digital Music Market", *International Review Of Law Computers & Technology*, Vol. 20, No. 3, pp. 271–285.

[549] Ken Fisher (2007b) "Is interoperable DRM inherently less secure? The case of FairPlay versus Windows Media", *Ars Technica*, 8th February, http://arstechnica.com/old/content/2007/02/8799.ars; John Gruber (2006) "Interoperability and DRM Are Mutually Exclusive", *Daring Fireball*, 20th June, http://daringfireball.net/2006/06/drm_interoperability

we consider this amidst the backdrop of the iTunes *mise en scène* discussed in the preceding chapter, the iTunes album was a monostable mnemotechnical artefact, designed to fix the user into Apple's storage, playback and retail systems, and rendering the user unable to make a productive impact upon how their digital copy was made, how it could be experienced, and how it could be shared. The user could verify the source of both their download and labelling/ metadata, but that source was closed and proprietary,[550] so in terms of file quality and the potential to use and distribute the file information, the role of the iTunes consumer was one of passively accepting standards that had been defined by an organisational infrastructure that they held no stake in.

As we have seen in chapter 7, from our analysis of how openness can be exploited in public P2P systems, trying to find and download a full album using an older P2P app like Kazaa or Limewire, or a public BitTorrent site, was not a monostable process of individuation, nor was it metastable, but *unstable*. Furthermore, pre-BitTorrent P2P systems tended to fix the music consumer into downloading individual mp3 files, and did not offer the ability to download or upload packaged, verifiable album or single 'releases'.[551] This meant that trying to compile an accurately labelled, archival-standard album was almost impossible, as parts of the album would often come from different sources, and there was usually no way to be sure of the ripping and encoding quality of each song before downloading. They were usually no rules related to quality and efficiency standards and uploading was largely anonymous, meaning that the source of the uploads could not be verified and users could be made accountable for uploading low quality, spoof, or decoy files.[552] The album downloaded from a pre-BitTorrent /public-BitTorrent P2P app or website was typically an unstable mnemotechnical

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[550] Nicola F. Sharpe and Olufunmilayo B. Arewa (2007) "Is Apple Playing Fair? Navigating the iPod FairPlay DRM Controversy", *Northwestern Journal of Technology and Intellectual Property*, Vol. 5, No. 2, http://www.law.northwestern.edu/journals/njtip/v5/n2/5/

[551] Sabrina Zaugg and Marc Fetscherin (2004), "Music Piracy on Peer-to-Peer Networks", in Yuan Soe-Tsyr and Liu Jiming (Ed.), *Proceedings of the IEEE International Conference on e-Technology, e-Commerce, and e-Service (IEEE)* (Taipei: IEEE Computer Society Press), pp. 431-440.

[552] Adela Mlcakova and Edgar A. Whitley (2004) "Configuring peer-to-peer software: an empirical study of how users react to the regulatory features of software", *European Journal of Information Systems*, Vol. 13, pp. 95-102.

artefact, which rendered users' experience of it as passive, but for the opposite reason that iTunes did. Instead of its source being closed and controlled, it was open and out of control.[553] The users could share Limewire music files in any way they wanted, but as we shall see below, OiNK represented an early manifestation of a growing ethical stance amongst filesharers who were unwilling to tolerate the low, unverifiable P2P standards of music file quality, which had not significantly improved between 1999 and 2004.[554]

OiNK, on the other hand, was replete with EAC ripped and encoded torrents that contained high quality, well labelled, verifiable music releases that could be easily and efficiently shared between users and transferred between platforms. As opposed to coming from a fixed-corporate or anonymous source, the torrents had been 'designed' by other OiNK members, with the intention of providing an experience based on an understanding of what other members wanted from digital music and what might improve their experience of it, backed up by the user-constructed guidelines available in the tutorials, FAQ's, rules and forums. OiNK torrents could be downloaded with productive knowledge of their quality and what other data was contained within. There were no proprietary restrictions on playback or interoperability, and members could be confident that the sound quality would be excellent, the labelling would be accurate and they could be quickly added to your playlists. They could be burned to disc with one click of the .cue file, and members could be sure that by continuing to seed the torrent, they were passing the very same levels of quality onto other OiNK members. To an OiNK newcomer, browsing the contents of the torrents on the site, it would have been clear that the site was offering its members the opportunity to build a digital collection of music that could match the standards of CD and LP collections in terms of sound quality, labelling and design. It gave members' new opportunities to find and store high-quality archival-grade collections of music using far less space, to transfer digital music to

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[553] Eytan Adar and Bernardo A. Huberman (2000) "Free Riding on Gnutella", *First Monday*, October, http://www.firstmonday.dk/issues/issue5_10/adar/index.html; Daniel Hughes, Geoff Coulson and James Walkerdine (2005) "Free Riding on Gnutella Revisited: The Bell Tolls?" *IEEE Distributed Systems Online*, Vol. 6, No. 6, pp. 1-18.

[554] Zaugg and Fetscherin (2004) *Op Cit*; Mlcakova and Whitley (2004) *Op Cit*.

multiple platforms without significant losses in quality and to engage in playback and sharing seamlessly, securely and efficiently.

OiNK as the 'next step up' in digital music standards

Within the small pockets of media and plateaus of the internet that directed its gaze toward OiNK, the stereotypical view of the majority of its member's was that of the white, middle class male 'time-rich, cash-poor' American college student. This view was often encumbered with satirical notions of the 'indie kid', 'hipster' or 'geek', replete with the subcultural baggage of musical snobbery and technological elitism.[555] From my active participant observation it was clear that although this demographic did not constitute the majority of OiNK members, it did comprise one of the larger minority groups on OiNK. American college students often had fast internet connections, the ability to keep their computers on 24/7 and the time to learn how to rip and encode music, and create and upload torrents that conform to OiNK's requirements. This cohort of OiNK members were of an age to have experienced all the different generations of P2P and iTunes, to the extent that their familiarity with those applications had given them a clear idea of what they wanted from their digital music experience. Three OiNK members that I interviewed, *beardownboilerup, AJtheSloth* and *TU*, who were all in their early-to-mid twenties and at American Colleges whilst OiNK was going, saw it as the next 'step-up' from earlier generations of P2P and iTunes:

> *I got into Napster first...then Kazaa...then Limewire...then random public BitTorrent sites...then OiNK… one thing that sickens me is the amount of people who aren't big music fans who listen to all the shit files on Limewire and aren't bothered that the cymbals sound like they were recorded underwater… The main advantages [of OiNK] are the*

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[555] *Encyclopaedia Dramatica*, an online satire of Wikipedia, has an extensive entry for OiNK: "OiNK's Pink Palace, or simply OiNK was a super secret UK based gated community, where all the stupid music snobs hung out to download pirated albums and talk about how their taste in music is superior to everybody else's." - Encyclopaedia Dramatica (2010) "OiNK", 14th December, http://encyclopediadramatica.com/OiNK

speed and convenience and the quality and the broad selection. (beardownboilerup)

… in middle school and high school I went through all the motions with Napster, Kazaa, Morpheus…Then in High School I stumbled upon torrents with sites like suprnova and torrentspy, but of course I still had dialup so it was rather horrid. When I finally got my laptop before I went to college, and so that was when I was first able to start getting music fast and it definitely had me listening to music a lot more. (AJtheSloth)

I have been downloading music since Kazaa and moved through a succession of its replacements, but the low quality and availability of releases on the program made me move to purchasing songs off of iTunes soon after their store launched. I mentioned this to a rl [real life] friend who sent me an invite…Simply put, the wide library of OiNK made me stick around and learn how to use torrents and manage ratio. (TU)

Implicit within these chronological accounts of digital music consumption is a deeply held assumption that the proprietary outlets of the music industry did not offer them the experience they were looking for, and had not done so for some time. What is also implicit in these statements, but perhaps more telling of OiNK's appeal and rapid growth, is that OiNK brought together the tools we have been interrogating *at a time* when a vocal minority from the generation that had been brought up on Napster, Kazaa and Limewire were no longer satisfied with the novelty of downloading 'free music', were dissatisfied with the poor standards of quality and availability on both P2P and iTunes, and were both willing and able to put more time and effort into filesharing than they had been used to with previous systems, in order to consume the levels of quality, availability and efficiency they desired.

Both *LordShaft*, who had been an active member of BBS groups in the 80's and USENET lossless audio trading in the 90's, and *TU*, a relative newcomer to high quality audio standards who had learned about FLAC through OiNK, felt that the site was successful,

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both in terms of being an attractive proposition to its members and building such a critical mass of high quality music, because it represented a logical 'next step' for music filesharers looking for a better solution, and who had developed enough knowledge over the years to not be intimidated by having to learn how to use and integrate new software.

> *The high-quality music was likely a factor in [OiNK's] rise, but its requirement by the site was also simply the fulfilment of a new demand. The majority of file-sharing software existing before torrents had been unable to provide any files at such a high-fidelity to the "real" product. OiNK was one of the first to recognize the value of these files (TU)*

> *I think a quality-centric focus was inevitable once the initial "shock" of being able to acquire almost anything people desired began to be replaced with a wish for the content to be of the same "perfect" form provided by purchased media. I can't imagine that even hearing-challenged Napster based traders felt that their 128kbps mp3s sounded "just like" the original CD, even assuming the Digital Audio Extraction (DAE) process used was perfect. (Lord Shaft)*

OiNK was the locus of a disparation between a strong collective desire amongst a large group of disparate individuals who wanted higher quality digital music, a wide selection of it, and the ability to share it efficiently, and the emergence of an inventory of mnemotechnical artefacts, related to filesharing and digital music, that had been individuated with the intention of providing productive knowledge of how to modify them and integrate them with other related open artefacts. The locus of OiNK as a transindividual collective resided in how it *in-formed* these component tools together as a metastable solution, the sensitive proximity of which could be harnessed by the OiNK members, through the individuation of OiNK torrents. OiNK *re-solved* the desire for higher quality digital music *and* the dissatisfaction its members had with systems that limited their interaction with music by showing its members how to re-produce, store and share high quality digital music themselves.

Consuming production in uploading: Protocol and cultural memory on OiNK

These articulations and combinations of code, software, hardware and human agency did not merely underline the fulfilment of a desire to consume particular products or entities, but also an interface to a specific manifestation of internet and computing *protocol*. It will be remembered that we have previously expounded the relationship between protocol and *cultural memory* in chapter 5, where we developed the term to explore the extent to which protocols that govern the spatio-temporal structure of how we 'recall' mnemotechnics through our engagement with mnemotechnical artefacts.

We can get a sense of what 'protocol' might be in the internet climate, and the sort of practices and behaviours implied by the external tools that OiNK brought together through considering Galloway and Thacker's work in *The Exploit*. They draw attention to the 'layer functioning' of the internet as a primary exemplar of how protocols control the operation of different functions and types of information, and how individuals orient protocols in order to produce and disseminate different types of information.[556] The 'application' layer of structures the protocol of how we are able to form emails, text and graphic design, and how we can communicate and circulate information through HTTP, FTP, IM and P2P; the 'communication' layer (IP/TCP) forces the information through strict mathematical models of parsing and encapsulation as they deliver the information to the (un)intended nodes in the network; whilst the 'physical' layer of processors, wires and cables determine the speed at which we send and receive, and the quantities that we can send and receive. The 'surface' layer sits on top and refers to humans directing the constellation of communications, applications, software, hardware and cables through typing, pointing and clicking.

Due to the fact that the public understanding of the technical operation of the layers of the internet, software and hardware is largely confined to a minority of enthusiasts and experts, Galloway and Thacker argue that *protocological control* has become the

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[556] Alexander R. Galloway and Eugene Thacker (2007) *The Exploit: A Theory of Networks* (Minneapolis: University of Minnesota Press).

currency by which Governments and large conglomerates maintain control. The old idea of 'top-down' or unilateral control is diffused through the internet and appears as a less proscriptive pluralism, where the seat of power is less visible because to become aware of it, one must be able to understand how the collective apprehension of information is constrained and expressed through the protocols of the internet. As they put it, large conglomerates and Governments have realised that "...to become unilateral, it is necessary to become multilateral, but via a veiled, cryptic sort of multilateralism. To become singular, one must become plural."[557]

They address the problem of how it might be possible to overcome protocological control in networks. The trick is to not try and fundamentally change the technology of the protocol, but to try and 'exploit' gaps and opportunities that the flux condition of networks present. Protocol can be exploited though the related practices of 'replication' and 'cryptography'. That is, an assemblage of socialised desire that wishes to exploit protocol must do so by replicating itself, but must encrypt this replication through techniques of constant change. What Galloway and Thacker are advocating here is a search for gaps in the online system that exists between humans, hardware, software and internet protocols, which enable the socialised desire of humans to develop around the *mnemotechniques* of replication and encryption. In other words, to find techniques of collective involvement that at once teach those involved how to reproduce the contours of the group they are involved with and therefore reproduce it outside of hierarchical (pluralistic) command and control.

Through OiNK, digital-mnemotechnical artefacts (hardware, software, the internet) were repositioned as objects of interrogation that not only achieved an exploit through replication and encryption; but through inculcating a nascent metastable circuit that opened up a more extensive set of relations – the production, reproduction, distribution, storage and circulation of mnemotechnics – to a desire emerging from a collective understanding of the mnemotechniques of the internet that OiNK itself instantiated through its guides and tutorials. That is, OiNK *exploits* the layered

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[557] *Ibid*, p. 9.

functioning of communication protocols, software, hardware and humans in such a way as to give its members dynamic control over changes to the site itself and how the music it provides access to is replicated, but also over how music is ripped from CD, encoded, labelled, archived, stored and distributed, and it is the extensive access to the mnemotechnique of these processes through the FAQ's and Tutorials that provide this deeper level of exploit.

The exploit that OiNK achieved was at the same time an integration of a collective empowerment amongst its members; an opportunity to invest time and attention into their relationship with music that was increasingly absent from the concentrated and targeted practices of mainstream retail and radio, the rapidly diminishing world of independent retail, the restrictive world of online retail and the insecure, anonymous nature of pre-BitTorrent and public-BitTorrent filesharing. *MrJONeZ* was a little older than the college kids, had been a hip hop DJ for 15 years, and had been trying to share higher quality digital files with like minded individuals for most of that time. For him, the appeal of investing time and attention in uploading new music to OiNK stemmed from the parallels he drew between the OiNK environment and the 'crate diggin' hip hop culture[558] of finding and sharing rare music:

> *I was coming at [OiNK] more like a B-Boy you know constantly trying*
> *to one up the last guy with something rarer than his upload; it was*
> *just like crate diggin culture for me… I was swapping beats with guys*
> *just like I used to do in clubs way back when the environment was also*
> *key, you knew the people talking where there for all the right reasons,*
> *so it cut out a lot of bullshit. (MrJONeZ)*

For *MrJONeZ*, this was Old Skool hip hop culture gone digital, and he was inspired to be as careful and meticulous about his uploads as possible because he enjoyed garnering

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[558] The term 'crate diggin' refers to record collecting most associated with hip hop culture, but practiced in other popular music cultures i.e. searching through 'dusty crates' full of records (crate diggin) in independent record shops, usually to find new beats to play at clubs and to sample in production, or to collect for personal playback. Haze (2005) "How Many Of You Know About Crate Diggin? What Does Crate Diggin Mean To Me?" *Low End Theory*, 7[th] April, http://thelowendtheory.blogspot.com/2005/04/how-many-of-you-know-about-crate.html

the respect of the other 'serious' uploaders on the site, and would give respect when others met those standards: "*They were there because they took music as seriously as I did, you had to be really interested in such things to go to such efforts.*" Many of OiNK's members uploaded because they wanted to engage in processes of reciprocity and active engagement between themselves and the other OiNK members, and between themselves and the hardware and software artefacts they were using. They wanted to treat the ripping, encoding, labelling and torrent creation process as a labour of love, just as others had done whom they had downloaded from, and in order to contribute to a community that had given them access to vastly higher standards of quality *and* the ability to learn how to meet these standards themselves. A major reason that this capacity of enjoying uploading flourished on OiNK was due to the comments section at the bottom of each torrent page. The below screenshot (**Figure 9.20)** sees *MrJONeZ* debating the quality of the labelling on a torrent that contained DJ Shadow's 'Diminishing Returns' 2 disc set, which took place on that torrents' comment section on The Successor with some other members, but does not differ much from the quality of OiNK conversations. JONeZ is arguing that it should have been labelled 'hip hop' rather than 'trip hop':

JONEZ 💰 (User +) PM   2009-07-01 16:05:14 BST (68 weeks ago) #372831 ⬆

Lovely thanks but there really is no such thing as trip hop, this is hip hop baby. Trip hop was a name conjured up by a lazy British music journalist in the mid nineties when faced with one of Shadow's first releases which was Shadows take on hip hop but because it lacked lyrics the journalist was clueless as to what he was reviewing & thought it clever to come up with the tag trip hop. Schools out.

Quote

💰 🌭 (Power User +) PM   2009-07-01 16:30:23 BST (68 weeks ago) #372839 ⬆

Considering DJ Shadow is from California, I'm gonna doubt that it was originated because of one of his albums (though I'm sure he was one of the first people categorized under such a genre). Actually, I've heard many times that Massive Attack's 1991 release was the beginning of the British "hip hop movement" which would later be coined as "trip hop". At least you got the time line and locale right.

Thanks for the release.

Quote

🐢 🍰 (User +) PM   2009-07-01 19:08:37 BST (68 weeks ago) #372919 ⬆

interesting, thanks 🎁

Quote

(Power User +) PM   2009-07-01 21:13:08 BST (68 weeks ago) #372968 ⬆

That's one brilliant album!

Quote

JONEZ 💰 (User +) PM   2009-07-02 10:39:22 BST (68 weeks ago) #373226 ⬆

atila you do know that it was Britain that made Shadow famous right ? It is musical history that a reviewer from mixmag coined the phrase trip hop. Do some research on the subject sir you will find I'm 100% accurate with facts aswell as my time line. It had nothing to do with Entroducing it was more likely used to describe the 'What Does Your Soul Look Like EP' or even possibly the 'Influx' single.

"Trip hop (also known as the Bristol sound) is a term coined by British dance magazine Mixmag , to describe a music al trend in the mid- 1990s ; trip hop is downtempo electronic music that grew out of England 's hip hop and house scenes. "

Last edited by JONEZ at 2009-07-02 13:35:42 BST

Quote

(User +) PM   2009-07-02 18:09:12 BST (68 weeks ago) #373327 ⬆

Awesome-o thank you

Quote

Figure 9.20: Comments section for DJ Shadow 'Diminishing Returns' on Successor (Private Music Tracker 1 2009d)[559]

It was these sorts of exchanges and the challenge of getting all the details right in an upload, so that no one could find fault with any of the information in the torrent or how it was presented, that many users revelled in, as *MrJONeZ* explicates here:

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[559] Private Music Tracker 1 (2009d) "Comments section for DJ Shadow 'Diminishing Returns' on Successor", 1st-3rd July [private URL].

I really invested a lot of time in OiNK, I spent time trying various uploads & getting more creative with each one, like adding more info & then eventually adding images like album covers for people, it was like trying to impress teacher in art class as you would receive pleasing comments from users on your presentation, & when you're a tart like me this matters! It became very time consuming but it was always worth the extra effort…it is very much a pat on the back thing which you can get right into enjoying - fame amongst geeks is well earned fame in my experience (MrJONeZ)

MrJONeZ had an affinity with the OiNK community insofar as he was sure that other members had the same productive knowledge of the practices that brought OiNK together as him, evidenced by the quality of the torrents on the site and the discussions he could partake in. He sensed that he was sharing in a collective effort to propound a deeper interaction with music, with the *cultural memory* of it, through the different ripping/encoding/uploading/sharing tools and skills he and other members engaged with, which impacted heavily on their secondary retention of the digital music they were sharing. This collective desire and apprehension of cultural memory was also felt by those who had little experience of high quality encoding standards and archival collecting. *B-Random*, who learnt how to rip, encode and upload through OiNK, also speaks below of the hours he put into his uploads.

…well since I'm a perfectionist (OiNK converted me) when it comes to that stuff [uploading], it was my civil duty to make sure everything was labelled correctly…it was very time consuming, to make sure everything was perfect, I would spend hours upon hours organizing my music with iTunes, making sure all the track titles were capitalized correctly and were spelled correctly. I became almost obsessive, for better or worse. It was worth it – I still have my collection on my external hard drive. (B-Random)

The final sentence in the B-Random quote gives us an insight into how the uploading process had an impact upon his relationship with the music he carefully reproduced, labelled and shared – the cultural memory that was created through the careful

processes of uploading finds a repository in the perfectly ripped, encoded, labelled and stored library of music that B-Random still has on his hard drive, and which he can share through another BitTorrent tracker again at anytime through enacting the uploading skills he learnt through OiNK.

Another phrase that stands out is: '…it was my civil duty to make sure…everything was perfect'. We can elucidate what it might mean to have such a strong conviction if we consider what happens when members of a community are given the freedom to generate what is produced by that community *through consumption*. The uploading infrastructure which OiNK made explicit was at the same time a *desiring infrastructure*, an inventory of mnemotechnical artefacts that, when coiled together, amplified the notions of cultural memory that the enthusiastic OiNK uploader could illicit from their interaction with music on the site. Each member's uploading contribution implicated them as a vital and active member of the OiNK community; as people whose modes of reflection and action were recognised and appreciated by the other members. This gave them the conviction to invest time and attention in uploading at the highest levels of quality possible. This highlights the difference between imposing a pre-determined technique that users can only access after production, and enabling users to *consume* the processes of production through providing access to mnemotechnique. Instead of consumers feeling detached from the supposed communities inherent within the organisational structures of retail and broadcasting, they have an active desire to contribute to a community which they perceive to be active and vital, for the very reason that they have been encouraged to manage the excess of their collective individuations *through their collective acts of consumption*.

It is a conviction of this thesis that in the digital era, for a 'community' or 'collective' to become transindividual it must be able to successfully open up the mnemotechnique of how it is produced to the productive capacities of its members, through enabling them to consume and thereby delineate the metastable individuation of its productive future. These processes of 'consuming production' within communities achieve an exploit through turning the sort of diffuse pluralism that Galloway and Thacker warn against into transindividuation – a metastable disparation between the collective desires of those involved, and the open productive capacities of the mnemotechnical artefacts

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that the community depends on. *LordShaft* felt that OiNK propounded 'egalitarian attitudes' through such processes:

> *Most of these sites [OiNK and its successors] have expended considerable time and energy towards the education and support of users who aspire to learn how to perform proper DAEs [Digital Audio Extractions] and configure their toolchains and tagging systems to produce coherent and archival grade copies for others to enjoy, which to my mind, is the very embodiment of egalitarian attitudes. These "elitist" sites have provided knowledge and toolchains to formerly "ignorant" people to be able to make their own archival quality backups of the music they love. (LordShaft)*

We can situate this appropriation of 'consumer tools' within the tradition of hobbyist groups that have formed around technology. Such groups, particularly 'audiophile' groups from the LP and CD era that, in some ways similarly to OiNK, prioritised 'audio quality', have been heavily criticised for making epistemic claims to 'audio perfection' that have been exposed as illusory by scientific and engineering methodologies.[560] The tendencies of users in these groups to present themselves in line with Kantian aesthetics as 'disinterested' individuals making 'analytical evaluations' of the sound quality of audio tools and equipment have been reconceptualised by a critique developed from the work of Pierre Bourdieu and Herbert Gans, which sees such claims as value judgements created by the hobbyist culture surrounding the tools, which amount to judgements in 'taste' and 'cultural capital' that are about social standing within the community, and which are not commensurate to 'audio perfection', let alone disinterested analysis.[561] Although there were OiNK members who prioritised 'hi-fidelity' perfection over anything

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[560] Marc Perlman (2004) "Golden Ears and Meter Readers: The Contest for Epistemic Authority in Audiophilia", *Social Studies of Science*, Vol. 34, No. 5, pp. 783-807.

[561] Kieran Downes (2010) "'Perfect Sound Forever' - Innovation, Aesthetics, and the Remaking of Compact Disc Playback", *Technology and Culture*, Vol. 15, No. 2, pp. 305-331. See also: Immanuel Kant (1987) *Critique of Judgement* (Indianapolis, IN: Hackett Publishing), p. 7; Herbert J. Gans (1974) *Popular Culture and High Culture: An Analysis and Evaluation in Taste* (New York, NY: Basic Books); Pierre Bourdieu (1984) *Distinction: A Social Critique in the Judgement of Taste* (London: Routledge & Kegan Paul).

else, *LordShaft* being a prominent example, we can see from the above investigation that most members interviewed used the notion of quality to refer to standards of DAE ('CD quality' rips) rather than total perfection in sound, and discussed the term in relation to concepts such as availability (i.e. of an archival library of music), efficiency (getting music faster) and reliability (absence of spoof and decoy files). Furthermore, the members interviewed openly make value judgements and do not claim to be disinterested users, as we can see most clearly from *MrJONeZ and B-Random*'s openness about their cultural attachment to the pastime of indulging in OiNK uploads and spending time providing them for others. We have seen from our comparison of the OiNK album file, the iTunes album file and earlier P2P files that the advantages of using OiNK were not just about 'audio quality', but also 'file quality' – the inclusion of artwork, .m3u, .cue and .log files; and 'sharing quality' – the ability to efficiently and openly share the files without DRM.

Epistemic contestation of OiNK's tool-chain was not a major individuative impulse in the community, and many saw the improvement in audio quality as part of a reliable package that gave them a better overall experience than what was otherwise available. It was reliable, quick, uncluttered, the files were fully interoperable, and the system had the added bonus of being managed and modulated by the members themselves. Strictly in terms of 'value systems', OiNK finds a nearer neighbour in what can be termed 'nostalgia' groups forming around computing practices, such as that of the TRS-80 computer, studied by Christina Lindsay.[562] Marc Perlman accounts for the inscription of value in these communities as "…activity over passivity; do-it-yourself over consumerism; skill over expediency; frugality, simplicity, and reliability over wasteful complication; and the pleasures of curiosity and involvement over the standardized goods corporate behemoths foist upon a mass market."[563] The major difference was that instead of engaging with such principles for nostalgic purposes, OiNK members were doing so to produce a system of recorded music circulation that *improved upon the then-current consumer compromise in physical, legal-online and illegal-online circulation*.

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[562] Christina Lindsay (2003) *Op Cit*.

[563] Perlman (2004) *Op Cit*, p. 784.

Moreover, OiNK members were no longer reified as just the 'customer' or 'listener', who had to experience music through a CD player they had no productive knowledge of, or through 'high-end' components where value was fetishised around false claims of 'audio perfection'; or via anonymous, insecure P2P applications they had no vested interest in; or through iTunes, which reticulated their experience within the restrictive and passive training arcs of Apple Ltd. Their cultural memory of listening to and consuming music was now encompassed within the 'learning curve' (rather than 'training arc') of their experiences as ripper, encoder, labeller and uploader, and their encounters with sharing, debating and discussing the quality standards of OiNK torrents and the music and metadata contained therein.

OiNK IV - The value of a digital music archive: Interacting with music through OiNK.

OiNK's reputation was built upon a rapid and continuous influx of new torrents containing new, old, rare and deleted music of all genres, sources and high-quality file-types, and also on the certainty that its members could download these files quickly and efficiently at all times - something that required OiNK to somehow ensure that its members were willing to keep their computers switched on, their BitTorrent clients open and their OiNK torrents seeding for long periods of time. OiNK provided an initial incentive for its members to upload new torrents and to share them continuously through its *ratio system*. We have looked at minimum ratio requirements for private trackers in chapter 8, but the incentive for most OiNK members did not centre on merely keeping to the minimum ratio – on uploading just enough to keep their accounts alive - but rather on making sure they had uploaded *more* than they had downloaded. More precisely, many members desired a large 'buffer' which they could use to freely download anything without having to worry too much about their ratio score, leaving them free to explore and indulge in the vast library of OiNK. Furthermore, as we shall see, many members committed to 24/7 uploading out of a desire born from a commensurate realisation their modes of existence, expressed through OiNK, formed an integral part of the site's desiring infrastructure.

In this chapter we shall look firstly at how the ratio system provided an initial incentive that increased the quantity of high-quality digital music releases on the site, and how a 'transindividual ethic' which valued archiving, collecting, uploading and sharing was established beyond the requirements of the ratio system, with members uploading new, old, rare and deleted music releases regardless of 'incentive', because they merely desired to contribute to the OiNK community. Secondly we shall look at how the ratio system gave the new user an immediate incentive to continuously share their OiNK torrents over long periods of time. This practice also became a strongly ingrained ethic within the OiNK community that transcended the requirements of ratio, and in this respect we shall look at the oscillation between OiNK members' modes of reflection and action, and their *temporal interaction* with digital music and related technology.

Discovering music: The ratio system and 'transindividual ethic' on OiNK

In terms of finding new material to upload, which was the quickest way to improve ratio, some members were at an advantage, namely the archival collectors who often had access to complete discographies and libraries of rare and out-of-print music, also those that worked within the recording industry that had access to promos and advance copies of new releases, and those that had access to The Scene or to non-Scene lossy and lossless trading groups, which were still flourishing on FTP and USENET. From my participant observation as an active member of OiNK for over a year, it was clear to me that between the aforementioned groups a large proportion of the history of recorded music had been uploaded to OiNK in a very short period of time, and new releases would be uploaded long before most members had even heard the music. Although this left the remainder of the OiNK membership (which constituted most of the members) at a disadvantage, such was the desire to participate in OiNK that it also created an intense clamour to find things to upload. Members were inspired to look beyond their own collections, to scour obscure sections of the internet, to explore their parents and grandparents music collections, and in some cases to go as far as borrow music from their public libraries just to upload it, as these members outline:

> *I upped all my old CDs not up, and I went to the library, grabbed 20 random CDs, brought 'em home, ripped all to FLAC and converted to various mp3 formats (trucks)*

> *When I first got an invite I was in my house where I go to Uni so I really didn't have anything to rip... So I scoured the sites on vuze search for reggae that wasn't on here, with limited success but I think I got a couple of gigs out of it so I was happy enough with that buffer... I remember I got ridiculously excited once when someone started DLing a FLAC I had found. Then I went home I got down to ripping my dad's classical collection which I still haven't finished doing (Sebington)*

Back when I still had closed ports I ripped my parents' salsa collection

out of desperation. Did not go down too well here (olenpriit)

As well as acting as a catalyst for these members' own journeys of musical discovery, the desire to add to OiNK's already-burgeoning music collection - music that was often beyond the reach of even the archival collectors and Scene/industry insiders – contributed to bringing rarities, out-of-print releases, test pressings, one-off releases, limited edition releases and obscure/unheard-of music and artists *ad infinitum*, back into circulation; music that had previously been considered 'lost'. In a related sense, it also brought those who had not been collectors or purveyors of high standards in DAE before OiNK into transindividual connection with the more experienced collectors on the site, enabling them to appreciate and experience similar modes of existence in relation to valuing care and attention in the processes of reproducing, storing and distributing music.

While this ratio-inspired uploading of 'ultra-rarities' played an important role of 'filling the gaps' in OiNK's already extensive collection, those who had large collections also wanted to build a good ratio, and it was these members that were responsible for the 'core' of OiNK's music collection. *MrJONeZ*, below, points out that due to the strict rules regarding the quality of uploads and the appeal of an already extensive collection, the hip hop collectors and enthusiasts that he had been keeping in touch with over the years, through a variety of different websites and filesharing groups, could now all be found in the same place: *OiNK*:

> *I think it made it easier to find quality music all in one place, those of*
> *us who had been on the net since the mid 90's were doing a good job*
> *at connecting with each other via blogs or whatever but it was*
> *difficult. OiNK definitely changed that for all of us; it rounded us all up*
> *like happy cattle. It linked me with like-minded individuals who were*
> *simply an artist search away. (MrJONeZ)*

MrJONeZ' discussion of being 'linked' to 'like-minded individuals who were simply an artist search away' is crucial here. As well as the generic metadata searches and external links to musical metadata and content that OiNK provided through tools such as

OiNKPlus that we touched upon in chapter 1, the individuative processes of 'discovery' that most members went through to find new music on OiNK often relied upon some sort of interaction with OiNK's membership, which contained long-term archival collectors, genre enthusiasts, and those that had extensive knowledge of particular artists and musical movements. This being so, the mnemotechnique of discovering new music, new genres, artists, albums and singles was made accessible through the high levels of knowledge that existed amongst OiNK's members. In the same way that OiNK's members could generate a sense of collective desire around protocols that governed the uploading of music, there was a related set of protocols that opened out the spatio-temporal structure of searching for and discovering music using OiNK's interface. This deeper engagement with cultural memory was made accessible because OiNK made it possible for members to learn about music through observing the activity of other members, by following their comments on the forums and on the comments sections of individual torrents, and through observing their uploading/downloading activity.

Below is a screenshot (**Figure 9.21**) of my user profile on Successor, which can be used to explicate how the same processes worked on OiNK. [564] Each member's user profile could be openly viewed by all other members on OiNK, and although there was no requirement to reveal any information relating to personal identity, the profiles showed a wealth of information regarding that member's contribution to OiNK.[565] Here, as we can see, members could find out how much data other members had uploaded/downloaded and their ratio score. The profiles were also 'interactive', insofar as they showed how many torrent comments and forum posts members had made, and how many individual torrents they had uploaded/downloaded. It was also possible to 'click through' to view these comments and posts, and look at which torrents they had uploaded and downloaded. This meant that members could identify other members

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[564] The following three screenshots are all taken from one of OiNK's successors. Again, I have picked examples of processes that were identical to those on OiNK, despite the aesthetic being very slightly different. I have done this due to the fact that OiNK screenshots of these processes are no longer available.

[565] It was also possible to hide most of the profile information relating to OiNK, but most of the users did not do this.

that they trusted, through viewing their uploading/downloading history, and through deciding whether their comments in the torrent pages and forums could be relied upon.

Figure 9.21: Personal profile page on Successor (Private Music Tracker 1, 2010f)[566]

Also, we can notice the 'send message' button at the bottom of the page. This enabled members to send each other private messages, and we can see one of the ways in which this worked in practice by viewing the screenshot below (**Figure 9.22**). This is a message

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[566] Private Music Tracker 1 (2010f) "Personal profile page on Successor", 22nd September [private URL].

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I received from another member who had been observing my user profile after he'd noticed I was downloading a torrent he had uploaded, and had been tracking my uploading and downloading behaviour. He had noticed some crossovers in musical taste between us both, wanted to let me know he had downloaded one of my torrents and to direct me towards more of his torrents, which I could also track through viewing his profile.

Figure 9.22: Personal message from a fellow Successor member (Private Music Tracker 1, 2010g)[567]

OiNK's capacity to overlay its user profiles, discussion forums, private messaging and comments sections onto a set of productive tools meant that communication between members was done with a keen awareness that it was possible to learn about music from people who understood how to use these tools and thereby were starting from a relatively 'expert' standpoint, but also that the music these people were discussing was readily available through an interconnected layer of the protocols that OiNK brought together. This recursive catalysis between getting to 'know' certain members through tracking their uploading, downloading and commenting behaviour and the diffusion of

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[567] Private Music Tracker 1 (2010g) "Personal message from a fellow Successor member", 22nd September [private URL].

productive knowledge regarding how to search for music was played out much more extensively on OiNK's forums. Its structure was the same as most other 'web forums', with members being able to post on threads in different categories such as 'music chat', 'general chat' 'serious discussion' etc, and all the tutorials could be found in the 'Internet, Tweaks, Tutorials' section of the website. Unlike other forums, particularly in the music section, discussion could be directly linked to OiNK torrents and knowledge of the uploading/downloading/commenting behaviour of each 'poster' was available through the member profiles.

For *LordShaft*, OiNK's major strength was its capacity to conjoin discussion about music to the efficient and high quality processes of distributing that music. For him, what set OiNK apart from other filesharing systems "*…comes down to the forum communities for the purposes of content awareness and dissemination.*" *LordShaft* also felt that this close relationship between the mnemotechnique of tool bearing and the mnemotechnique of searching for and discovering music was what inspired the community involvement on OiNK – that is, the long-term commitment to uploading, downloading and sharing knowledge about music beyond a concern for ratio and outside the monetised notions of information exchange and targeted advertising that Google, Facebook and MySpace used to build their 'communities':

> *People often glibly speak of "communities" like it's a bullet point item in a marketing document, but I think with something like music trading, it's an inevitable part of the experience. Music is almost inherently a communally experienced art form, and there is nothing available that can replace the exchange that occurs between people who get to "know" each other via their postings which reveal not only their likes and dislikes, but exactly how/what/why they like/dislike about these things under discussion. (LordShaft)*

OiNK members actively participated in the site through becoming beacons of knowledge for certain artists and genres, investing in a collective desire to expand OiNK's library and to express their unique modes of reflection on music through providing knowledge and engaging in debates on the forums. We can see how this worked in practice by observing the forum screenshot below (**Figure 9.23**). *LordShaft*

and some other members are having a conversation about the classical composer Olivier Messiaen. The original poster provides extensive information about each Messiaen release that is available on the site. The title of each release appears in bold purple, which means these are 'interactive' links to the torrent page for that release. *LordShaft* then discusses a recent experience of hearing one of the pieces in concert, recommends a Messiaen box set and asks if anyone could upload a high quality version of a particular recording. One of the forum moderators requests for a FLAC version of the box set to which *LordShaft* refers to be uploaded, providing external links to the appropriate versions. *LordShaft* then rounds off the discussion by providing yet more biographical knowledge about Messiaen and his work, and a link to where one of the best Messiaen recordings can be purchased.

yes.
in honor of his birthday some faculty here performed the quartet for the end of time.
straight up awesomeness.

Report Post - Quote

Thank you.

Report Post - Quote

Bravo.

I'd just heard _Turangalîla-Symphonie_ for the first time live here at the Walt Disney Music Hall under Gustavo Dudamel, and I cannot express enough delight about the piece. It was a packed orchestra (103 players, including Jean-Yves Thibaudet on solo piano and Cynthia Millar on the wonderful little ondes martenot - both gave a pre-concert talk about their relationship with the piece and Messiaen himself.

Messiaen's fondness for birds was no secret, but many of the movements incorporate the same kind of short phrases between instruments that completely evoke being amidst various birds calling to each other.

This piece used the immaculate acoustics of the hall to perfection - the dynamic range of this piece is beyond words, with many elements of percussion modulating their strikes from barely audible even just 3m/10' feet away (I sat directly behind the orchestra, facing the conductor), to thunderous. I particularly enjoyed how Messiaen avoided recycling and regurgitating the themes (in toto) during the final movement, which was a stunningly rousing conclusion worthy of any action-packed blockbuster. This is not iTard earbud tunage, to be certain.

I've listened to almost all of the recordings ever made of this (I have copies of the DG 32 CD set as well as the Warner 18), and none of them were even close. I'd appreciate anyone with proper copies of the pre-1971 recordings.

For Messiaen fans in general, check out the 1950s recording of him playing his own works on the organ (his "home" instrument).

Report Post - Quote

LordShaft wrote:

> For Messiaen fans in general, check out the 1950s recording of him playing his own works on the organ (his "home" instrument).

gonna do this. messiaen is in my opinion one of the best composers of all time, by far. i feel like chronochromie and turangalila and quartet for the end of time can stand up even to historical titans such as mozart and bach in terms of sheer quality

Report Post - Quote

(Forum Moderator) PM #1542063

Missing Messiaen collections...

This is indeed worth celebrating – now and in the years ahead!

In March someone uploaded *Olivier Messiaen - Complete Edition* (32 CDs),
and in May *Olivier Messiaen – Messiaen Edition* (16 or 18 CDs), both in Flac version.
(The boxed sets to which LordShaft refers.)

Unfortunately, both of those were removed before I could finish my downloads.
It would be really great if someone could put those back on ▮▮▮▮

Report Post - Quote

) PM #1542096

I'm always up for celebrating Messiaen's 100th birthday, even if it *is* almost two years ago by now.

Report Post - Quote

(Forum Moderator) PM #1542104

Hey, 102 years beats 100!

Report Post - Quote

LordShaft 🐵 🌭 **(LordShaft, Esq. Ph.D.) (Power User+) PM** #1542297

Well, Messiaen is what I bring out when I run across a classical music fan who "doesn't like" modern music.

I actually got one of these blue-hairs to accompany me to the concert, and she is now a True Believer(tm).

Probably the best (and fortunately, one of the easiest) recordings of _Turangalîla-Symphonie_ to acquire is DG's Myung-Whung Chung (probably the preeminent Messiaen conductor, who has devoted a fair bit of his career to Messiaen's works). It was performed in the conductor's presence, and incorporates all of his revisions to the piece made in 1990. Additionally, Messiaen's wife (Yvonne Loriod, an exemplary pianist) performed the piano section, with her sister Jeanne playing the ondes martenot, who had done so many times in the past.

http://www.deutschegrammophon.com/cat/single?sort=newest_rec&PRODUCT_NR=4317812

This is one of those times when the oldest recording isn't probably the best "artistically", though I for one would love to acquire any of the recordings where Ginette Martenot, sister of the ondes martenot's inventor, performed the ondes.

It's a pity she never made a recording of the revised score with Loriod + Messiaen - that might have truly been the "truly definitive" performance, but frankly, the "weak link" is probably more the conductor than any single performer - as this is a *MAJOR* orchestra with more than the usual timing + synchronisation issues. Chung nails it in any event, and DG's typically high technical standards make it a worthy recording to stand as definitive.

Ginette Martenot had done many recordings of other composers' works performing the ondes, including several by Jolivet.

Report Post - Quote

Figure 9.23: Thread about Messiaen on Succesor forum (Private Music Tracker 1, 2010h)[568]

[568] Private Music Tracker 1 (2010) "Thread about Messiaen on Succesor forum", 22nd September [private URL].

The opportunity to develop affinities with other members based on their OiNK activity was something that long-term collectors like *MrJONeZ* and *LordShaft* gravitated towards, and this practice served to create strong, reliable and thorough genre and artist-based sub-collectives on OiNK, of heterogeneous clutches of OiNK members that stayed in regular private messaging contact with each other, often commented on similar torrents and who would start threads on the forums about particular genres and artists. As we saw in the above screenshot, these small groupings would take pride in working together to upload 'complete' collections of particular artists and to alert OiNK's membership of new discoveries in different genres through posting on the forums. Through this set of practices, OiNK opened up huge and diverse collections of music to a group of people that expanded from 43,000 to 190,000 in two years. Members were not defined, in a subcultural sense, by an 'allegiance' to any of these loosely held groupings. Rather, the manifold and diverse musical knowledge common to many enthusiasts on OiNK interwove and crosshatched within and between different genres and artists, creating a simmering, metastable excess of carefully presented uploads, downloading activity and commentary across the forums, messaging and torrent pages that served as a repository for the mnemotechnique of searching for and discovering music; much as the tutorials and FAQ's laid bare the mnemotechnique of creating, uploading and sharing torrents.

MrJONeZ was broadly affiliated with a loose group of hip hop and funk enthusiasts, and describes below how what he learned from them opened him to new genres and artists that he explored away from OiNK, and how the porous proximity between uploading, commenting and messaging rapidly interlaced into a desiring infrastructure that offered him efficient and involved access to the widest selection of music he had experienced:

> *I'd watch certain guys who were uploading & do a little research on*
> *their stuff, if I liked the sound of the information I'd grab the torrent.*
> *Then you just get to know these guys & it opens whole other doors*
> *away from OiNK... to a lot of things instantly that I would have taken*
> *years to discover via my old route of music shops & crate digging. The*
> *sheer speed & ease allowed me to consume more music than I could*

> probably hear via the traditional routes. I owe OiNK big time for the
> sheer breadth of discovery. (MrJONeZ)

LordShaft had an interest in both classical music and analogue synth music from the 70's, both of which had thriving uploading/downloading/commenting channels on OiNK. He points out that the complex negotiations between uploading, forum discussions, messaging and torrent comments were bringing back music into circulation that simply was not available anywhere else:

> Since I have a strong interest in specific performers of classical pieces
> (Sviatoslav Richter for example), many of which were recorded and
> released on very obscure or long-dead labels, etc, these sites [OiNK
> and successors] provide the ONLY way, legal or otherwise, to acquire
> this content at all. (LordShaft)

This unrivalled access to rarities and music that had dropped out of circulation inspired members to reciprocate by redoubling their efforts to find yet more rare and out of circulation music to upload. *MrJONeZ* describes the relationship between finding a rarity and the desire to upload rarities for others:

> …there was a record I'd been hunting for over a period of 14 years. It
> was 'Spread Love' by The 45 King. Then one day I'm trawling OiNK &
> there it was I almost broke down in tears of joy. There were a lot of
> mixtapes that I upped which collectors thought had disappeared, I
> was proud of that as well. (MrJONeZ)

Although these groupings had their core uploaders and members that would comment on certain torrents and forum threads with authority, there was no sense in which they could be exclusive, as the torrents they were uploading were made available to the whole OiNK community, and although many members may have felt they lacked the knowledge to join in on certain forum or comment conversations, they could read and learn about artists and genres they were unfamiliar with or had not heard of. More inexperienced members such as *TU* and *beardownboilerup* discuss how OiNK's huge collection expanded their engagement with music, giving them access to new genre's, artists, and music that they could not access elsewhere:

…my options are basically endless now, I got stuff on OiNK that I have no idea where I would find a physical copy of. (beardownboilerup)

The availability of any album you could ever hear mentioned…was the greatest offering OiNK had to its members. I delved in IDM [Intelligent Dance Music], namely Amon Tobin, on a whim solely because I had heard a clip of one of his songs once. I enjoyed the clip: I never would have purchased the album, but I spent some of my limited initial downloading on one of his albums. I also ventured into progressive rock quite a bit, discovering bands like King Crimson and Gentle Giant (TU)

The massive leap in the breadth and depth of archival collections that was signalled by OiNK, not only online but *anywhere*, can be illustrated through the following example given to me by *LordShaft*, in which he gives an account of how he became enthusiastic about contemporary ambient music released by the FAX label:

I went to my local used music store (the excellent Amoeba Records outpost here in Southern California), and they had only a tiny handful of FAX albums and some of what they had was clearly priced for "speculators", i.e., above original retail NEW prices, which I generally never pay out of protest.…but when I turned to OiNK, they not only had most of them, almost all of them were available to my basic standard (FLAC/Log/Cue). From there, I "discovered" that this specific sub-genre of electronic music is indeed fairly vibrant thanks to Ian Boddy/ARC, and others…The availability of physical media copies for this material is very scant…(LordShaft).

LordShaft had visited the Hollywood branch of Amoeba Records, which bills itself as "The World's Largest Independent Music Store" and which claims to house "…the biggest, broadest, most diverse collection of music…ever seen on under one roof,"[569] yet,

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[569] Amoeba Records (2010) "Hollywood: The World's Largest Independent Music Store", 14th December http://www.amoeba.com/store-locations/berkeley.html#hollywood

he could only find a limited collection of the music he wanted, priced for 'speculators'; thus limiting its availability further. Through OiNK, he was not only able to find the full FAX collection uploaded perfectly in FLAC, but he was able to search for and discover other artists outside of the FAX label working in that genre. In this sense, OiNK transcended the limitations of retail, even the glorified notion of the independent record shop, and set new standards in recorded music archiving. Each member had the chance to become the High Fidelity cliché of the audiophile record store owner, providing new music and knowledge, debate and commentary to anyone lurking on the torrent pages or forums, and the contents of that record store exponentially multiplied as more users uploaded to it and downloaded from it.

Use value, exchange value, transindividual value

If we consider the comparison *LordShaft* introduces in more detail – that between vinyl/CD collecting culture and recorded music circulation on OiNK – we can interrogate how conceptions related to the *value of music* were rearticulated through OiNK. Since recorded music became a commodity around the beginning of the 20[th] Century, criticisms of collecting artefacts have centred around the space between *use value*, which has a lineage from John Locke[570] to Marx and beyond and indicates that commodities are valued for their actual utility, and *exchange value*, a term developed by Marx from Adam Smith and used to indicate 'market value', which for Marx was determined by the labour required to make the commodity.[571] Jacques Attali claims that the exchange value of recorded music actually destroys its use value, because the desire to 'use' (listen, playback) leads people to spend a large proportion of their time producing the means to buy recordings (money) and 'stockpiling' all the music they no longer have time to listen to: "*People buy more records than they can listen to. They stockpile what they want to find the time to hear.* Use-time and exchange-time destroy

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[570] John Locke (1692) *Some Considerations on the Consequences of the Lowering of Interest and Raising the Value of Money* (London: A. & J. Churchill).

[571] Karl Marx (1976) *Capital: A Critical Analysis of Capitalist Production*, Vol. 1 (London: Penguin); Adam Smith (1993) *An Inquiry into the Nature and Causes of the Wealth of Nations* (New York: Oxford University Press).

one another."[572] In terms of the 'industry' of collecting recorded music artefacts and the 'speculation' *LordShaft* alludes to above, Walter Benjamin's critique of the art collector is appropriate where people collect vinyl/CD's only for investment value, and masque their commodity fetishism as a non-monetised fetish for 'cultural artefacts'.[573]

As Jonathan Sterne points out, the exchange value critique cannot be readily applied to the huge amount of digital music that moves freely outside of the market, nor does it precisely fit the legal market trading of digital music, as there is little scarcity or labour involved in making each unit, and therefore the price of individual units is not commensurate to exchange value.[574] Furthermore, commodity fetishism is dependent on the 'mystification' of commodities that already have exchange value.[575] However, argues Sterne, digital music is not exempt from economies of value, as even the most committed free/P2P filesharer enters the market to purchase computers, modems, monthly internet connections from ISPs, hard drives etc. Some have underlined the irony in the fact that the flow of profit made by conglomerates from the circulation of recorded music (and thereby monostable control of it) has shifted from the once profitable vinyl/CD market to the now thriving computer hardware and software market.[576] Sterne argues that value still persists because music has become *micromaterialised* rather than dematerialised – its presence as an object has not

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[572] Jacques Attali (1985) *Noise: the Political Economy of Music* (Minneapolis, MN: University of Minnesota Press), p. 101. Original Emphasis.

[573] Walter Benjamin (1968) "The Work of Art in the Age of Mechanical Reproduction", in *Illuminations* (New York: Schocken), p. 244. (pp. 217-251).

[574] Jonathan Sterne (2006) "The Mp3 as a Cultural Artefact", *New Media & Society*, Vol. 8, No. 5, p. 831. (pp. 825-842).

[575] Marx (1976) *Op Cit*, pp. 163-177.

[576] John Snyder and Ben Snyder (2003) "Embrace file-sharing, or die; IV: Record company complicity", *Salon*, 1st February, http://dir.salon.com/story/tech/feature/2003/02/01/file_trading_manifesto/index3.html; Frank Rose (2003) "The Civil War Inside Sony", *Wired*, Issue 11.02, February, http://www.wired.com/wired/archive/11.02/sony.html

disappeared but has been squeezed into hard drives, and people still feel they can collect or 'possess' it.[577]

How is this micromaterialisation expressed in terms of value? How do people glean value from the circulation of recorded music artefacts over wires, through current and between slithers of hard drive silicon? Some, such as Patrick Burkart and Tom McCourt, have attempted to locate this value in a notion of 'sharing'. That is, the locus of value does not reside within the link between individual and object (mp3, flac), but between individual and individual through the sharing of these objects, the seemingly infinite expansion of the potential to share text, files, folders and opinions around music files through the internet, and a nascent 'free labour' fetish of sharing objects, ideas and information stemming from one's own digital collection.[578] This harks back to the notion of value linked with pre-internet 'fan club' record collecting cultures, where collectors were seen as supporting artists though cataloguing detailed histories of records – tracklistings, release dates, musicians – and creating new discourses through editing and writing fanzines.[579] We can certainly observe a similar impulse on OiNK, through the quality of sharing processes and the cross-hatching of genre and artist 'micro-cultures' of sharing, information and opinion we have described above.

However, when Burkart looked at online music retailers around 2007-08, he found that too many obstacles had been placed in front of the consumer - in the form of DRM and restrictive corporate relationships between the major labels and major retailers - for them to be able to fully indulge in this notion of sharing. The consumer had to feed on "…whatever gratifications can come from a substituted fetish that cannot be gratified."[580] We can identify the same difficultly in earlier P2P protocols we have looked at, with the large scale injection of spoof and decoy files and anonymous sharing hardly

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[577] Sterne, *Op Cit*, p. 832.

[578] Tom McCourt (2005) "Collecting Music in the Digital Realm", *Popular Music and Society*, Vol. 28, No. 2, pp. 249–252; Patrick Burkart (2008) "Trends in Digital Music Archiving", *The Information Society*, No. 24, pp. 246-250.

[579] Gary Burns (2004) "Fan Culture, the Internet, and the British Influence in Popular Music Studies", *The Journal of American Culture*, Vol. 27, No. 2, pp. 199-209.

[580] Burkart (2008) *Op Cit*, p. 247.

providing the basis for a notion of value based on an involved sharing culture. Indeed, writing without a consideration of BitTorrent and given that their analysis comes out of DRM-riddled retail and early P2P, it is difficult to imagine where Burkhart and McCourt might have located the existence of the widespread potential for the sharing culture they describe.

I would like to suggest that it was possible for these 'free sharing' fetishes to be cultivated and fully flourish on OiNK because of a wider notion of *transindividual value* that we can glean from our theory-driven method, and which was replete within OiNK's dynamic architecture. The earlier studies considered above were predicated on the assumption that value resides in the sharing of 'digital files' and in the implicit cultural slipstream (metadata, discussion, remixes, archiving etc). Compared to older P2P and digital music retail, OiNK opened up a new dimension of sharing, and moved the individuation of value in digital music beyond the sole consideration of 'sharing'. As well as 'digital music files', OiNK's members were sharing cue, log, m3u files, artwork, and furthermore they were sharing tutorials, FAQ's and hypertext links which led them to share in an inventory of sharing, ripping, encoding and uploading tools. Commensurately, the 'value' of digital music was not confined to sharing. Productive knowledge of the aforementioned tools meant that music could be valued as something an individual could also rip, encode, upload and store to high standards. Value became to some extent predicated on the access to mnemotechnique that the transindividual collective of OiNK provided. This being so, the term 'transindividual value' treats objects as mnemotechnical artefacts, and in terms of the extent to which productive knowledge can be gleaned from them *through using them*, which can then be employed to express modes of reflection and action in relation to others who have used the objects as part of a transindividual collective. Moreover, value is not created through market exchange or immaterial 'intellectual property' rights, nor through solely 'using' the eventually individuated product, but through shared control over the structuring of the desiring-infrastructure that individuates the 'product'. On OiNK, objects replete with transindividual value were not just digital music, but digital folders, modems, hardware, software and internet connections, and the locus of value is positioned in the members' capacity to manage and modulate the disparation between these components. OiNK

members' engagement with sharing information, opinions and discourses on music was underpinned and enhanced by this notion of transindividual value.

We are not denying the presence of use value and exchange value in relation to OiNK, but putting forward the idea that the properties of 'using' digital music, previously considered to be located in practices related to sharing, and properties of exchange (the purchasing of hardware, software and communication components) were rearticulated as part of the *transindividual assemblage* that OiNK operationalised. 'Use' thereby became ripping, encoding, storing, uploading as well as sharing, playback, discussing and listening, and the exchange value of the purchased components became reconfigured in terms of their value as components in the circuit of reproduction, storage and circulation that members invested in through OiNK. There is a correlation here with the 'cognitive capitalism' thesis, influenced by Hardt and Negri's work on the 'commons',[581] which focuses on digital objects and conceptualises value as dependent on the control of 'immaterial knowledge' production.[582] The closest homology is with Enzo Rullani's work, which refracts the value of immaterial knowledge through material vectors such as hardware and the body, and which accords no central role to intellectual property.[583] As Matteo Pasquinelli has summarised,[584] Rullani identifies three 'key drivers' in the production of digital value 1) maximising the value, 2) multiplying effectively, 3) sharing the value that is produced. It is argued here that transindividual value wrestles back immaterial knowledge from capital by operating its own three 'key drivers' 1) quality of digital extraction, encoding and sharing 2) access to hardware/software mnemotechnique, 3) sharing in the collective desire that is produced. There is also a 4th

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[581] Michael Hardt and Antonio Negri (2000) *Empire* (Cambridge, MA: Harvard University Press), pp. 300-303.

[582] Yann Moulier Boutang (2011) *Cognitive Capitalism* (Cambridge: Polity Press).

[583] Enzo Rullani (2004) *Economia della conoscenza: Creatività e valore nel capitalismo delle reti* (Milan: Carocci).

[584] Matteo Pasquinelli (2010) "The Ideology of Free Culture and the Grammar of Sabotage", *Policy Futures in Education*, Vol. 8, No. 6, p. 678.

dimension in transindividual value – that of *time*,[585] or the *temporal structure of interaction*. We can get a clear idea of how transindividual value moved through OiNK by considering how members *interacted* with these components over time, through explicating the practice of 24/7 filesharing that was essential to OiNK's operation.

Sharing music 24/7: The ratio system and interaction on OiNK

Initially individuated by the demands of the ratio system, it was the willingness to seed, and to keep seeding content 24 hours a day, 7 days a week, that made OiNK more efficient than other filesharing systems, and deepened its collection of music. Whilst OiNK was remarkable for the breadth of new, old, rare and deleted music it provided access to, it was equally remarkable for its *depth*. In other words, the willingness of its members to seed everything they downloaded meant that even the rarest of music torrents would usually have enough people seeding it to ensure a fast download. In terms of how 24/7 seeding impacted on OiNK members' relationship to the music they were sharing, the main difference between OiNK and all previous music distribution systems was the way in which it extended interaction with music *over time*. We can get a sense of how continuous seeding played a role in this temporal extension by looking at some comments from the below members, all of whom had slow connections, but emphasised their willingness to spend time and exercise patience in order to build a good ratio, which explicitly involved a commitment to sharing and uploading music to other members:

> *My connection is garbage yet I've done things to insure that my ratio is kept up. I upload torrents, download and seed constantly …and now that I've done this it allows me to continue downloading with no worries about my ratio. (b0arder753)*
>
> *…when I joined OiNK I had a 45k/sec upload rate too and found it hard only at the get-go. Once I uploaded a few torrents and seeded like*

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[585] Rullani also uses time as a central theme, but does not include it in his 'three-dimensional' theory of value. In postulating value as 'four-dimensional', transindividual value attempts to make this latent part of Rullani's theory manifest.

crazy it was only a matter of time and it ballooned from there (squiggle)

I think I left {my computer and BitTorrent client} on 24/7 for like three months…My connection really isn't the fastest thing going…I basically just downloaded a few things as I wanted them, and left them seeding forever and it built up slowly (Leoplurodon)

I tried to do leave my laptop on 24/7, which ended up in me burning out my laptop mobo (which was still under warranty lol). (Trembles)

Here we can observe the temporal development of transindividual value through the utilisation of mnemotechnical artefacts as objects of interrogation – the BitTorrent client, the metastable interface of OiNK, the external tools we looked at in the previous chapter - and through processes of *interaction* with these artefacts that come to shape the members' relationship to both OiNK and the music they share through OiNK. Michael Murtaugh's incursion into the debate on contemporary interaction[586] interrogates the tradition of 'interactive computing' in software hacking, engineering and maths, where the focus was not on the premeditated search and retrieval of information within the defined contours of an 'interactive search', but on attempting to create new information through 'live' interaction with machines or to make changes to that machine through this live contact, the contours of which were continually redefined during the generation of the interaction itself. Murtaugh points to J. C. R. Licklider's work on the TX-2 computer in the 1950's, which saw a shift from the computer as a problem solving machine to a problem-finder or a problem-explorer – as a machine that users can enter into a symbiotic relationship with in order to conduct experiments, rather than calculations.[587] Eberbach, Wegner and Goldin's notion of a 'Persistent Turing Machine' is also pertinent, where the computer is conceived of as more than just a self-contained unit, but a dynamic input-output machine than has a continuous relationship

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[586] Michael Murtaugh (2008) "Interaction", in Matthew Fuller (Ed.) *Software Studies: A lexicon* (Cambridge, Mass: MIT Press), pp. 143-148.

[587] J. C. R. Licklider (1960) "Man-Computer Symbiosis", *IRE Transactions on Human Factors in Electronics*, Vol. HFE-1, pp. 4-11.

to an unpredictable environment – a notion that has clear implications for online interaction and the flow of mnemotechnics on the internet.[588]

At the crux of Murtaugh's definition of interaction is the centrality of 'liveness' to interaction – the quality of an interaction between human and machine operating recursively and in 'real-time', necessitating that the possibility for exploration of an interactive environment that does not follow a predetermined path is left open, and that choosing a particular path will have unique consequences.

> An Important consequence of liveness is that interaction always occurs over time…Interaction always involves simultaneity, as computation occurs iteratively through feedback to a shared and changing environment. Designing with interaction requires a sensitivity to the timing of the processes involved.[589]

We shall put forward here that OiNK propounded a notion of *'live contact' interaction as an operation of individuation.* We have already observed how OiNK enabled its members to engage in different forms of interaction through 'live contact' with hardware through the software tools OiNK brought together. However, it was the sense of *continuity* brought about by the requirement to keep OiNK torrents seeding 24/7 that allowed a live contact interactive relationship to develop between OiNK and its members over the course of its existence, and between its users and the music they were sharing. It was not 'search' interaction while at the computer, but the interaction that was set in motion to occur when members were *away* from their computers that had the largest bearing upon the operation of interaction and the subsequent development of a transindividual ethics that was individuated through OiNK. This is a major component of what we have called 'transindividual value' – where the *excess* of individuation created through the productive use of mnemotechnical artefacts is managed through collective interaction persisting over time. Exploring the temporal

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[588] Eugene Eberbach, Dina Goldin and Peter Wegner (2004) "Turing's Ideas and Models of Computation", in C. Teuscher (ed) *Alan Turing: Life and Legacy of a Great Thinker* (Berlin: Springer-Verlag), pp. 159-194.

[589] Murtaugh (2008) *Op Cit*, p.146.

relationship between interacting with software, and a transindividual connection linking members through the mutability of such software evokes what Adrian Mackenzie has described as a conceptualisation of software as an "…historically media-specific distribution of agency."[590] Moreover, an approach to software that frames it as the dynamic distribution of a set of relations between people, machines and the surrounding environment. As Goldin and Wegner have suggested, a model of a human-machine relationship that emphasises a continuous relationship with a changing environment lends itself to the operation of software within contemporary practices of distributed, social and networked computing.[591]

At stake here is the conceptualisation of these agential relationships as individuation, and it will be argued below that it is temporal control over how this 'live-ness' plays out, through the collective management of the mutability of OiNK's software components, that determines the possibility for socialised desire to become transindividual; for collectives of individuals to have control over their interaction with the protocols of hardware, software and the internet.

Temporal strategies of interaction

The individuation of interaction on OiNK comes to its most visible formulation through an observation of the techniques, or what we shall call 'temporal strategies', that members used to improve their ratio through 24/7 seeding. OiNK gave its new members the opportunity to download 5gb worth of data before the ratio rules kicked in, so a common trajectory for the new OiNK member would be to upload one or two torrents at the beginning of their membership to give them some extra upload buffer and then download some albums in the hope that they could share or 'seed' back this content to accrue a better ratio score. One popular strategy for accruing a good ratio score without having to upload new torrents was to 'jump on' popular torrents early. This involved keeping an eye on what was being uploaded to OiNK, and downloading potentially

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[590] Adrian Mackenzie (2006) *Cutting Code: Software and Sociality* (New York, NY: Peter Lang Pub Inc.), p. 19.

[591] Peter Wegner and Dina Goldin (2003) "Computing Beyond Turing Machines", *Communications of the ACM*, Vol. 46, No. 4, pp. 100-102.

popular torrents before others, in the hope that hundreds of people would want to download the file from you in the near future. Another strategy was to utilise the week-long Christmas 'free leech' that happened at the end of each year. During this week, members could download as much as they wanted without it counting against their ratio score, whilst the amount they uploaded during this time would still improve their ratio score. The massive amount of downloading that occurred during free leech meant that most members' uploading capacity would be maxed out for the full week, allowing most to vastly improve their ratio scores. There were also sporadic 24 hour free leech periods that would occur throughout the year, usually two or three times. Many users combined 'jumping on' and free leech with a small amount of uploading new torrents; the experiences of *TU* can help us explicate the processes associated with a 'temporal strategy':

> *I began with ratio in mind, downloading the albums which I estimated would be popular (a Tupac Best Of comes to mind, as well as a pre-release Incubus album). I mostly downloaded FLAC. Once I had a couple gigabytes of buffer, I began slowly downloading newly released albums I was interested in…When free leeches occurred (notably the long week in the end of '06), I downloaded the entire discography of as many bands of which I was a fan that I could…[after] the week-long free leech…many popular albums I had downloaded for ratio became even more heavily impacted. Many ratios for individual torrents went about 10.0, and almost all of them were FLAC. This would be perhaps three or four months after I received my invite (TU)*

We can see that there is a temporal structure, a strategy that extends and changes over time, to *TU*'s uploading and downloading behaviour. It is something he has actively engaged with, partly due to the constraints and incentives of the ratio system, over 3 to 4 months. He was aware that he could utilise the tools available to him on OiNK over time in order to access the music he wanted, progressing from popular albums to build ratio, to a small amount of new albums he personally liked, to full discographies, all the while making sure he uploaded everything back and downloaded at the right times.

Through maintaining an interactive connection between his client and OiNK for this period of time, *TU* was actively involved in maintaining the depth of OiNK's music collection, and through doing so he was able to build his ratio score which enabled him to download new music. There was a constant process of live interaction occurring between him and OiNK whilst he was sporadically learning how to interact with all the tools we have described in the preceding analysis – ripping, encoding, labelling, creating torrents, uploading, searching for and discovering new music via user profiles/comments/forums – that served as a backdrop which reinforced his amplified engagement with the cultural memory that these mnemotechnical artefacts enabled him to individuate in relation to the music he was sharing. *TU* describes some of the practices he engaged with in relation to music that were external to OiNK, but intimately related the experience he had had on it:

> *Through lurking on the OiNK forums and attempting to rip a couple of my own uploads for the site, I learned quite a bit about digital music… The site and the community made music into something imminently accessible and pervasive. My music collection exploded and I soon purchased external hard drives to hold album after album of new music. I went from a 4GB iPod mini to an 80GB standard. I also purchased Grado SR-80 headphones, a serious investment on a minimum wage budget. (TU)*

The social and material practices that he engaged with, as a direct result of his engagement with the software tools he learned to use through OiNK, completely changed his relationship to how he stored, listened to and shared music, and thus his cultural memory or 'retention' of these practices was amplified over time. He purchased a series of mnemotechnical artefacts over the course of that time period – studio-quality headphones, external hard drives, a larger capacity portable music player - for the purpose of matching the experiences of quality and the wide music collection he had found on OiNK. This desire to widen the scope of one's own cultural memory was at the same time a desire stemming from a realisation that it was possible to exert the same levels of productive control over the playback, storage and portable music experience as it was over ripping, encoding, labelling, creating torrents and uploading them. *TU* had

become schooled in the mnemotechnique of his relationship to digital music, and extrapolated this productive knowledge to the external elements that defined his experience of digital music.

Transindividual value and digital time on OiNK

Keeping in mind our discussion of 'transindividual value', *TU*'s external purchases were not simply a matter of paying money in order to access a particular consumer experience, but a matter of enhancing the mini-circuit of production he had made for himself. 24/7 seeding on OiNK had made him a permanent storer and distributor of his well organised collection of music, and he was simply making productive changes to his system to improve his stationary and portable storage space, and his playback experience. Our analysis of the temporal structuring of experience on OiNK resonates with Mark Hansen's reinterpretation of Stiegler's work on the temporal object,[592] in which he argues that the 'digital inscription' of time, as a process of temporalisation, is distinct from human 'time-consciousness' (the flux of the 24-hour clock) and the pre-determined broadcasting slots of radio and TV because it can be deployed heterogeneously. Different time-functions can occur concurrently, recurrently, before and after in the digital realm that the unidirectional flux of our time-consciousness cannot process without the aid of hardware and software:

> …the *use* of these [digital] devices is not predetermined in near totalitarian fashion by the content they would channel and by a system of one-directional broadcasting, they broker a contract with time…that is not *already* narrowly correlated with the temporal constraints of so-called realtime media or even with those of human sensory ratios…digital devices offer access to the heterogeneity of time…as a virtual or preindividual source for divergent and potentially incompossible temporalisations[593]

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[592] Mark B. N. Hansen (2009) "Living (with) Technical Time: From Media Surrogacy to Distributed Cognition", *Theory, Culture & Society*, Vol. 26, No. 2-3, pp. 294-315.

[593] *Ibid,* p. 302.

Hanson argues that it is no longer the temporal object (cinema, TV, melody) that models the flow of time, but rather: "…artworks that eschew the objectal in favour of the processual."[594] It is argued here that the structuring of time has indeed shifted focus to 'processual entities' in the digital realm, but involves a broader impulse than that which subsumes visual art, or the dynamics of 'noticing' based on visual awareness.[595] It now encompasses the architectural operation of digital organisational infrastructures, which operationalise a dynamics of noticing based on the ability to modulate system behaviour. If we think back to our analysis of the pre-internet global mnemotechnical industry of production in chapters 3, 4 and 5, we can see how the bedrooms and workstations of OiNK members resolved the productive circuit of music circulation more efficiently and at higher quality standards than the music industry through the ability to manage the *timings* of such occurrences as heterogeneous processes. *TU*'s capacity to control and manage the mnemotechnique of ripping, encoding, labelling, storing, reproducing, uploading and downloading music at OiNK standards and at different times made him a one-man manufacturing plant, storage warehouse, distribution system and retail store. If we add this to fact that hundreds of thousands of people were engaging in the same OiNK-led modes of action, and most crucially, upholding the long-term durability and efficiency of this system by committing to 24/7 seeding, it is easy to see why the global music industry was threatened by OiNK – it had replaced and improved upon each and every element of production that the industry relied upon to routinise money back to itself. Not only this, but it had taught ordinary consumers how to uphold and manage this vastly improved system without the need for regressive techniques of external and/or hierarchical control.

There was enjoyment to be had - a collective desire based on open mnemotechnique that could be shared - in this new found ability to consume at every level of producing digital music artefacts, and particularly in the fact that this interaction with consuming production could be temporally structured to the point where members felt that the

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[594] *Ibid*, p. 296.

[595] Barbara Maria Stafford (2009) "Thoughts Not Our Own: Whatever Happened to Selective Attention?" *Theory, Culture & Society*, Vol. 26, No. 2-3, pp. 275-293.

responsibility for controlling and managing the system was theirs and theirs alone. This was the locus of the 'transindividual value' we outlined above. Even amongst those with faster connections and large buffers, there was a discernable commitment to uploading new torrents and to sharing all downloaded content. The practice of 24/7 seeding had become a matter of consumption, rather than a 'carrot and stick' requirement. It was something OiNK's member's engaged with because they wanted to:

> *I could nearly download all I have downloaded the time I have been here again and would still be left with an okay ratio. While I am a little proud to have come that far with my bad upload speed I still keep on seeding 24/7 since I want to contribute as much as I can to this awesome site (fuzzylogic)*

> *I upped my own torrents and never shut down my computer. It was really hard keeping a ratio when I was living at my parents' again where the network sucked and I could hardly upload anything. Then I returned to my own place and I uploaded what I believe was three times as much as I had ever uploaded at my parents'…Since then my ratio has kept on expanding and I can't keep up with it! (Vitz)*

Despite the fact that OiNK was eventually shut down, the lasting legacy of its capacity to structure the temporality of 'live' interaction with mnemotechnical artefacts through heterogeneous digital inscription was that the collective apprehension of the mnemotechnique that made the system possible would endure far beyond the closure of a particular tracker interface, as would the massive collection of high quality digital music that, because of its existence, now resided on the hard drives of hundreds of thousands of people across the world. MrJONeZ underlines this point when he says that, due to the measure of control he and thousands of others had over the productive system of digital music, the individuation of his interaction with recorded music through OiNK could extend beyond his own life, as long as the music continued to be uploaded and downloaded. He felt that the rare music he uploaded and helped to upload created a profound link between him and future generations of music enthusiasts; he was giving others the opportunity to experience music that they otherwise would not have been able to access:

I was proud to put some hard to find old gems on there for sure…Is it not a good thing to also host something that may never see the light of day again & to let them survive in the lists of a server ?? They will never degrade & will live as long as computing does! We have created a virtual Ark for the tunes! (MrJONeZ)

Thus, incentive to participate in these practices of interaction was not only that of ratio improvement, or the vicissitudes associated with downloading and uploading music, but that the consequences of these interactions *enabled the structuring of transindividual interaction beyond the flux of 'lived experience'*. Firstly, through building and maintaining a collection of OiNK torrents that others could share in through heterogeneous deployments of time, the OiNK members essentially became 'live' interactive components within the OiNK filesharing infrastructure, having a discernable impact on the speed that certain torrents could be downloaded and uploaded, which they could modulate by making sure their ports were open and through configuring BitTorrent. Secondly, they could enter new 'data' into the system by ripping, encoding and uploading new torrents, control over the quality and contents of which was entirely given over to them through the tutorials. Thirdly, they were responsible for producing most of the metadata and all of the musical discussion on OiNK, and the fact that they were constantly contributing to each of these practices through seeding the torrents 24/7 can go a long way towards explaining the fanatical commitment of its members – they did not use OiNK, but were *part of* OiNK. They were not connected to it primarily through *using* OiNK or *exchanging objects* through it, but were *themselves* replete within the desiring infrastructure of OiNK through their temporal-transindividual connection to it.

Concluding thoughts - The transindividual memory of OiNK

Since the shutdown of OiNK in October 2007, the public and private BitTorrent architecture has changed rapidly and markedly, as has the legal music industry. The reverberations of OiNK's injection of user-orientated standards of quality and efficiency into uploading and sharing mnemotechnics can be observed in many of these changes. One major factor is the decline of The Scene. Recent forum discussions have shown that members of the Successor now regard The Scene to be unimportant in the uploading and sharing of digital music, the consensus being that the private music trackers which succeeded OiNK are more reliable in terms of labelling, ripping, encoding and availability. They also see its role in the uploading of films and TV shows as being in steady decline, with its organisational infrastructure reticulating back to the borders of its software/application-sharing origins because non-Scene home users can now easily handle tasks that previously required Scene specialists:

> *And I don't think the scene is "needed" at all, outside of cracking apps & games…and in my experience here, they're more of a pain than anything, when it comes to music. Transcodes[596] galore! (never mind weird naming & tagging schemes) (Woodenhead)*

> *Music wise, they [The Scene] are always a bonus for early leaks, but they can stop with music anytime tbh. Leave that to [OiNK successor sites] (nitrogif)*

> *I think the scene [sic] will lose relevancy in terms of movies and television to the same extent that they have for music (they'll be a source, but not a particularly special one) within a decade. Ripping movie and television no longer really requires any technical skills or unusual hardware. (SilentFury)*

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[596] 'Transcodes' are digital files that have been 'encoded upwards' e.g. from a 192kbps mp3 to a 256kbps mp3. OiNK and its successors banned the practice because a transcoded file will never be as high quality as a properly 'encoded down' file of the same size.

Indeed, *TorrentFreak*, one of the major online news hubs for BitTorrent and filesharing, have recently reported that the 'Scene pyramid' we analysed in chapter 7 is no longer the main source of music, movies and TV shows, with 'BitTorrent Releasers' bypassing Topsites and uploading straight to invite-only torrent trackers, often using higher quality standards than The Scene.[597] As we touched upon in chapter 8, there has been a concomitant increase in the size of the overall Torrent hydra, which has exposed public trackers to the spoof and decoy threats inherent within open P2P systems. One recent study estimated that the fake publishing of torrents, by either malicious users or anti-piracy agencies, constitutes 30% of all content and 25% of all downloads in BitTorrent. The same study concluded that although OiNK-style private trackers with no advertising and restricted membership still thrive, the Torrent architecture is now rife with both public *and* private trackers looking primarily for financial gain through advertising, charging for invites and charging for differential levels of access.[598]

It would be misguided to assume that the 'general standard' for the quality of digital music on the internet now conforms absolutely to that promulgated by OiNK, or to claim that OiNK and its successors are wholly responsible for a rise in general quality standards, but a filtration process can clearly be seen through how the mainstream recording and online retail industry has attempted to capitalize upon a nascent demand for higher quality file encoding. For example, the changing policy of iTunes, who in January 2009 removed Digital Rights Management (DRM) software from their music files (which prevented iTunes files being played on 'unauthorized' computers) and introduced a new 'iTunes plus' file format with a 256kbps bit rate, twice the size of the previous standard, albeit for a higher price.[599] The new music streaming service Spotify,

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[597] Enigmax (2010c) "BitTorrent Releasers Are The New Kids On The Piracy Block", *TorrentFreak*, 27th July, http://torrentfreak.com/bittorrent-releasers-are-the-new-kids-on-the-piracy-block-100729/; Enigmax (2010d) "BitTorrent Releasers Slice The Top Off Movie Piracy Pyramid", *TorrentFreak*, 29th July, http://torrentfreak.com/bittorrent-releasers-slice-the-top-off-movie-piracy-pyramid-100727/

[598] Ruben Cuevas, Michal Kryczka, Angel Cuevas, Sebastian Kaune, Carmen Guerrero and Reza Rejaie (2010) "Is content publishing in BitTorrent altruistic or profit-driven?" *Proceedings of the 6th International Conference* (Philadelphia, PA: ACM), pp. 1-12.

[599] Peter Cohen (2009) "Apple to end music restrictions", *Macworld*, 6th January, http://www.macworld.com/article/137946/2009/01/itunestore.html

a desktop application that enables users to stream an iTunes-style library of music over the internet for free, offers its members a 'premium' account for a monthly fee, which enables them to stream all music without the usual intrusive audio advertising and at 320kbps, rather than the 'free streaming' default of 160kbps.[600] This signifies a shift towards monetising streaming services in the operation of the global music industry, away from an 'online retail' model. All the major labels have a stake in Spotify, which amounts to 18% of total shares,[601] and at the time of writing (8th March 2011) it was about to launch in the USA, having just signed up its 1 millionth subscriber in Europe.[602]

Through focusing on the disparation between the recording industry and decentralised information sharing, and interrogating BitTorrent culture at the historical moment when 'user-led' archival standards of reproducing, storing and circulating digital music became manifest through OiNK, this thesis serves as a reference point for future studies that endeavour to interrogate these techno-historical impulses in light of the post-2007 environment we have just touched upon. A commensurate intention has been to open up niche areas of research – private BitTorrent communities; the consumer ripping, encoding and uploading of 'archival grade' mnemotechnics, 24/7 sharing of digital artefacts – that have yet to receive close attention in the academic study of the arts, humanities and social sciences.

We have attempted to open up these areas through a theory-driven method that was developed to tackle the primary aim of this thesis – to unpick and explicate the threads of techno-historical development that were drawn together in the disparation of the OiNK-BitTorrent architecture. A frequent strategy of the method has been to interrogate the recursive catalysis between organisational architectures and human agency, where the perturbation between mnemotechnics, organisations and humans is theorised as

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[600] Spotify (2010) "Get Spotify Premuim" http://www.spotify.com/uk/get-spotify/premium/

[601] Helienne Lindvall (2009) "Behind the music: The real reason why the major labels love Spotify", *The Guardian*, 17th August, http://www.guardian.co.uk/music/musicblog/2009/aug/17/major-labels-spotify

[602] Emma Barnett (2011) "Spotify signs up 1m paying subscribers ahead of US debut", *The Telegraph*, 8th March, http://www.telegraph.co.uk/technology/news/8367955/Spotify-signs-up-1m-paying-subscribers-ahead-of-US-debutm.html

individuation and the structural consequences of such perturbations is framed by the contours of mnemotechnique that propagate within a given dimension. This endeavour provides a techno-historical context to recent work on digital-social production, particularly that of Yochai Benkler, who asks: "…Why, for example, did proprietary, market-based production become so salient in music and movies in the twentieth century, and what is it about the digitally networked environment that could change this mix?"[603]

We have approached such questions by developing a unifying impulse to 'look through…' rather than 'look inside…' We have looked through the space between the 'mass culture' of post-war recorded music circulation and an emergent 'pop culture' by interrogating the mnemotechnique of production, retail and radio. We also looked through the space between post-war mainstream computing and the desire to transfigure computing operations into private contexts, as the seeds of a mnemotechnique spinning on the axis of hardware storage, the encoding of files and folders, and the distribution of bandwidth began to develop. Finally, we have looked through the manifestation of this latter notion of mnemotechnique in the spaces between the dynamic operation of OiNK, as the collective desire for an experience beyond retail, radio and earlier P2P came into what Simondon has called 'micro-physical' (what we can call 'micro-digital') contact with a constellation of hardware, software, communication protocols, files and folders that enabled this collective desire to structure the porous borders of OiNK's architecture.

This relational bifurcation, where individuation and mnemotechnique structure the disparation between mnemotechnical infrastructures and human agency, also informs the 'groundless' approach to virtual methods and critique of the 'natively digital' ontology of digital methods that permeates this thesis. The 'results' of the research into OiNK are not 'contained' within the interviews, participant observation or site analysis undertaken. Rather, *traces* of the generative power of OiNK were produced through the operation of the methodological components used here, in order to momentarily grasp

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[603] Yochai Benkler (2006) *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (New Haven, CT: Yale University Press), p. 48.

some of the more intense currents that disparated through OiNK's transindividual collective. By the same token, the 'digital components' under scrutiny – hardware, software, communication protocols, files, folders etc – were not *a priori* repositories for the potential of agential and collective practices that were replete on OiNK. It was the transductive relationship between OiNK's structuring of mnemotechnique and the modes of reflection, action and intention of its members that constituted the operation of the software and hardware it brought together as a dynamic field of digital production, consumption and interaction. It is hoped that this thesis can begin to 'look through…' the seemingly incompatible potentials of the 'virtually grounded'[604] and the 'digitally native,'[605] so that the seeds of disparation between the two can eventually reveal the recursive structures of mnemotechnique, protocol and cultural memory that do not 'return' to a ground, but are injected back into an always-already metastable preindividual, as the energetic operation of individuation never ceases to move through a digital culture that is permanently and simultaneously moving through the 'online' and 'offline' worlds.

The second aim here was to interrogate what Stiegler calls the "…mass of consciousnesses controlled by systems and processes for diffusing signals,"[606] or the relationship between the audience and mnemotechnics, and its differential manifestation through the conglomerate 'frontpages' of the internet and through OiNK in terms of potential for collective interaction with hardware, software and communication protocols. The third aim was to assess whether the process of disparation OiNK inferred between its members and mnemotechnics could mean something other than 'control', and whether it contained the potential for a new politics of digital organisation, where collective individuation in relation to hardware, software and protocol could the subject of metastable catalysis rather than the object of monostable control.

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[604] Antony Bryant and Griselda Pollock (2010) *Digital and Other Virtualities: Renegotiating the Image* (London: I. B. Taurus).

[605] Rogers, 2009a, *Op Cit*.

[606] Bernard Stiegler (2009e) "To Love, to Love Me, to Love Us" in *Acting Out* (Stanford, CA: Stanford University Press), p. 70.

With these aims in mind, and looking beyond a sole focus on the music industry and the torrent hydra, the findings of this thesis most clearly resonate with two fertile strands of recent debate in the study of digital processes. The first strand is the notion that hardware and software are technologies of memory that cannot be reduced to codes and algorithms. Wendy Hui Kyong Chun's forthcoming work *Programmed Visions: Software and Memory* charts the 'hardening' of memory as hardware storage, and the emergence of software as a material 'thing' which manages the externalisation of memory as it interfaces with storage machines. The materiality of software emphasises the imperceptibility of memory, argues Chun, with our software routines only giving us brief glimpses of the global archive of transience and permanence that is always-already there. Within this dis-location between hardware (memory) and software (apprehension of memory) lies the *appeal* of computing processes, which are: "…the dream and nightmare of an all-encompassing archive that constantly regenerates and degenerates, that beckons us forward and disappears before our very eyes."[607]

We have argued here that the 'appeal' of OiNK was that it enabled its members to *actualise*, rather than merely glimpse, a digital archive through the exertion of temporal control over the content and quality of the information that fired between its disparate hive of hard drive memories, the 'externality' of which mitigated against degeneration through providing its members with access to the mnemotechnique of the software used to access it, and ownership of the storage machines it comprised. The thesis interweaves further with Chun's conceptualisation of 'computing appeal' as the tension between desire for the knowable and the 'unknowable-ness' of memory-storage, when we consider the 'forced degeneration' of OiNK by the music industry, and its attempts to regenerate itself through new private communities. Chun refers to the tendency that moves away from the degeneration of memory as the 'enduring ephemeral', the process that: "…conflates memory with storage and conflates the ephemeral with the enduring, or rather turns the ephemeral into the enduring…through a process of constant

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[607] Wendy Hui Kyong Chun (2011) *Programmed Visions: Software and Memory* (Boston, MA: MIT Press), p. 11.

regeneration"[608] and discusses it in relation to what can be called 'macro-digital' computing processes in biology and computing technology. This thesis can be read as a rejoinder to such assertions, where the computing processes under analysis are 'micro-digital' impulses related to the operation of information circulation between smaller, private collectives that are bound to proliferate as storage space, broadband speed, practices of DAE and digital proficiency continue to increase at unfathomable speeds and individuate in unknowable ways.

The second strand of debate is the notion that computing processes are expressions of agential *operations*; that they imply a tendency toward modes of becoming on behalf of the individuals and collectives that engage with them - however perfunctory, transient or unknowable such operations may seem. Although focusing largely on computer games, Noah Wardrip-Fruin's work on *expressive processing* as both a means of expression for 'authors' in digital processes and also as an expression of the design and history of digital processes is relevant to what we have learned here, and can be read alongside this thesis. He conceptualises a shift in the notion of 'author', away from 'writer', 'photographer' or 'filmmaker' towards those acts that define the rules of system behaviour. He writes of 'author-crafted processes' that determine his conversation options with characters in RPG's (Role Playing Games) and his experience of other virtual environments.[609] This thesis situates this 'crafting' of system behaviour at OiNK's interface between hardware, software and communication, which gave its members authorial control, or what we have called mnemotechnique, through the FAQ's, tutorials and system of private messaging, comments section and forum support it provided, and which transfigured this control as 'expression' through harnessing the collective desire of its members to manage the efficient ripping, encoding, uploading and 24/7 sharing of high-quality digital music.

We have argued here that for processing to become 'expressive' individuals must have access to the mnemotechnique of the processing components, and that the contours of

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[608] *Ibid*, p. 10.

[609] Noah Wardrip-Fruin (2009) *Expressive Processing: Digital Fictions, Computer Games, and Software Studies* (Boston, MA: MIT Press), pp. 3-4.

this expression individuate at the porous borders of desire, which can become monostable through the fabrication of desire by an organisational hierarchy, or metastable through the encoding of dynamic modes of thought, action and interaction into the fabric of transindividual collectives. In this sense, our focus on 'productive knowledge' of how to make and share 'archival grade' digital music does not mean that it is the key determining factor in whether individuals can enjoy and interact with it, but that there is a dimension to the experience of digital music (and mnemotechnics in general) that is delineated by the relationship between mnemotechnique and collective desire – *the transindividual dimension*, structured through time as heterogeneous digital inscription. This dimension has become increasingly vital in a consumer culture where productive knowledge of how to create and share digital music, TV shows, films, eBooks, applications etc becomes ever more accessible through open source and/or user friendly software and web applications, and amongst a growing user-base with ever increasing levels of digital proficiency. OiNK is an early, concentrated exemplar of how mnemotechnique has progressively come to impinge on the collective desire for mnemotechnics, of how standards of ripping, encoding, uploading and distribution have, in some quarters, increasingly become transindividual, as part of the desiring experience, which is at once an experience of transindividual value and time-as-heterogeneity, of digital music and latterly other forms of digital text, audio and visual artefacts, particularly the sharing of TV programs and films. These processes have given rise to a transindividual fabric of digital production and consumption that maintains its vitality because it manages the excess of individuation without crushing the potential for its reconditioning.

Appendix A - OiNK rules

This appendix contains the full OiNK rules, as of 12[th] August 2006:

Main Rules - Breaking these rules will get you banned

* If you choose to use one, a cute avatar is a must (preferably a stuffed animal, pet, cartoon character, etc.). If you can't find one, ask in the forums. Things that are not acceptable: your favourite band, attractive women, band/sporting/product logos, pictures of you and/or your partner. It's far better to not have an avatar than one that breaks the above rule.
* Do not post our torrent files on other sites. Every torrent file has your personal passkey embedded in it. The tracker will automatically disable your account if you share your torrent files with others. You will not get your account back.
* This is a torrent site which promotes sharing amongst the community. If you are not willing to give back to the community what you take from it, this site is not for you. In other words, we expect you to have an acceptable share ratio.
* Do not sell our invites. The invites were given to you to invite your friends or people you think that can contribute. If you are found selling invites, you'll lose your account.
* We're a community. Working together is what makes this place what it is. There are over a thousand new torrents uploaded every day and sadly the staff aren't psychic. If you come across something which violates a rule, report it! Ignoring it is only damaging the community.

Uploading Rules - Failure to comply with these rules will result in a warning or a ban

General Uploading Rules

* Do not tag your releases. Your name goes next to the upload anyway, there's no need to plaster it all over the place!
* Only music, apps, comedy (audio), audio-book, eLearning videos and eBooks releases are allowed here.
* Releases needn't be 'scene' releases, in fact it's always nice to see personal rips. But please remember that you should use a good CD ripper ie EAC and good encoder ie LAME (or a suitable alternative) ripped with a high quality (--alt-preset standard or --alt-preset extreme [or with a lossless codec such as ape or flac). Regarding app releases however, ensure your release is tested working on not just your own PC if it is your own rip.
* Do not upload a torrent unless you intend to seed until there are at least

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1.0 distributed copies.

* (Updated) Duplicate torrents in any category are not allowed. For example, if a torrent exists on the site at 256kbps then no further torrents at 256kbps or lower bitrate are allowed. Significantly higher bitrate rips or different file formats of the same content are allowed (applies to lossy codecs only). There are 2 exceptions to this rule:

1. (New) A FLAC release which contains a .log of the rip process can be uploaded when there is already a FLAC without a .log, or the existing torrent has CRC mismatches. In the latter case, the existing torrent must be reported or your new one will be deleted as a duplicate. If a FLAC torrent already exists, no alternative lossless format may be uploaded.

2. A LAME --alt-preset-extreme (or the newer equivalent, -V0) rip is allowed on the site at any time, even if a higher CBR rip is already on the site. Only 1 APX/V0 rip, though. Lying about the quality or transcoding a release in order to meet this condition will result in severe consequences.

* If your torrent is deleted by a staff member for any reason, you can use the Log to see who deleted it and why. If you disagree with that decision, please use the PM link on the Staff page to contact that staff member. If you post in the forums about these kinds of things, the staff person involved might never see it.

* Do not advertise other sites in your torrent descriptions. We don't have any advertising, you shouldn't either.

Music Specific Uploading Rules

* Music releases must have an average bitrate >= 192kbps, regardless of the format, be properly labelled and ideally also have .m3u (playlist) file and covers. No transcodes or re-encodes of releases are acceptable here. There are no exceptions to this rule (no matter how rare you claim it is!)

* Music releases must be a folder containing the music, not an archive (ie: .rar, .zip). The only exception to this is if it is a single file where a torrent of a single file would be acceptable (though still not archived).

* Image files like .bin, .iso and .nrg are not allowed in music torrents.

* Radio, television, web rips and podcasts are not allowed. It does not matter whether it's FM, direct satellite, internet or even if it's a pre-broadcast tape (too difficult for us to moderate such things). Radio does not have enough bandwidth to meet our 192kbps rule. Plus, anything on the radio has already been through several conversions/reencodes.

* No audience recordings - no matter how rare or how good you think they are.

* Music uploaded here must not be freely available on the web (from official sources such as record label or band websites). If you could just download from the web, so can everyone else. Uploads can be from other torrent sites but you take responsibility for determining that the music is not transcoded.

* Music releases must include the year of release, bitrate or rough average bitrate of the track(s). Writing simply VBR is not acceptable. Release must also include the the format (MP3/WMA/FLAC/AAC/APE/WAV etc) in the torrent name and a tracklisting in the description.

* Music releases must be properly labelled. This means you should not be sharing a folder which is just the album name. The minimum you must have for a folder is 'Artist - Title'. A little extra effort from you saves a lot of time for others.
* File names must reflect the song titles. You may not have file names like track01.mp3, track02.mp3, etc.
* Torrents should never be tagged as [REQ] or [REQUEST]. If you fill a request using Requests then everyone who voted for it will be automatically notified.
* The Artist field in the torrent name should contain only the artist name. Any tags like [Advance] or sub-genres (if you must use them) should come at the end of the Title field.
* (New) CD sourced music must not contain pops or clicks (rip/encode errors). They will be deleted if reported.
* (New) Cassette and VHS sourced music is not suitable for this site, the frequency range is not good enough to meet the high quality we strive to maintain here.
* (New) All music torrents must be encoded with a single encoder using the same settings. This means you cannot create a torrent which contains both CBR and VBR files, nor can you upload torrents containing a mix of APS/V2 and APX/V0.
Multi Album Torrents
* (New) Multi-album torrents are now not allowed on the site under any circumstances. That means no discographies, pitchfork compilations etc. Discographies make it a hassle for users to download individual albums and result in a lot of duplicate albums being uploaded.
* (New) All music torrents must be one release, so if an album is 2CDs, it is fine to upload that as a single torrent. However, uploading 2 or more different albums in one torrent is strictly forbidden. Greatest hits and best of compilations with several CDs are ok. Boxsets may be uploaded as one torrent so long as they do not contain any discs that are available as another individual release.

Lossless Torrents

* (New) A FLAC torrent which contains a .log file of the rip process (and confirms CRC matches) can be uploaded if there is an existing FLAC torrent without a log.
* (New) If there is a CRC mismatch in a FLAC torrent which contains a .log, a new one can replace it only if the existing one is reported to the staff with clear reasons why, and the new one contains no such CRC mismatches. Failure to do this will result in the new one being deleted as a duplicate.
* (New) Other lossless formats cannot be uploaded to the site once a FLAC version exists.
* (New) Uncompressed WAV files are not allowed. Many lossless compression

routines exist which are cross-platform and severely reduce the filesize. We recommend FLAC.

Comedy (Audio) and Audio Book Specific Uploading Rules

* Music is not permitted in these two categories. They are for spoken word only.
* Releases must be a torrent of a folder containing the audio files and have a bitrate (or rough average bitrate) at least 16kbps mono (ideally much higher).
* Archive files (.rar, .zip, etc.) are not permitted in these two categories.
* Radio or television rips are not permitted in these categories. We don't allow radio torrents of any kind (including talk).

App Specific Uploading Rules
* App releases (whether Windows or Mac) must not be freely available tools. There are no exceptions to this rule.
* Unix apps are not allowed here - don't upload any.
* App releases can be either a torrent of a folder or an archive, but archives must not be password protected.
* App releases must either have a small description of the program (either taken from its website, or from an nfo) or a link to information.
* The torrentname must not just be a non-informative filename.
* Serial numbers should not be posted in torrent descriptions. They should be in a file (text or otherwise) contained in the torrent.
* Torrents containing collections of cracks or keygens are not allowed. A crack or keygen for an application is only allowed in a torrent containing that application.
* Torrents containing collections of hacking or cracking tools are not allowed.
* Collections of pictures or wallpaper are not applications. They do not belong in this or any other category.

eBook (and eLearning Book) Specific Uploading Rules
* eBook releases can be either a torrent of a folder, an archive or .pdf. Archives must not be password protected.
* Collections of pictures, posters or wallpaper are not eBooks. Do not upload them on our site.

eLearning Video Specific Uploading Rules

* The eLearning Videos category is to be used only for tutorial videos.
* It is only suitable for tutorials on how to use features of applications, musical instruments or computer hardware. i.e. no kung-fu training, how to dance videos or lecture material which does not fit into one of the 3 topics already mentioned.
* Examples of acceptable content: lynda, LearnKey, Total Training and

GNOMON.
* Uploads in this category must be either in a video file format (.avi, .mov etc) or a disk image (.iso, .bin/.cue etc), not archive files (.rar, .zip etc).
* As with other categories, they must also not be freely available on the web and should include a proper description and/or a link to further information.

Not Allowed Here

* Games of any kind, whether PC, Mac or phone. No games.
* AllData programs and data (car parts)
* Videos of any kind (other than eLearning Videos). No movies, no TV shows, no concerts.
* Pornography or nudity of any kind. This includes pictures, comic books, etc.
* Anything not specifically allowed above. If you have any doubts, ask before uploading.

Forum Etiquette/Rules - Failure to comply with these rules will result in a warning or a ban

* Some general guidelines.
* Don't use all capital letters, excessive !!! (exclamation marks) or ??? (question marks)… it seems like you're shouting!
* No double posting, there's an edit button, use it.
* No lame referral schemes. This includes freeipods.com, freepsps.com, or any other similar scheme in which the poster gets personal gain from users clicking a link.
* No posting music requests in forums, there's a request link on the top bar, please use that instead.
* No flaming, be pleasant and polite. Don't use offensive language, and don't be confrontational
for the sake of confrontation.
* Don't point out or attack other members' share ratios. A higher ratio does not make you better than someone else.
* Try not to ask stupid questions. A stupid question is one that you could have found the answer to yourself with a little research, or one that you're asking in the wrong place. If you do the basic research suggested (i.e., read the FAQ) or search the forums and don't find the answer to your question, then go ahead and ask.
* Be sure you read all the stickys.
* Use descriptive and specific subject lines. This helps others decide whether your particular words of wisdom relate to a topic they care about.
* Try not to post comments that don't add anything to the discussion. When you're just cruising through a thread in a leisurely manner, it's not too annoying to read through a lot of "hear, hear"'s and "I agree"'s. But if you're actually trying to find information, it's a pain in the neck. So save those one-

word responses for threads that have degenerated to the point where none but true aficionados are following them any more.
Or short: NO spamming
* Refrain from quoting excessively. When quoting someone, use only the portion of the quote that is absolutely necessary.
* No posting of requests for serials or cracks. No links to warez or crack sites in the forums.
* Please refrain from starting political or religious discussions. These types of discussions lead to arguments and flaming users, something that will not be tolerated. This is a filesharing community in which we share music and apps.
* Don't waste other people's bandwidth by posting images of a large file size.
* Be patient with newcomers. Once you have become an OiNK expert, it is easy to forget that you started out as a newbie too.
* See the main rule

Rules edited 2006-08-12 (15:00 GMT)

Appendix B - OiNK fan art

This appendix contains a selection of the OiNK fan art that was submitted to the two blogs that became popular in the wake of OiNK's shutdown on 23[rd] October 2007. The date of the shutdown, 10/23, and the phrase 'Never Forget' became ironic slogans, used to represent the notion that an injustice had been carried out, and that the culture surrounding OiNK implied a political position that its users and supporters felt provided legitimate alternative to the position of the recording industry:

Figure A.1: OiNK fan art 1   (OiNK Memorial Blog 2007b)[610]

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[610] OiNK Memorial Blog (2007b) "OiNK fan art 1", 1[st] November, oinkmemorial.blogspot.com.

Figure A.2: OiNK fan art 2 (zixr 2007)[611]

[611] Zixr (2007) "OiNK fan art 2", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com.

Figure A.3: OiNK fan art 3 (Canapial 2007a)[612]

[612] Canapial (2007a) "OiNK fan art 3", *Paine's Blog*, 1st November, tehpaine.blogspot.com

Figure A.4: OiNK fan art 4 (ANON 2007a)[613]

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[613] ANON (2007a) "OiNK fan art 4", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

Figure A.5: OiNK fan art 5 (ANON 2007b)[614]

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[614] ANON (2007b) "OiNK fan art 5", *OiNK Memorial Blog*, 1[st] November, oinkmemorial.blogspot.com

Figure A.6: OiNK fan art 6 (ANON 2007c)[615]

Figure A.7: OiNK fan art 7 (ANON 2007d)[616]

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[615] ANON (2007c) "OiNK fan art 6", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

[616] ANON (2007d) "OiNK fan art 7", *Paine's Blog*, 1st November, tehpaine.blogspot.com

Other fan art took the IFPI and BPI to task more directly:
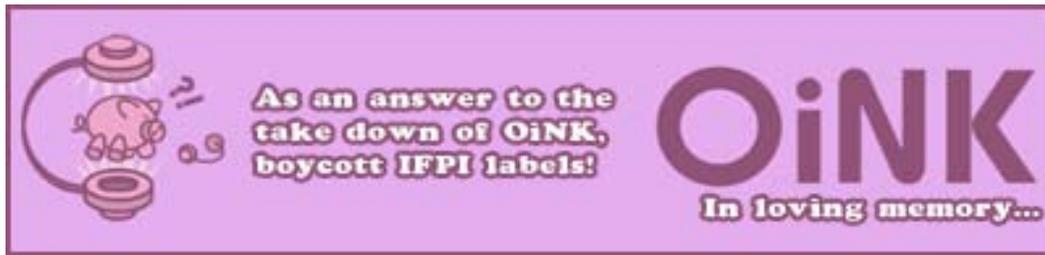
Figure A.8: OiNK fan art 8 (OiNK Memorial Blog 2007c)[617]
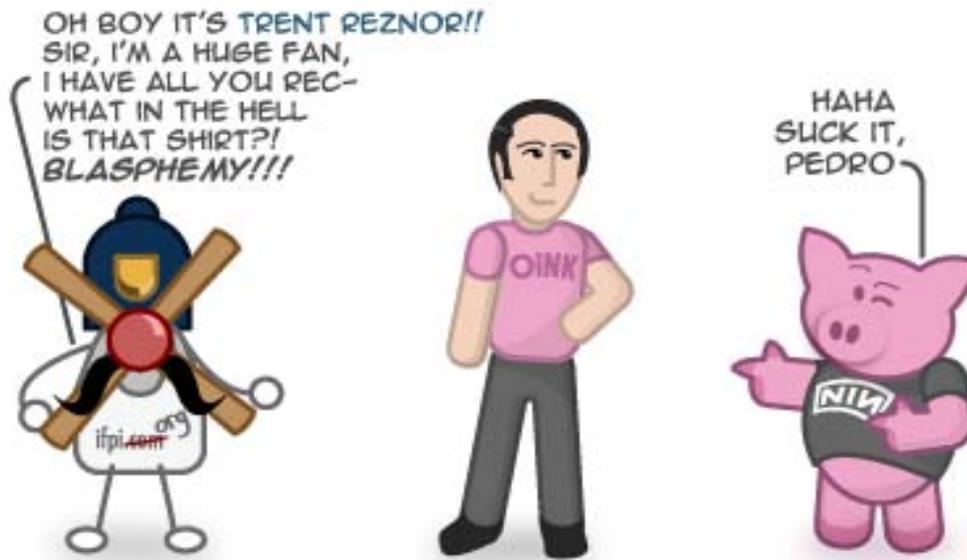
Figure A.9: OiNK fan art 9 (Canapial 2007b)[618]

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[617] OiNK Memorial Blog (2007c) "OiNK fan art 8", 1st November, oinkmemorial.blogspot.com.

[618] Canapial (2007b) "OiNK fan art 9", *Paine's Blog*, 1st November, tehpaine.blogspot.com

IM IN DA BIG HOUSE GETN WUT I DESERV

Figure A.10: OiNK fan art 10 (ANON 2007e)[619]

Pick the Pig

A) B) C)

D) All of the Above
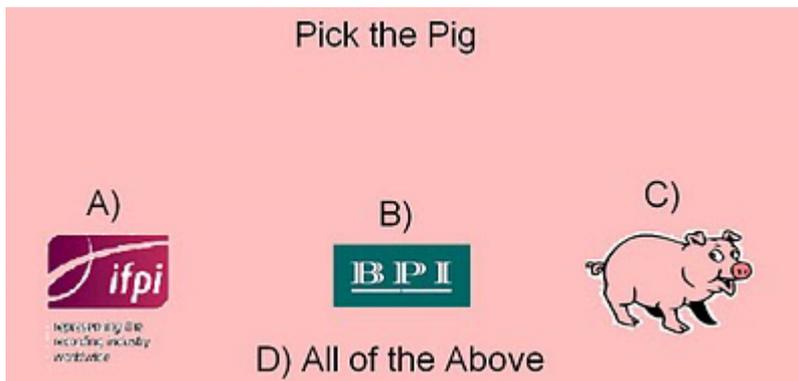
Figure A.11: OiNK fan art 11 (ANON 2007f)[620]

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[619] ANON (2007e) "OiNK fan art 10", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

[620] ANON (2007f) "OiNK fan art 11", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

Figure A.12: OiNK fan art 12 (ANON 2007g)[621]

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[621] ANON (2007g) "OiNK fan art 12", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

The fan art was also used to communicate how users felt about the closure of the site, what it meant to them and how much it would be missed:

Figure A.13: OiNK fan art 13 (ANON 2007h)[622]

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[622] ANON (2007h) "OiNK fan art 13", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com
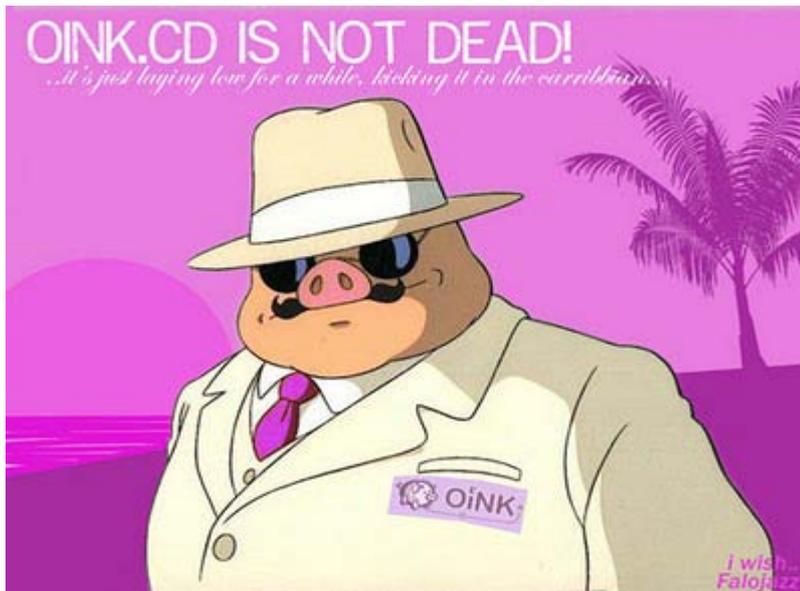
Figure A.14: OiNK fan art 14 (falojazz 2007)[623]
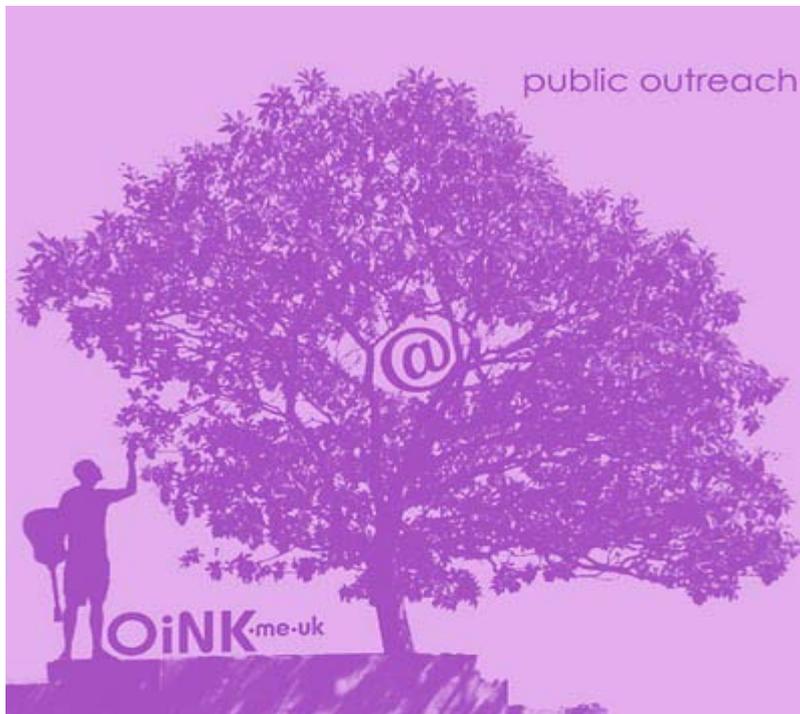
Figure A.15: OiNK fan art 15 (ANON 2007i)[624]

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[623] falojazz (2007) "OiNK fan art 14", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

[624] ANON (2007i) "OiNK fan art 15", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

Figure A.16: OiNK fan art 16 (ar33ome3 2007)[625]

[625] ar33ome3 (2007) "OiNK fan art 16", *OiNK Memorial Blog*, 1st November, oinkmemorial.blogspot.com

Appendix C - Jiggafellz guide to creating torrents

Below is the full *jiggafellz* guide to creating torrents using µTorrent, which was the most popular guide of its kind used by OiNK members, and which was made available on the OiNK website. The full guide can still be found, with the text and figures in the below order, on the web.[626]

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How to create and seed a torrent with µTorrent 1.5

Step 1:

Press the 'Create new torrent' button on the toolbar, or choose 'Create new torrent...' from the File menu. The 'Create new .torrent' window opens.
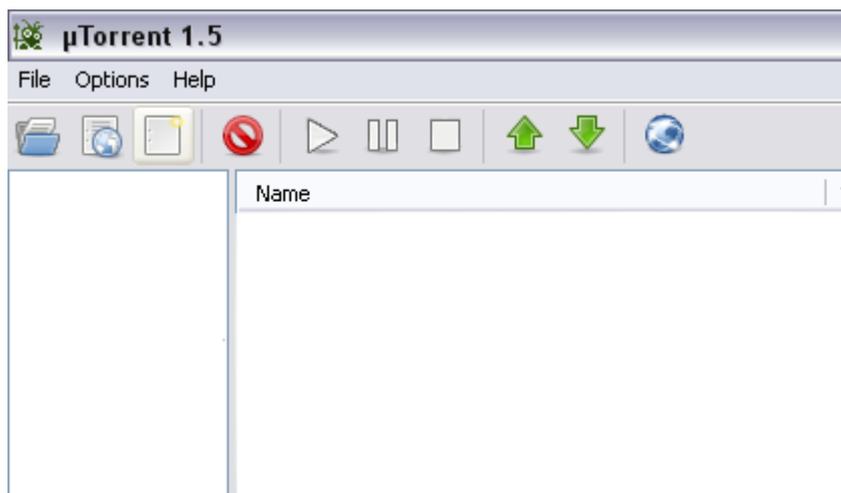
Step 2:

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[626] Jiggafellz (2006a) "How to Create and Seed a Torrent with µTorrent 1.5", April, http://jiggafellz.50g.com/bt/µTorrent/µTorrent.htm

Click 'Add Directory'.
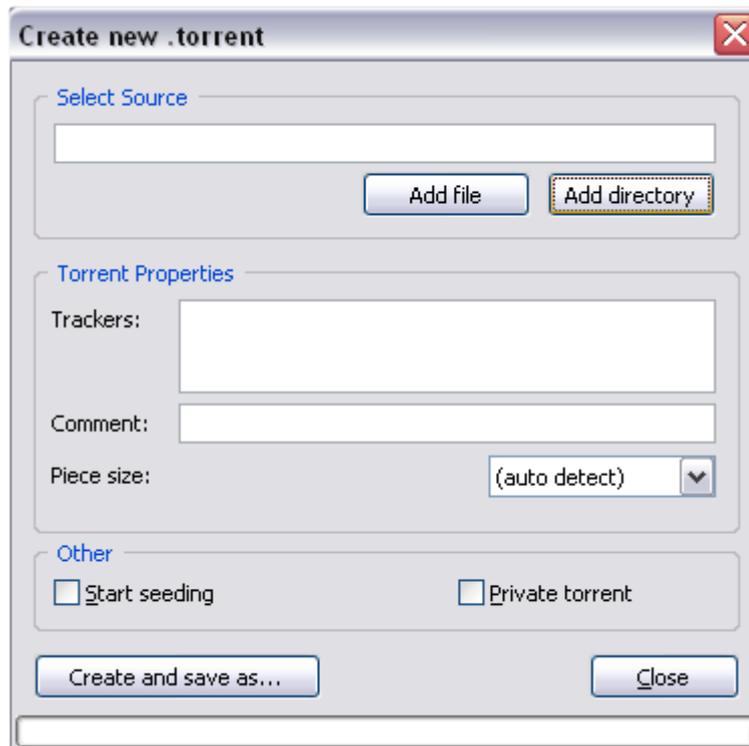
Step 3:

Browse to the folder of music you want to share and click OK.
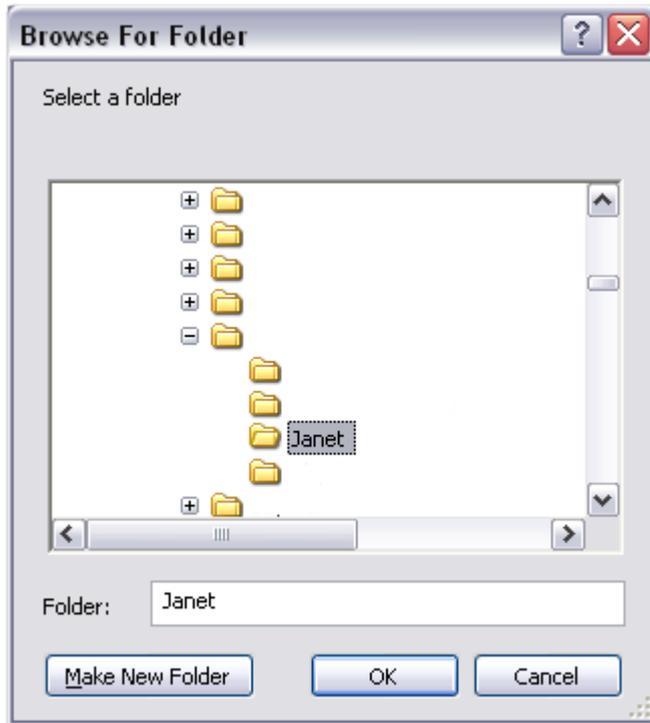
Step 4:

Copy and paste your personal tracker URL from the 'Upload' page into the Tracker URL box.
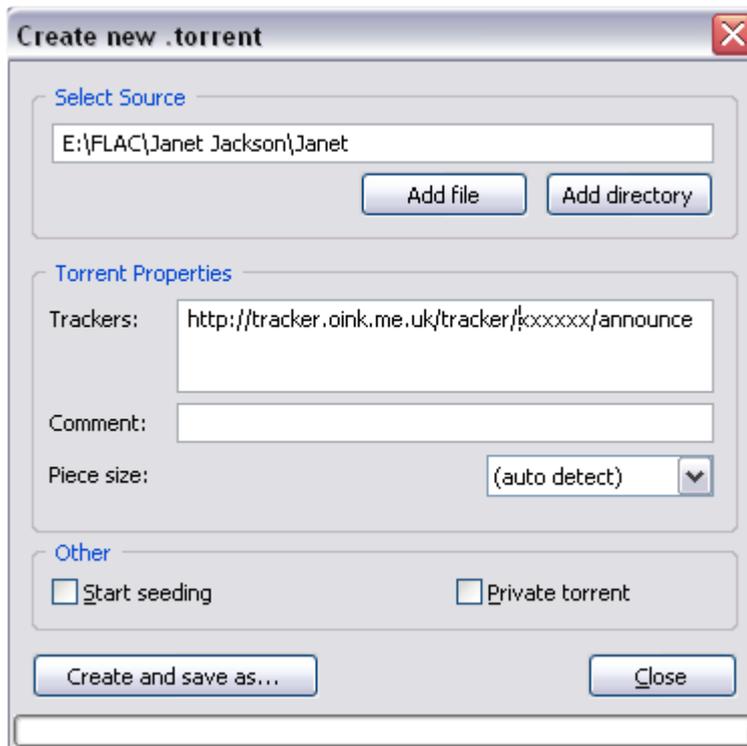
Step 5:

You can enter a comment if you like, although this is not required and is not used on the site, but it will be seen by those who are downloading your torrent.
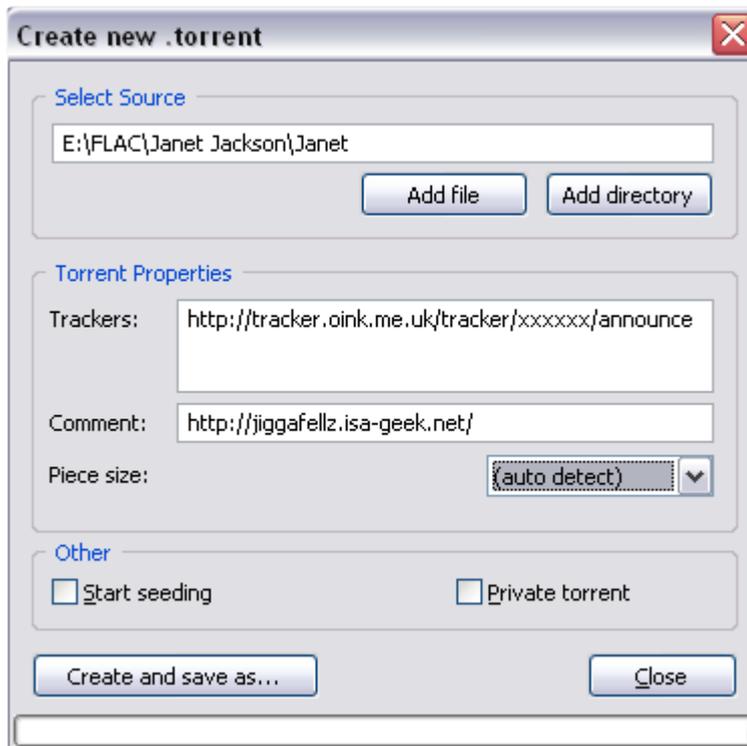
Step 6:

*** Important *** Tick 'Start Seeding' and also 'Private Torrent'.

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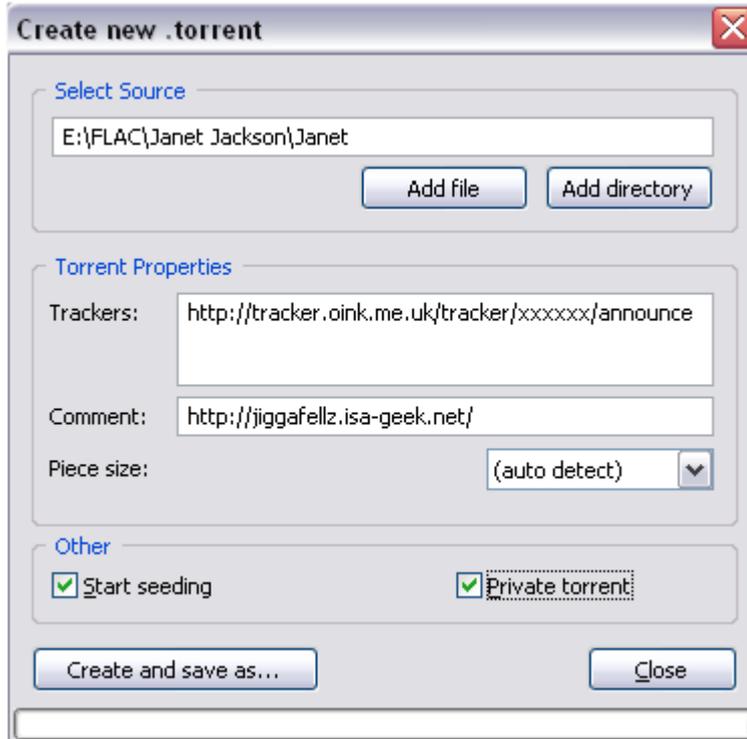
Step 7:

Click 'Create and save as...'
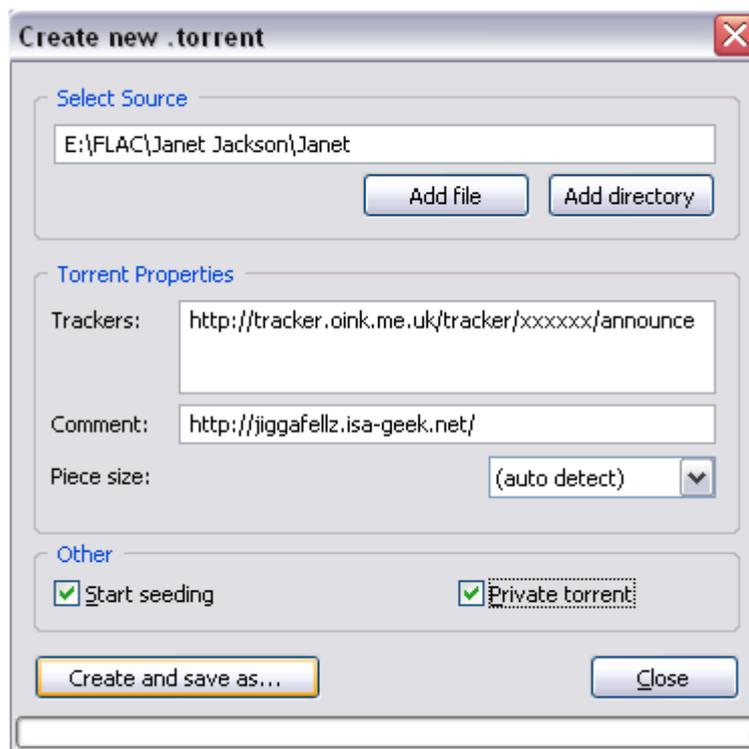
Step 8:

μTorrent hashes the files and creates the .torrent file.
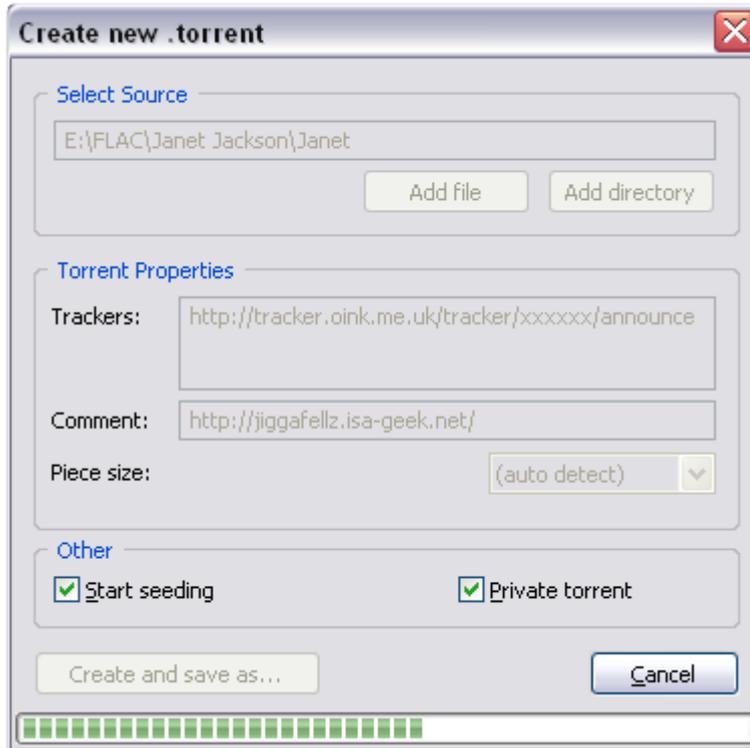
Step 9:

μTorrent asks you to where you would like to save the .torrent file. Save it somewhere you will remember, because you will be needing this soon!
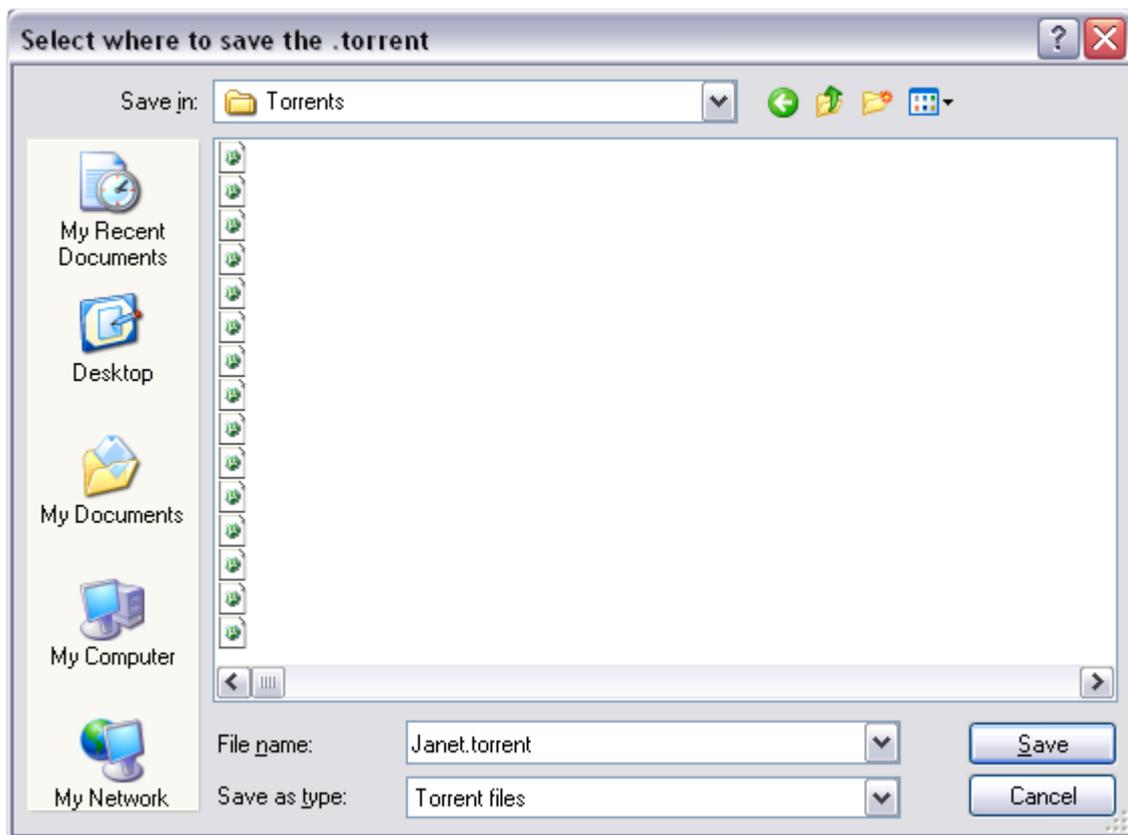
Step 10:

You can now close the 'Create new torrent' window.
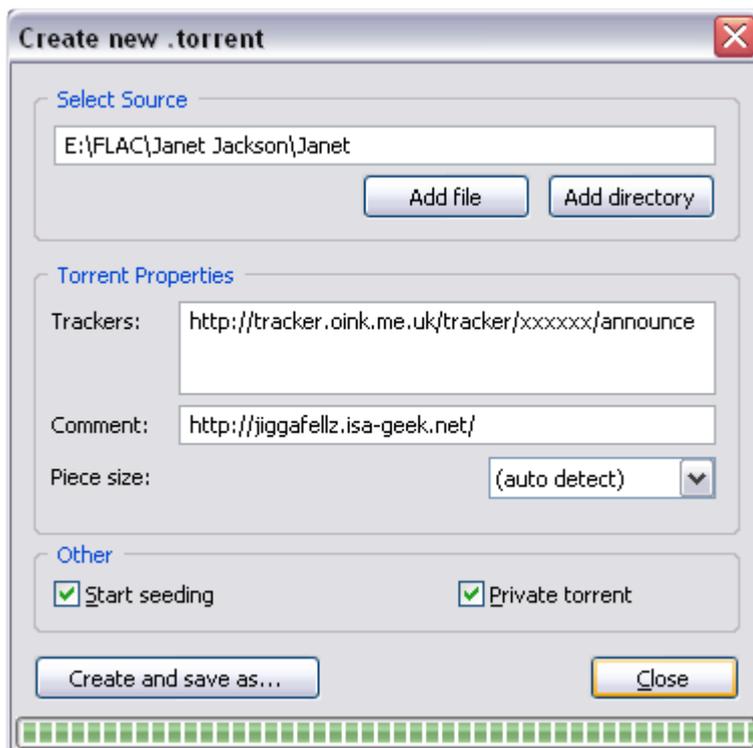
Step 11:

You will see that your new torrent is now listed in µTorrent, but the
Tracker Status gives 'Failure: torrent not registered with this tracker
(unauthorized)'. That's because you haven't yet uploaded it, so don't
worry.
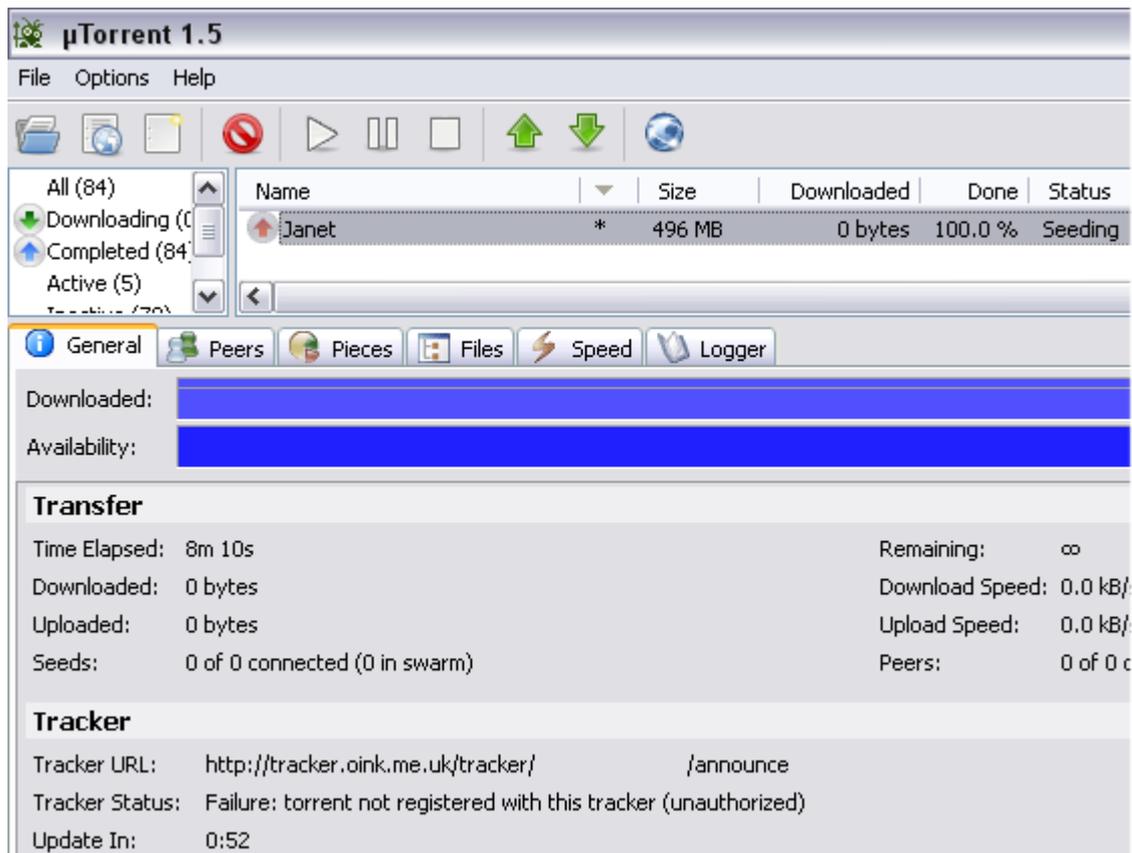
Step 12:

Go to the upload page and click 'Browse' to find the .torrent file you saved in Step 9.

Step 13:

Choose which genre or category your torrent best belongs in.

Step 14:

Fill in the torrent info box carefully and accurately. To find the correct bitrate, use Audio Identifier or Mr. QuestionMan. VBR means 'Variable Bit Rate' and you can use those programs to find whether you need to tick that. 'Scene' refers to an underground network which sources new material for release to the community. Read about the Scene at http://en.wikipedia.org/wiki/The_Scene.

Step 15:

At a minimum, the Description box should contain a track listing, like below. Remember to tick '**Checking this box indicates you are positive the release is not a transcode**' to confirm that you are 100% positive that this release is not a transcode.

Description All releases	HTML code will **not** work in this section, but BB Code **will**. See **this** page for available codes.

1. (00:00:31) - (51.39%) Janet Jackson - Morning
2. (00:04:25) - (63.84%) Janet Jackson - That's The Way Love Goes
3. (00:00:12) - (39.10%) Janet Jackson - You Know...
4. (00:05:06) - (69.03%) Janet Jackson - You Want This
5. (00:00:08) - (39.93%) Janet Jackson - Be A Good Boy...
6. (00:04:32) - (70.60%) Janet Jackson - If
7. (00:00:04) - (24.71%) Janet Jackson - Back
8. (00:06:59) - (67.52%) Janet Jackson - This Time
9. (00:00:05) - (22.57%) Janet Jackson - Go On Miss Janet
10. (00:04:35) - (72.30%) Janet Jackson - Throb
11. (00:04:06) - (73.53%) Janet Jackson - What'll I Do

Get a tracklist from **CDDB-Database** or **FreeDB**

Checking this box indicates you are positive the release is not a transcode ☑ Click **here** to learn about transcodes.

Step 16:

When you are done and happy with all the details, click 'Do it!' to add it to the site.

Do it!
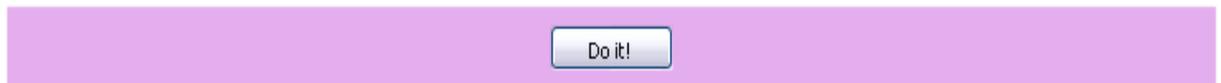
Step 17:

If you got the following page after you uploaded the torrent you've done everything correctly. **Now switch back to µtorrent.** Right-click the torrent and select 'Update Tracker.'

Successfully uploaded!

You can start seeding now. **Note** that the torrent won't be visible until you do that!

Janet Jackson - Janet [1993/FLAC/Lossless]

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That's it! You are now seeding. Well done.

Appendix D - Jiggafellz guide to Exact Audio Copy

Below is the full *jiggafellz* guide to ripping and encoding digital audio from CD using Exact Audio Copy (EAC), which was the most popular guide of its kind used by OiNK members, and which was made available on the OiNK website. The full guide can still be found, with the text and figures in the below order, on the web.[627]

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Secure CD Ripping with Exact Audio Copy

Table of contents

I. Introduction

This is a detailed and up-to-date guide to configure the best CD extractor on the planet, also known as Exact Audio Copy, which is made for Windows. It will guide you through the setup It consists of information I've found on various ripping and encoding sites, including Hydrogen Audio. What I've done is compile the most important and useful specifications that go into making a proper rip without giving you a lot of filler and information that isn't understood by the average user. At first glance, this guide may seem tedious or overwhelming, but the initial setup of EAC along with the setup of the four encoders is a one time deal. After that, it's smooth sailing. I might add that it isn't necessary to configure EAC for all

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[627] Jiggafellz (2006b) "Secure CD ripping with Exact Audio Copy", April, http://hiphopiscoolagain.com/secure-cd-ripping-with-exact-audio-copy/

four encoders to use. Just the ones you prefer or need. Installation The very first step is installing EAC. You need to download v 0.95 beta 4. You also need a working ASPI layer. If you have Nero installed you can copy wnaspi32.dll from the Nero installation folder (C:\Program Files\Ahead\Nero) to your EAC installation folder (C:\Program Files\Exact Audio Copy) after the installation has finished. If you don't have Nero you can download the needed file here.

- After installation is complete, extract & copy wnaspi32.dll to your EAC installation folder and run EAC.
- If it prompts you to run the Configuration Wizard, click cancel then restart EAC.

Configuring the options

Press F12. You **have to enter a valid email address**. Select a server from the dropdown menu. The default server is highlighted but as you can see there are multiple servers located all over the world. Select the one you want and click OK.
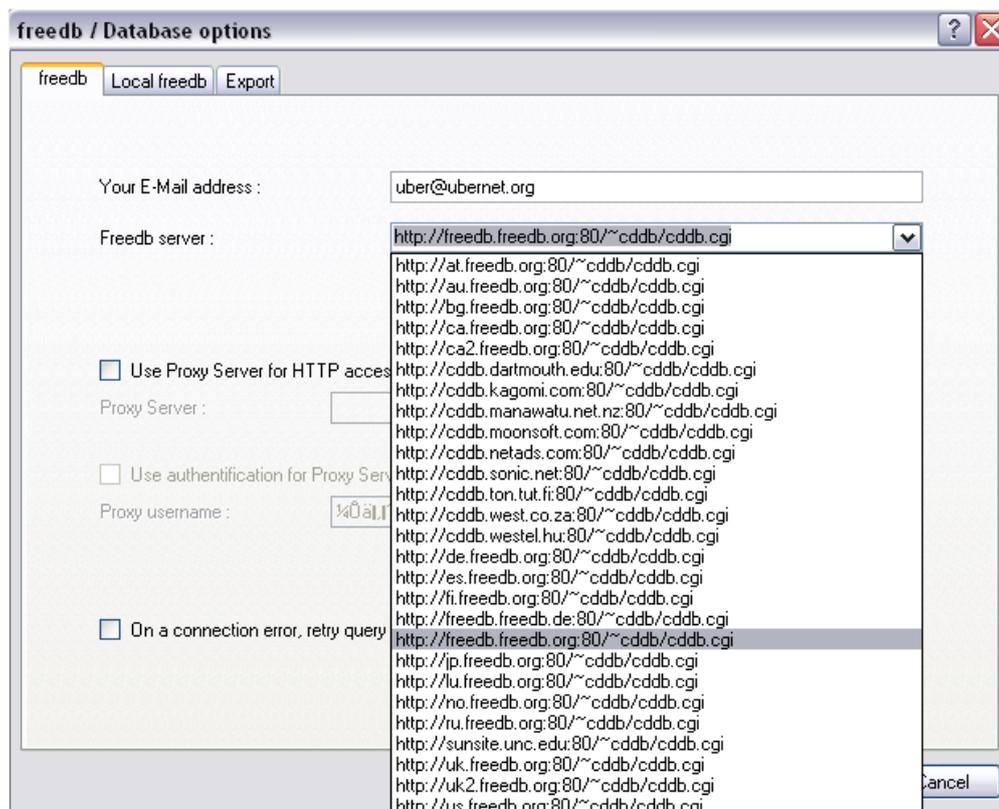
Press F9 and select the 'Extraction' tab. Check 'Fill up missing offset samples with silence' and 'Synchronize between tracks.' Also change the Error recovery quality to High.
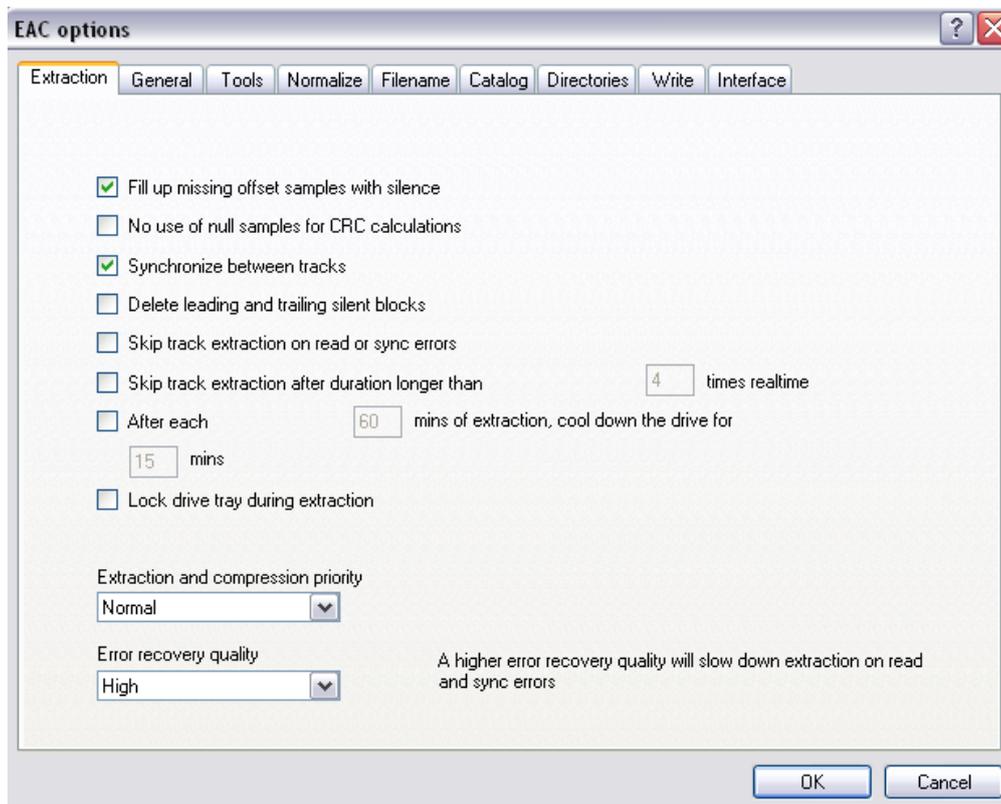
On the next tab General check following options:

- On unknown cds automatically access online freedb database: When you insert a cd in your drive EAC will automatically lookup the performer, album and track titles from the online freedb database. That saves you a lot of typing work if the cd is found in the online database. This option makes only sense if you have a permanent Internet connection like DSL or cable.
- When using the Power Down feature wait for external compressors.
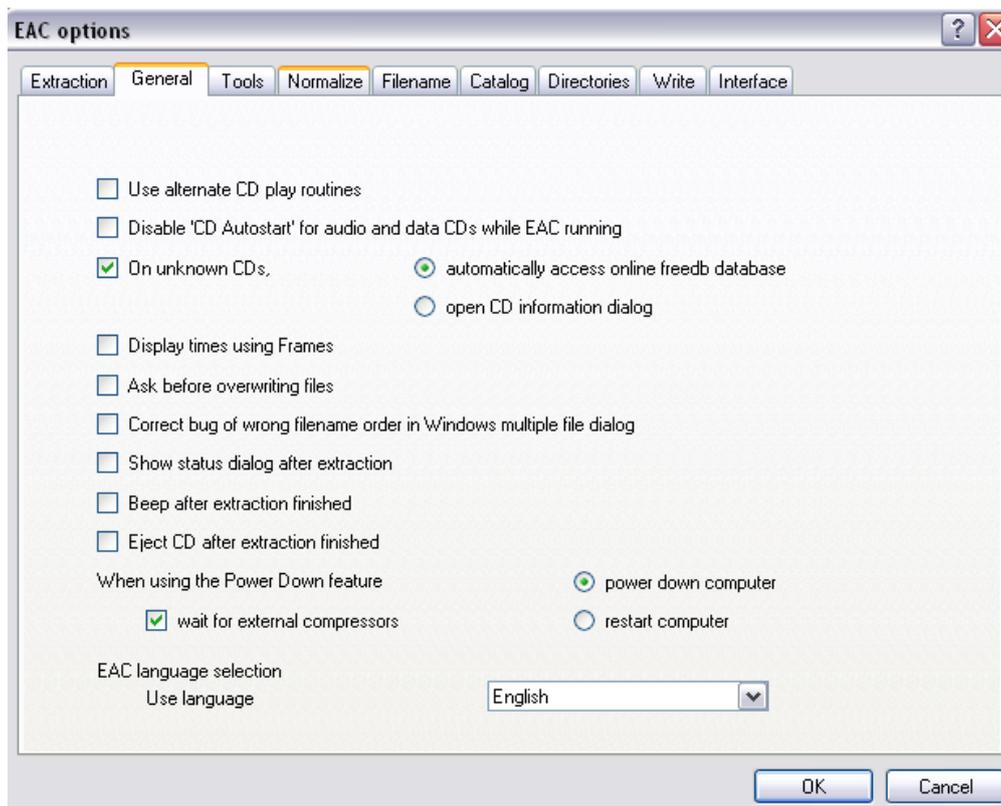
On the third tab Tools you also must set a few options:

- Use CD-Text information in CUE sheet generation
- **Optional**- Create '.m3u' playlist on extraction and the sub option 'Write m3u playlist with extended information.' This will make EAC add additional information to the playlist like the track play time.
- Automatically write status report after extraction. This makes EAC write a status report (log file) after extraction in which you can find possible errors and the used settings.
- On extraction, start external compressors queued in the background. This controls how many compressor windows will open and encode while you are ripping. It is unnecessary to select more than one.
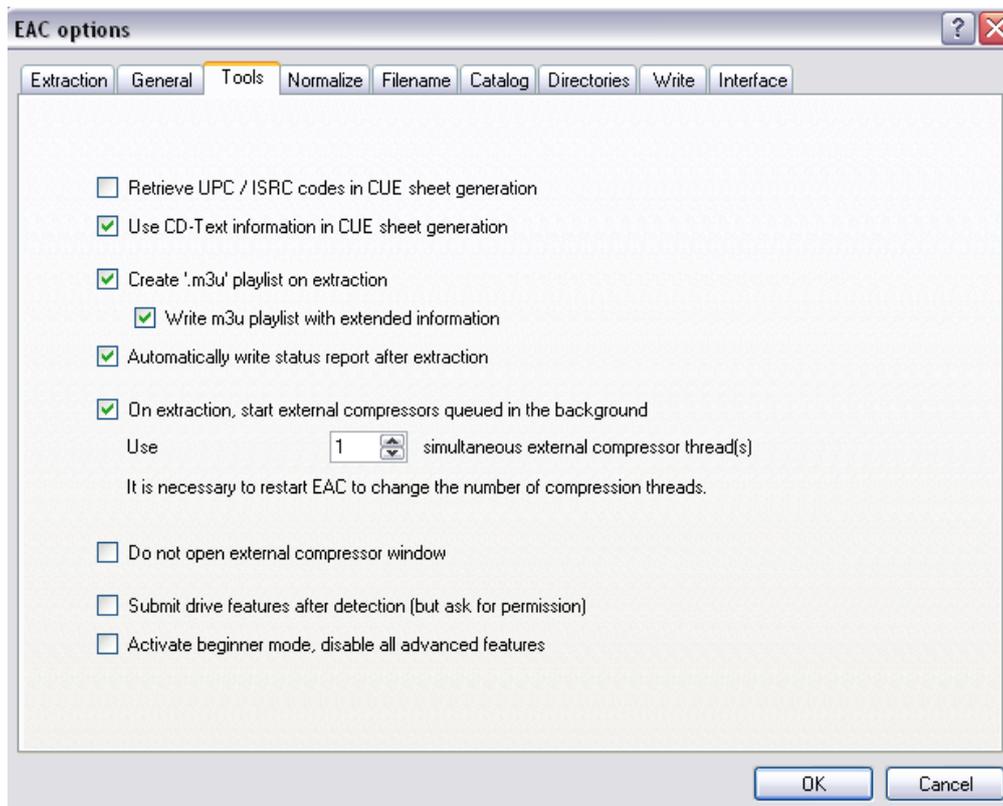
- Select the Normalize tab.
- If Normalize is checked, then deselect it.
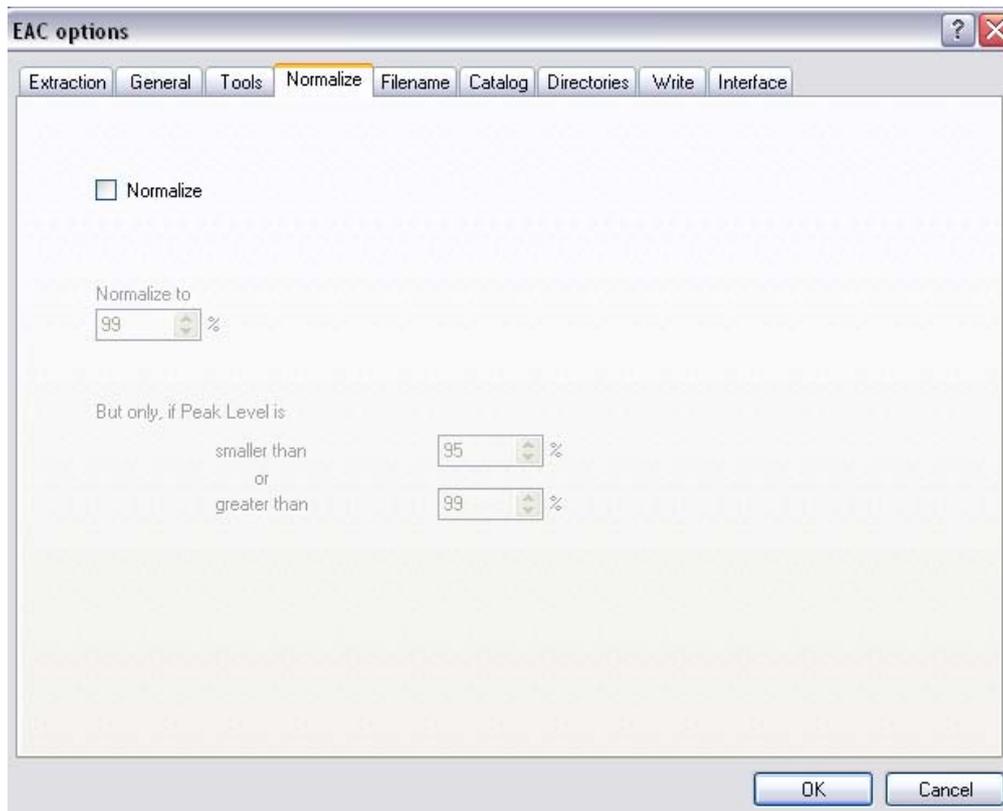
- Select the Filename tab. You'll notice two input fields with text in them. Below you see %N - %A - %T in those fields. EAC generates filenames using this string which would look like Number - Artist - Title. You can experiment with the various combinations for the filename construction. In any case, please keep the filenames simple and put the track number (%n) first.
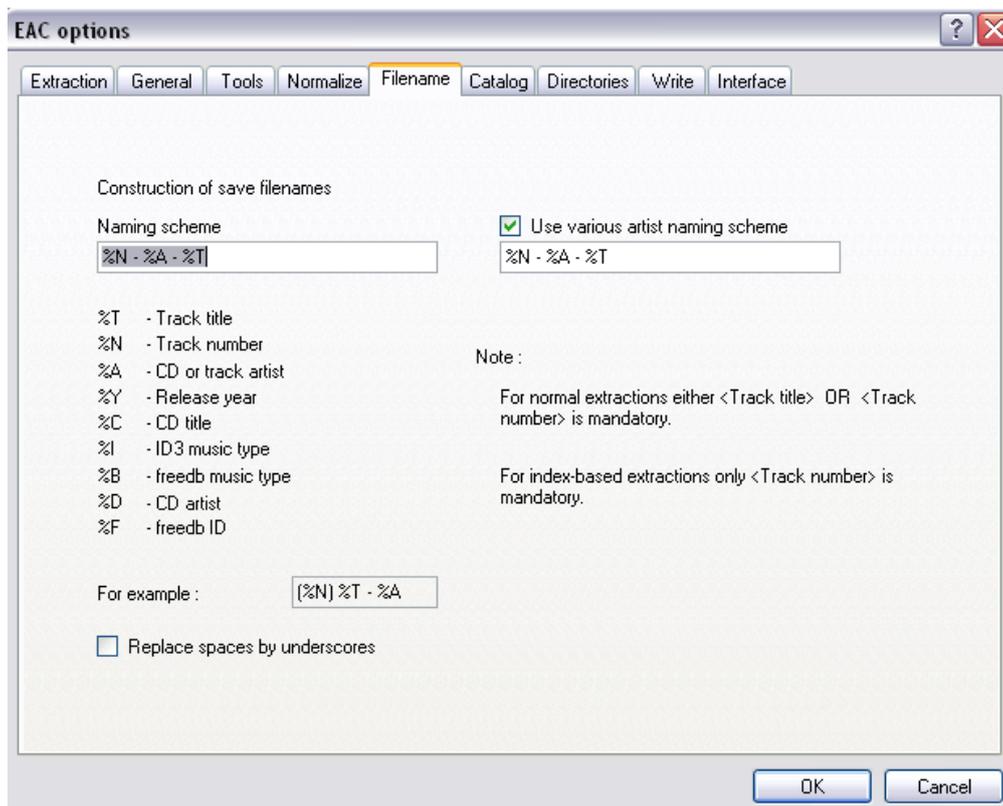
- Select the Interface tab and tick 'Installed external ASPI interface.' This would be the wnaspi32.dll file you copied to your EAC folder after installation. This section is complete. Select Ok.
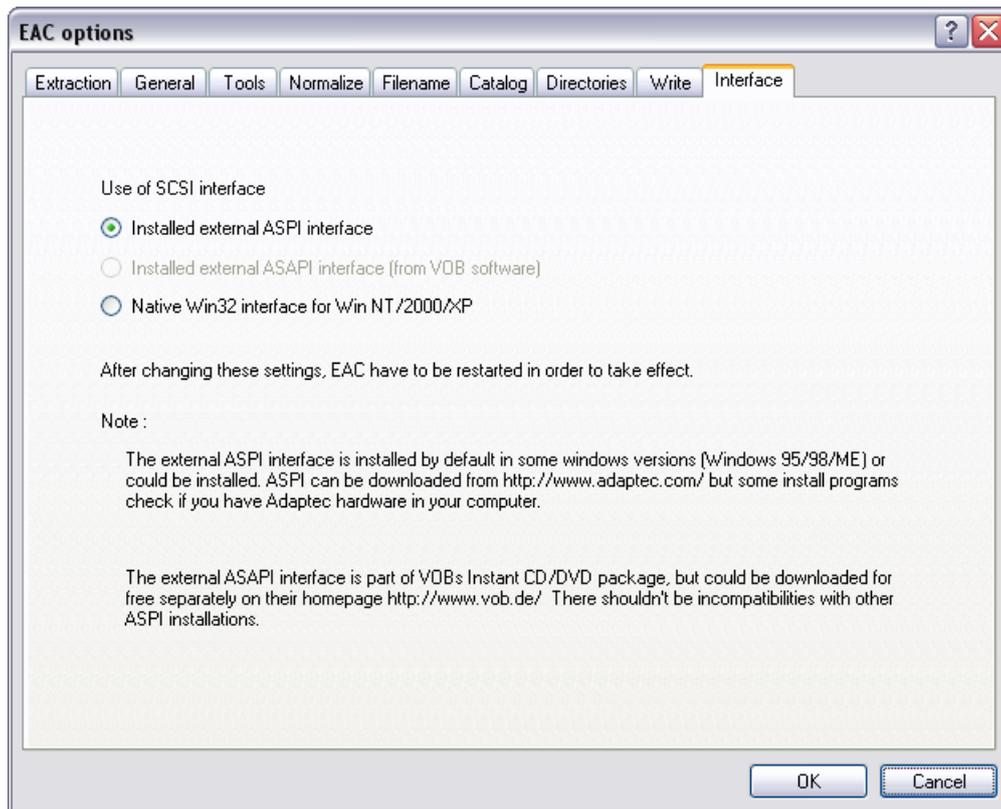
Verifying or setting the drive options

This is one of the most important parts of the EAC configuration.

- Press F10. Select the warning dialog box away.
- Select the 'Extraction Method' tab. Secure Mode must be enabled!
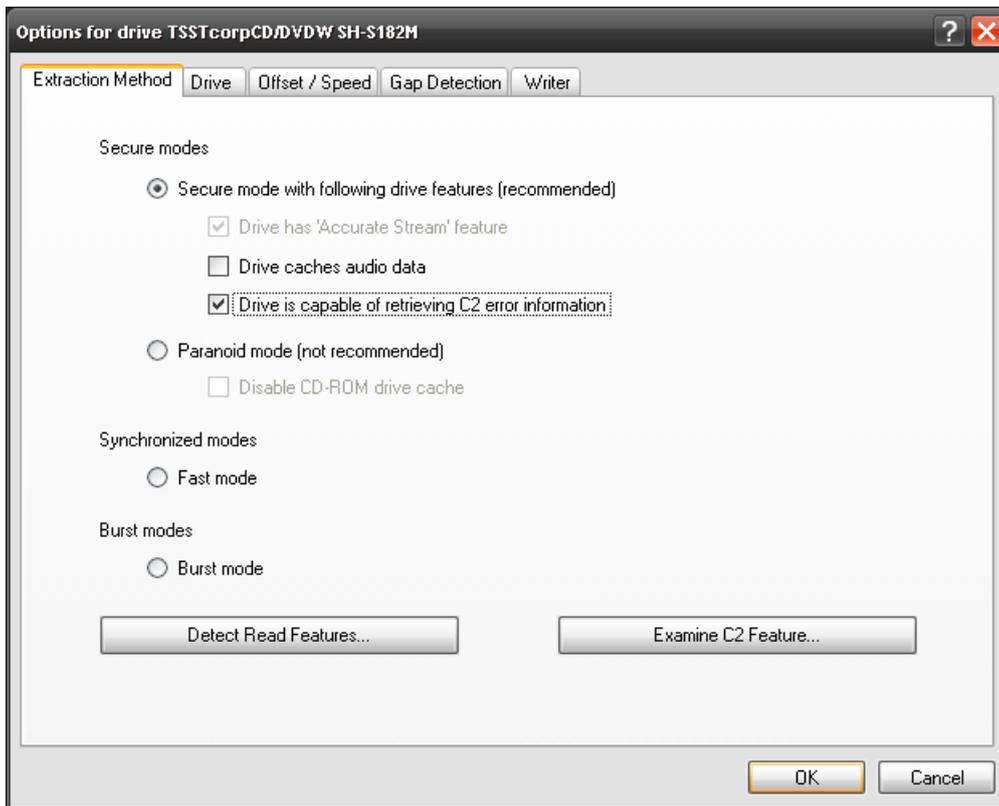
- Insert an audio into the selected drive.
- Click Detect Read Features. You will see the following when EAC begins to analyze your drive and when it is complete.
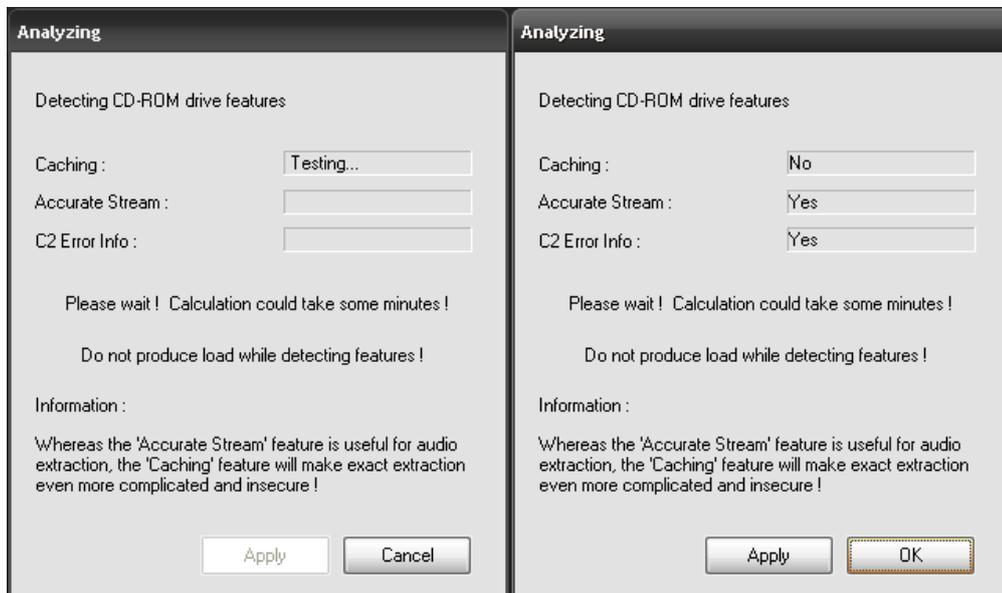
- Click apply. EAC will then ask you if you want to share the results of the test for your drive. That's up to you.

Select the Drive tab.

- Select the dropdown menu and select Autodetect read command.
- Insert an audio CD into the drive you're configuring.
- Select Autodetect read command now. After a few seconds EAC returns the correct read command for your drive.
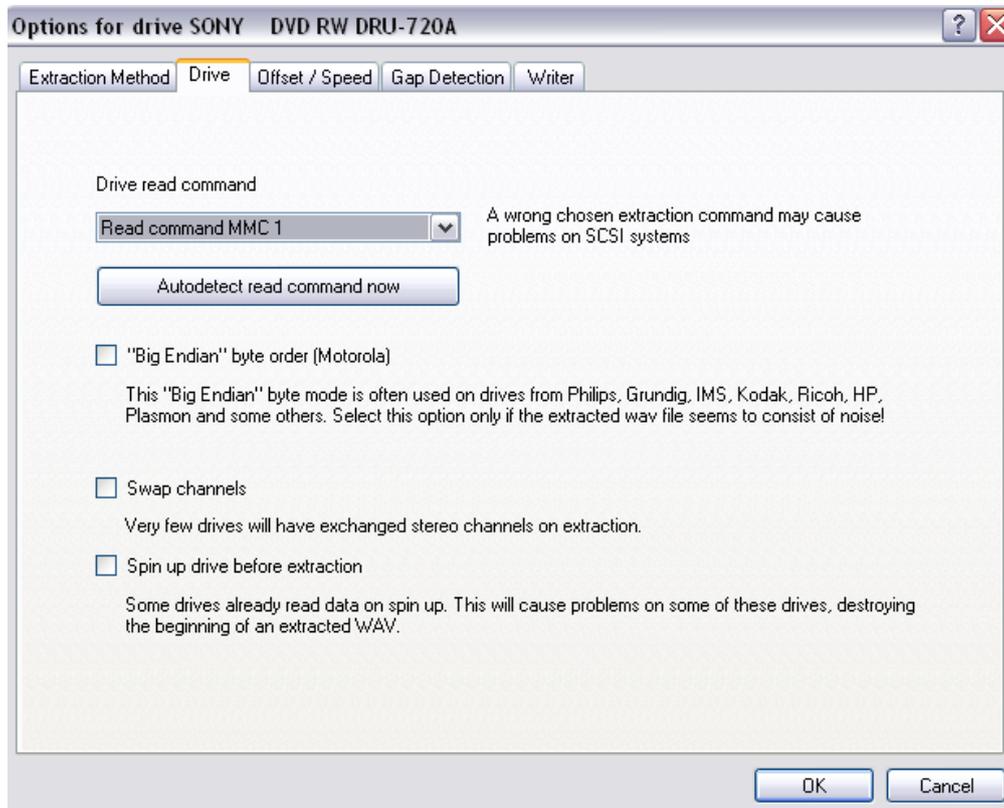
Select the Offset/Speed tab

- Check 'Use read sample offset correction'
- In the input field below, enter the offset correction value for your drive which can be found on this site. If you don't know what drive you have or what to look for, your drive will be listed at the top of the window below. It's likely to be easier searching for the model numbers. (e.g. DRU-720A)
- Check 'Allow speed reduction during extraction' and 'CD-Text Read capable drive.'
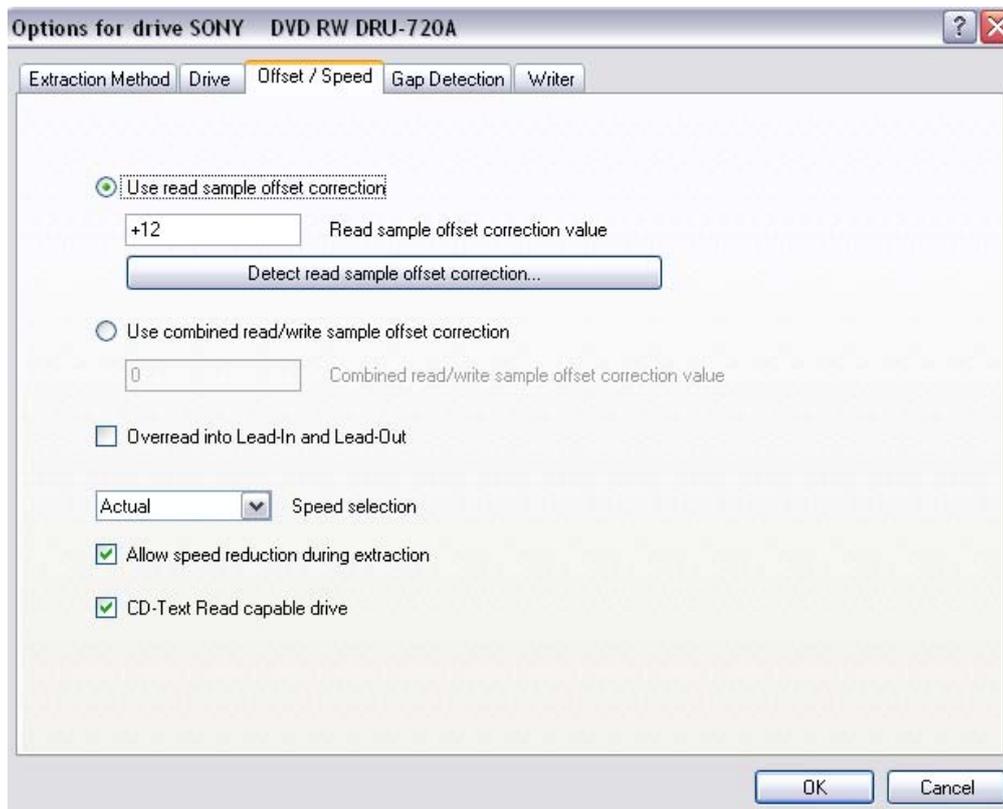
Select the Gap Detection tab

- It is recommended to use Detection Method A, and Secure here. Some drives may not use these settings, if this is the case when you are detecting gaps, try changing them.
- Select secure in the detection accuracy dropdown list.
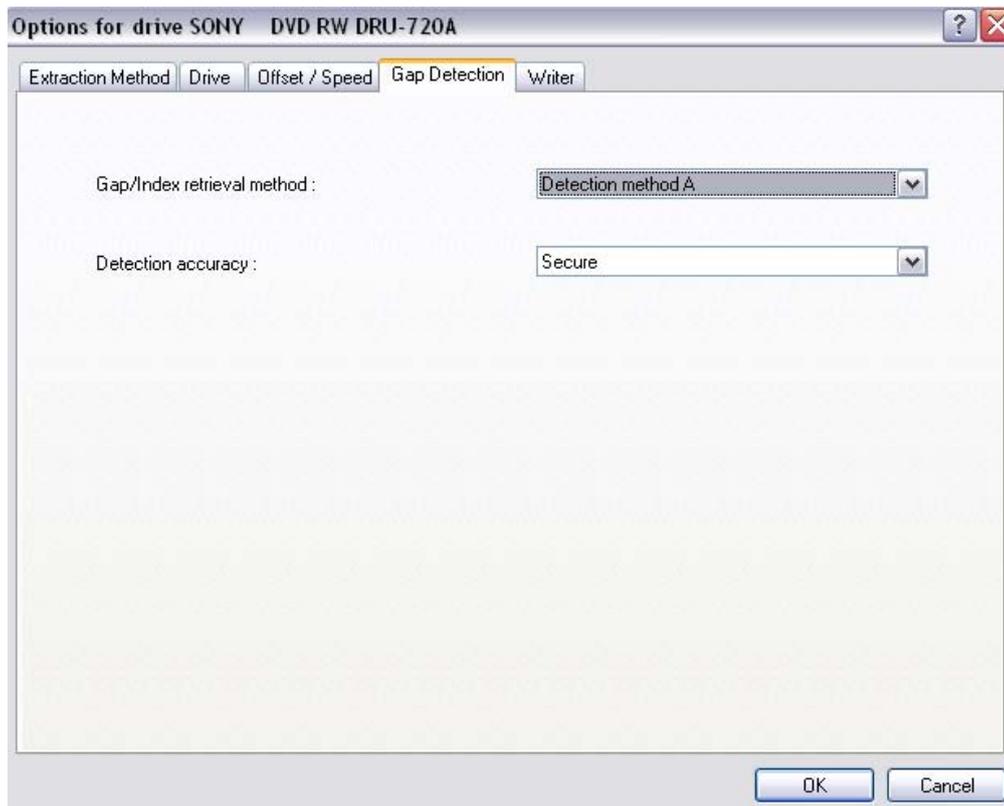
Select OK.

Setting the encoder options

The configuration of EAC and the drives is done. Next step is to configure the encoder settings. These differ from codec to codec, but the four steps lists below will remain the same.

- Press F11
- Select External Compression
- Check 'Use external program for compression.
- Select User Defined Encoder from the Parameter passing scheme drop-down box. Use the links below to advance to your preferred encoder.
    1. LAME mp3
    2. FLAC
    3. Monkey's Audio
    4. Ogg Vorbis

LAME mp3

The first thing you need to do is get LAME.

- Open the downloaded zip file. Extract the lame.exe file to the EAC installation path. (default: C:\Program Files\Exact Audio Copy\)
- Back in EAC set 'Use file extension' to .mp3 (including the dot in front). Next we need to set the path to the LAME executable.
- If you stored it in the recommended location, you can just copy and paste C:\Program Files\Exact Audio Copy\lame.exe.
- Further set the last four options on the tab as shown in the screenshot below.
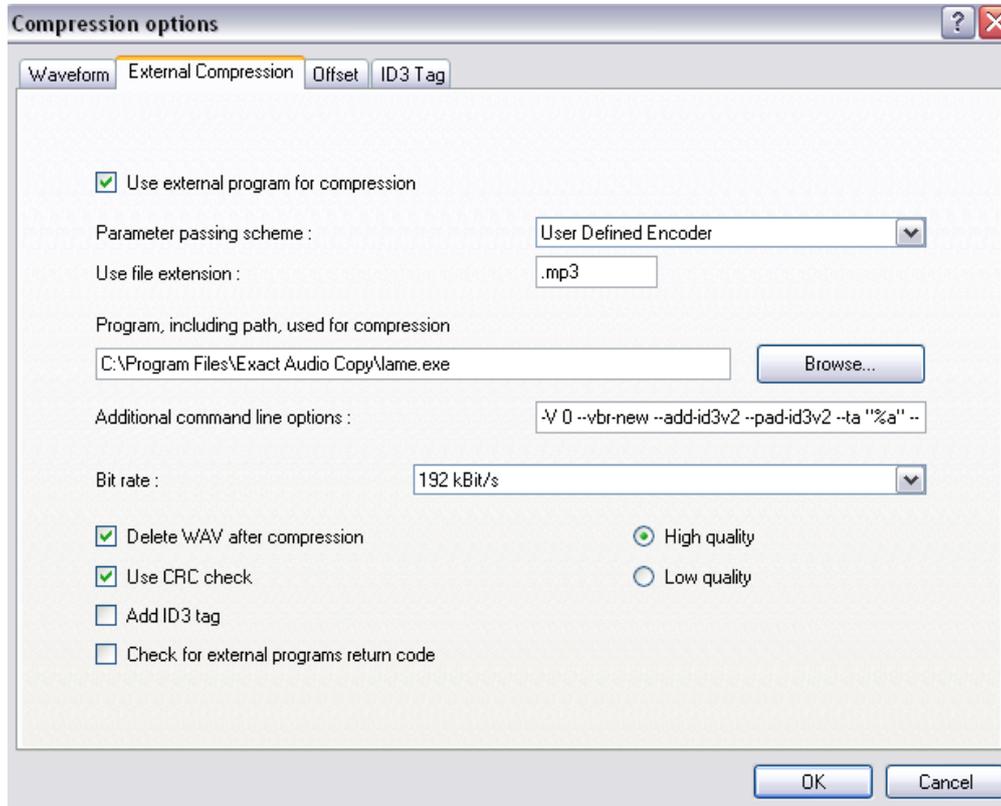
On the External Compression tab enter one of following command lines in the Additional command line options input field:

- **-V 2 --vbr-new --add-id3v2 --ta "%a" --tt "%t" --tg "%m" --tl "%g" --ty "%y" --tn "%n" %s %d**
- **-V 0 --vbr-new --add-id3v2 --ta "%a" --tt "%t" --tg "%m" --tl "%g" --ty "%y" --tn "%n" %s %d**
- **-b 320 --add-id3v2 --ta "%a" --tt "%t" --tg "%m" --tl "%g" --ty "%y" --tn "%n" %s %d**

List of recommended settings

Switch	Preset	Target Kbit/s	Bitrate range kbit/s	Bitrate designation

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-b 320	--preset insane	320	320 CBR	320
-V 0 --vbr-new	--preset fast extreme	245	220…260	V0
-V 2 --vbr-new	--preset fast standard	190	170…210	V2

- Check if the settings on the ID3 Tag tab page match the settings of the screenshot below.
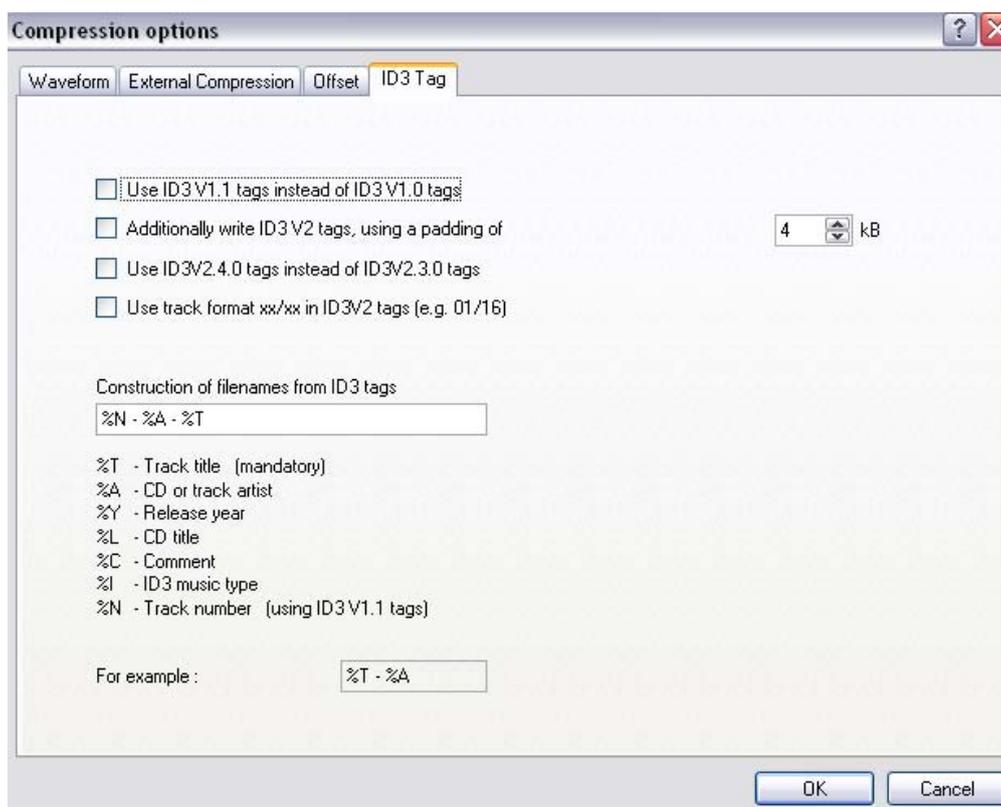
Select OK to save the settings. Continue reading at

FLAC

The first thing you need to do is get FLAC.

- Open the downloaded zip file. Extract the flac.exe file to the EAC installation path. (default: C:\Program Files\Exact Audio Copy\)

- Back in EAC set 'Use file extension' to .flac (including the dot in front). Next we need to set the path to the FLAC executable.
- If you stored it in the recommended location, you can just copy and paste C:\Program Files\Exact Audio Copy\flac.exe.
- Further set the last four options on the tab as shown in the screenshot below.
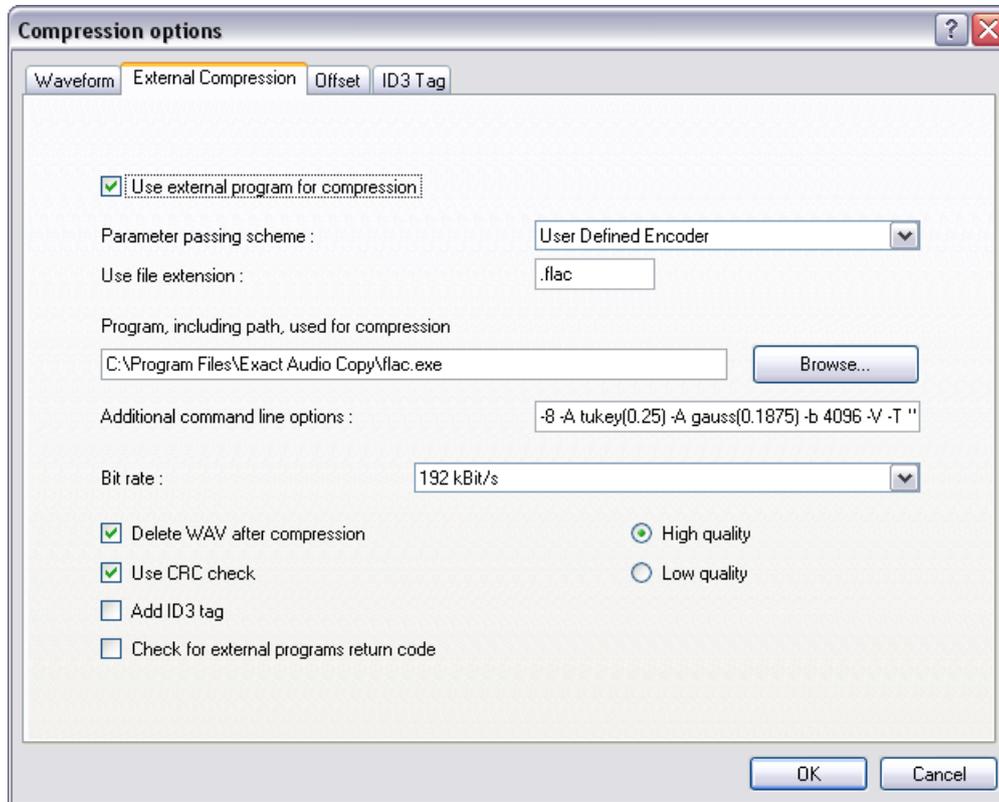
On the External Compression tab enter one of following command lines in the Additional command line options input field:

- **-V -5 -T "artist=%a" -T "title=%t" -T "album=%g" -T "date=%y" -T "tracknumber=%n" -T "genre=%m" %s**
- **-8 -A tukey(0.25) -A gauss(0.1875) -b 4096 -V -T "artist=%a" -T "title=%t" -T "album=%g" -T "date=%y" -T "tracknumber=%n" -T "genre=%m" %s**
- Just ignore the Bitrate field and the high and low quality selectors. The bitrate of the compressed files will be "Lossless" no matter the compression (5/8) level used.
- Check if the settings on the ID3 Tag tab page match the settings of the screenshot below.
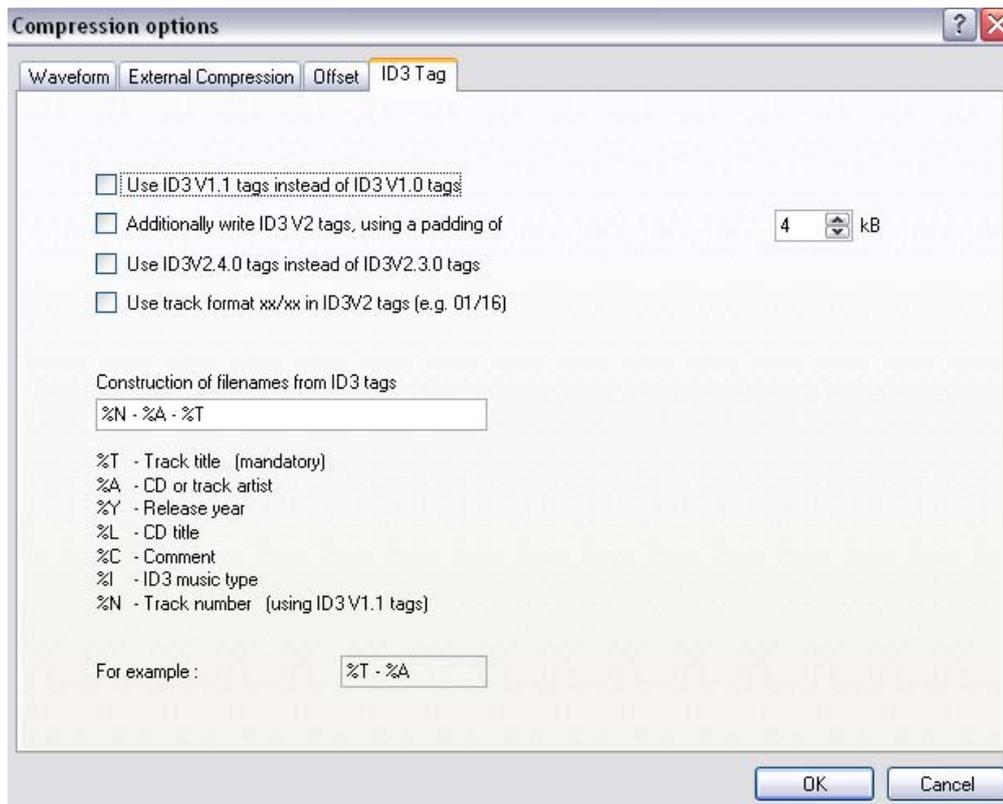
Select OK to save the settings. Continue reading at [Saving the compression options to a profile](#)

Monkey's Audio

The first thing you need to do is get [Monkey's Audio](#). You will also need [wapet](#). The Monkey's Audio format supports the so-called APEv2 tags but the command line encoder doesn't. Therefore, we point EAC to wapet which does support APEv2 tags and, which on its turn, points to the Monkey's Audio compressor.

- You'll have to download and install the full Monkey's Audio Windows suite. When that's done you'll find the command line encoder mac.exe in the Monkey's Audio installation folder (default: C:\Program Files\Monkey's Audio\). Copy and paste it to C:\Program Files\Exact Audio Copy\
- Extract the wapet.exe to C:\Program Files\Exact Audio Copy\
- Back in EAC set Use file extension to .ape (including the dot in front). Next we need to set the path to the wapet executable.
- If you stored it in the recommended location, you can just copy and paste C:\Program Files\Exact Audio Copy\wapet.exe
- Further set the last four options on the tab as shown in the screen-shot below.
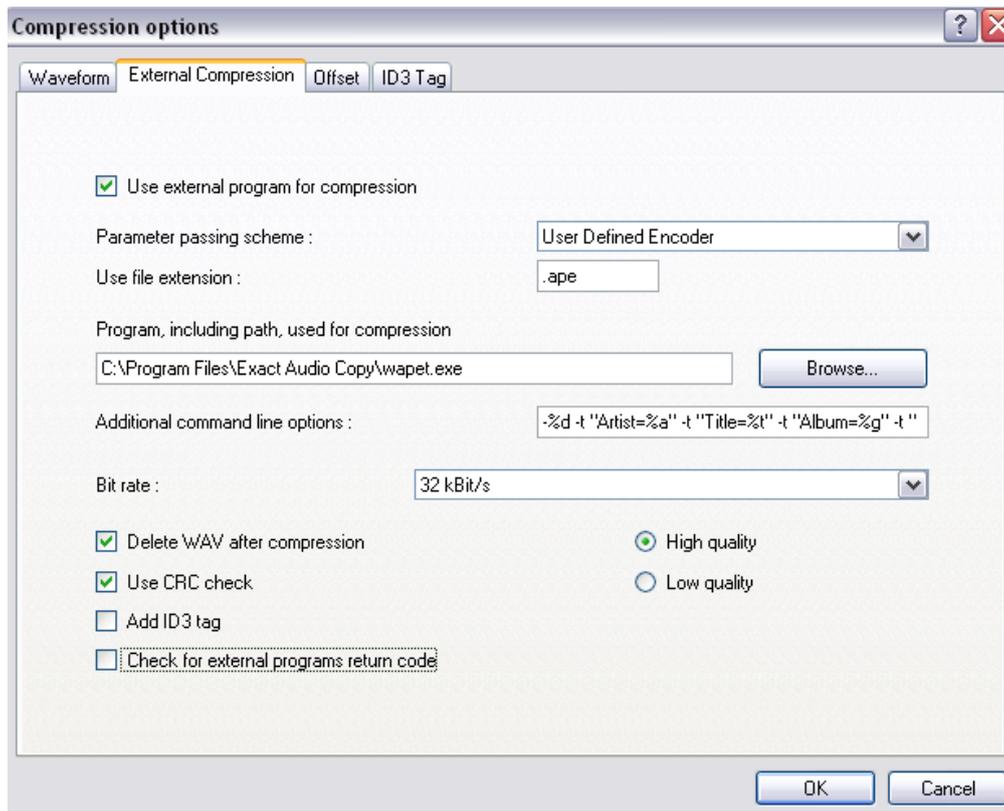
On the External Compression tab enter one of following command lines in the
Additional command line options input field:

- **%d -t "Artist=%a" -t "Title=%t" -t "Album=%g" -t "Year=%y" -t "Track=%n" -t "Genre=%m" mac.exe %s %d -c2000 -v**
- **%d -t "Artist=%a" -t "Title=%t" -t "Album=%g" -t "Year=%y" -t "Track=%n" -t "Genre=%m" mac.exe %s %d -c3000 -v**
- **%d -t "Artist=%a" -t "Title=%t" -t "Album=%g" -t "Year=%y" -t "Track=%n" -t "Genre=%m" mac.exe %s %d -c4000 -v**
- Just ignore the Bit rate field and the high and low quality selectors.
- Check if the settings on the ID3 Tag tab page match the settings of the screenshot below.
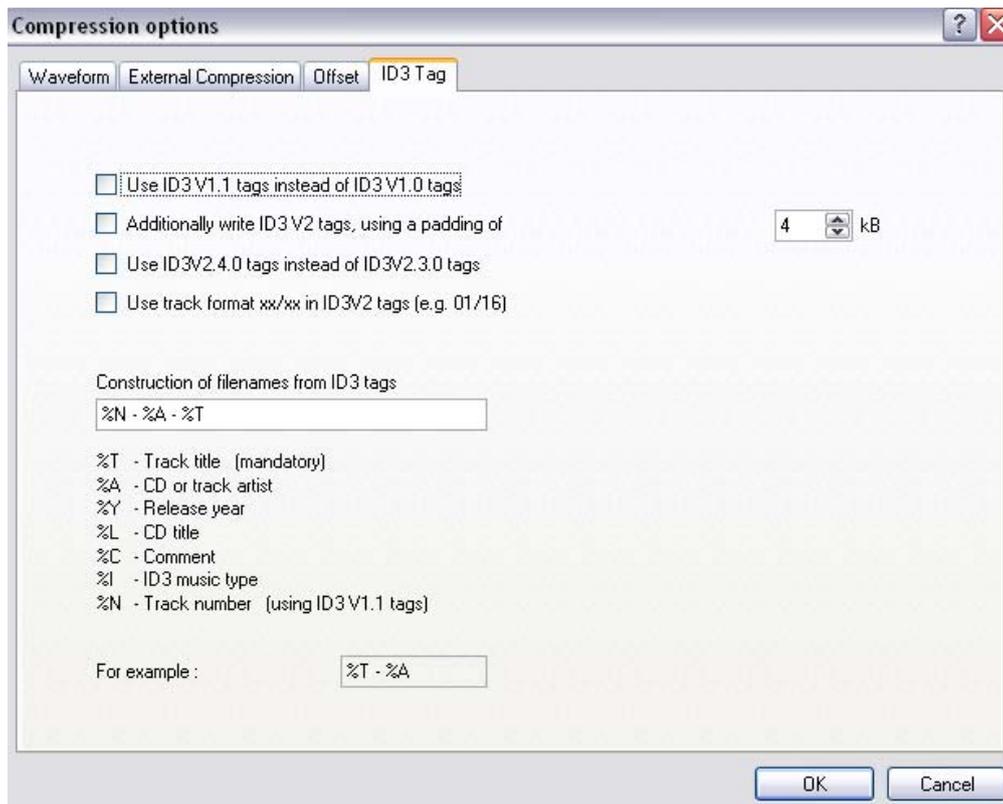
Select OK to save the settings. Continue reading at Saving the compression options to a profile

Ogg Vorbis

The first thing you need to do is get Ogg Vorbis.

- Open the downloaded zip file. Extract the oggenc2.exe file to the EAC installation path. (default: C:\Program Files\Exact Audio Copy\)
- Back in EAC set 'Use file extension' to .ogg (including the dot in front). Next we need to set the path to the OGG executable.
- If you stored it in the recommended location, you can just copy and paste C:\Program Files\Exact Audio Copy\oggenc2.exe.
- Further set the last four options on the tab as shown in the screen-shot below.
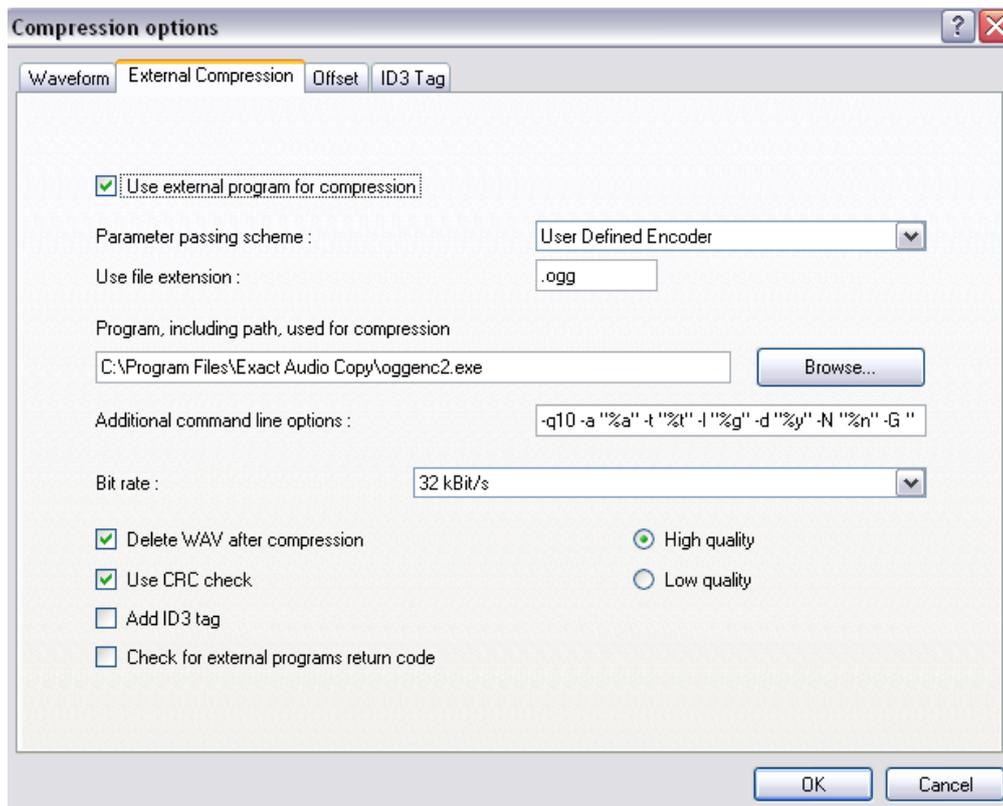
On the External Compression tab enter one of following command lines in the Additional command line options input field:

- **-q6 -a "%a" -t "%t" -l "%g" -d "%y" -N "%n" -G "%m" %s**
- **-q8 -a "%a" -t "%t" -l "%g" -d "%y" -N "%n" -G "%m" %s**
- **-q10 -a "%a" -t "%t" -l "%g" -d "%y" -N "%n" -G "%m" %s**
- Just ignore the Bit rate field and the high and low quality selectors.
- Check if the settings on the ID3 Tag tab page match the settings of the screenshot below.
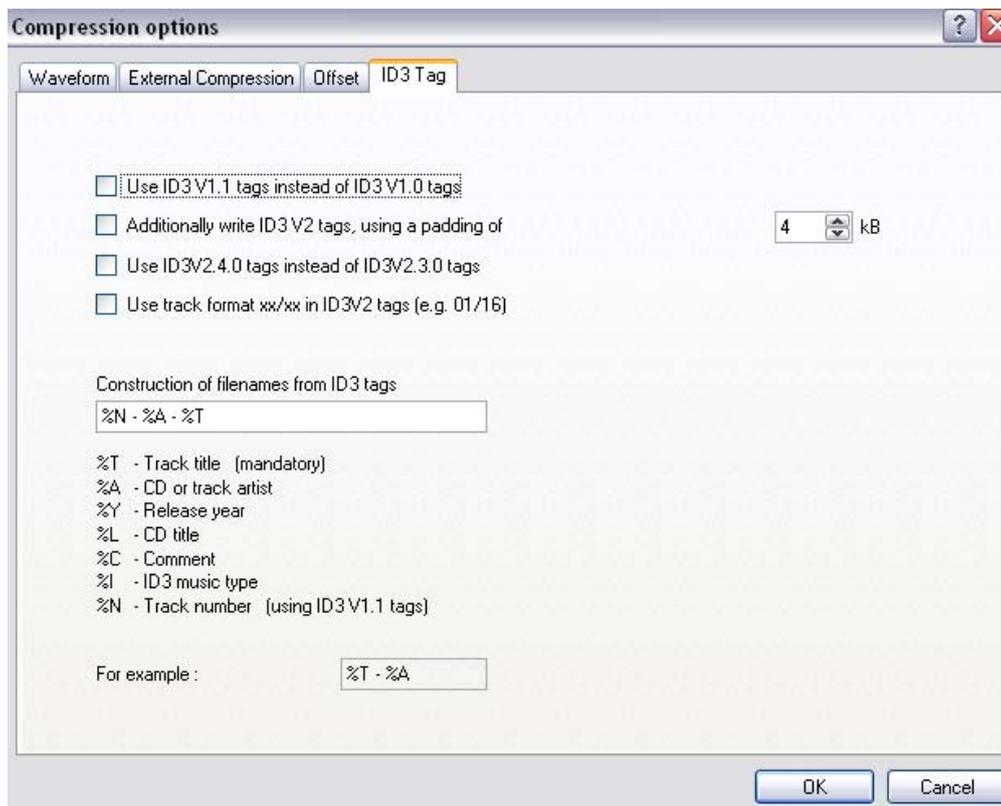
Select OK to save the settings. Continue reading at [Saving the compression options to a profile](#)

Saving the compression options to a profile

You've just set the options for your preferred encoder and now it's time to save that configuration to it's very own profile so you don't have to go that setup again. This is especially convenient if you want to use several different encoders because each time you change the compression options in EAC the old settings will be lost. You can use one of two ways to create your new profile(s). 1st Method

- Press Shift+F2
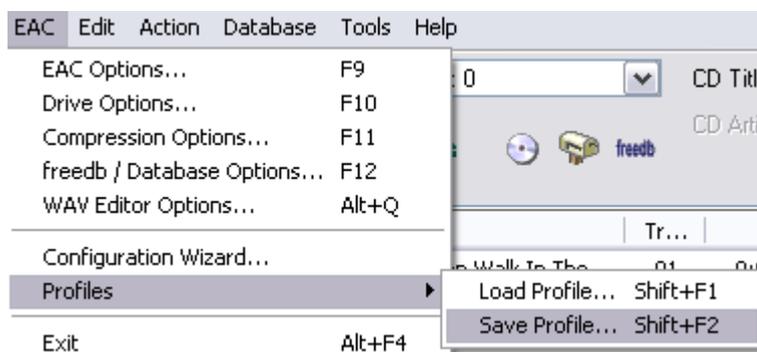
- Enter a name for the profile. I suggest naming it after whichever encoder it is configured for. That way, there will be no confusion on which is which later down the road.
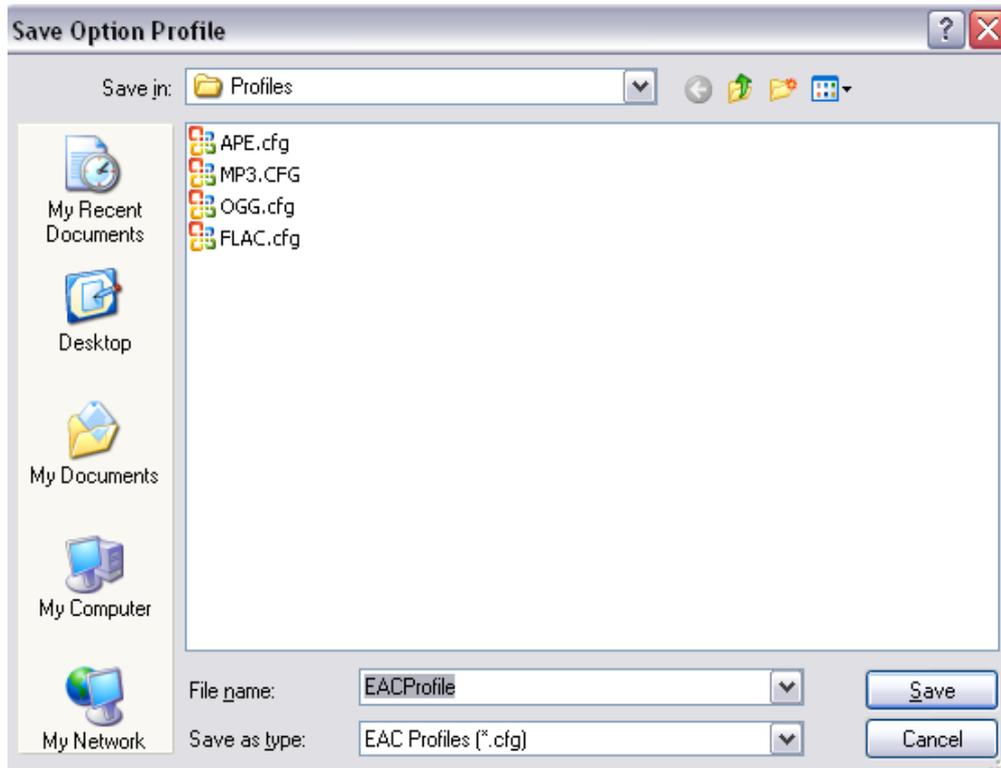
- Now choose a save location. There is a Profiles folder in EAC's default installation folder. (C:\Program Files\Exact Audio Copy\Profiles\)

2nd Method

- In the status bar on the bottom of the EAC main window you'll notice

  Load, Save, New and Delete buttons. With these buttons you can manage profiles in EAC.

- Select the New button. Provide a name for the profile, check All Compression options and select OK. You've created and automatically saved your profile to C:\Program Files\Exact Audio Copy\Profiles\.
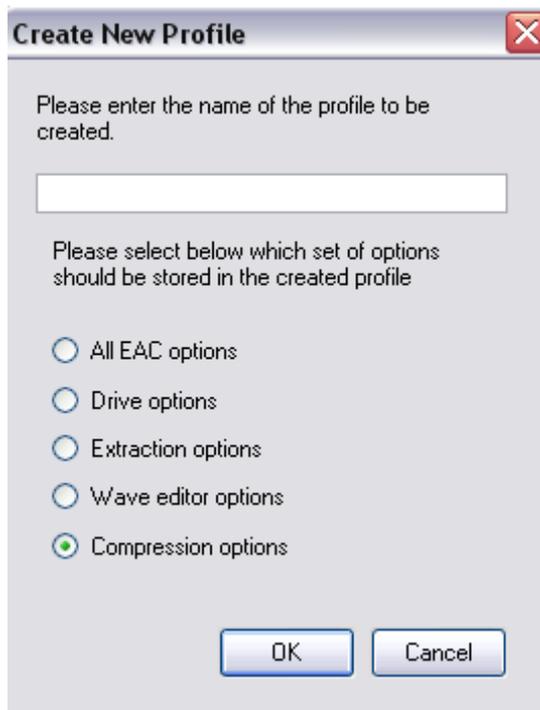
Your new profile should now be added to the dropdown box on the left of the buttons. If you have several profiles in the list you can switch between those by selecting one from the list and selecting the Load button. The second method is the better of the two for it's simplicity and time saving effectiveness. You may now continue setting another compressor or another profile, or you can start using EAC.

2. Using EAC

Insert the cd you want to rip in your cd-rom and wait for EAC to request the cd information in the online freedb database. Verify the titles because the information is sent in by volunteers to freedb and often contains typos.

Ripping an audio cd

This is the most common used extraction method. Repeat this process each time you rip a disc.

- Select only the wanted tracks, or none at all if you wish to rip the entire disc.
- Press F4. EAC will now detect the gaps between tracks of the entire disc and shouldn't take very long.
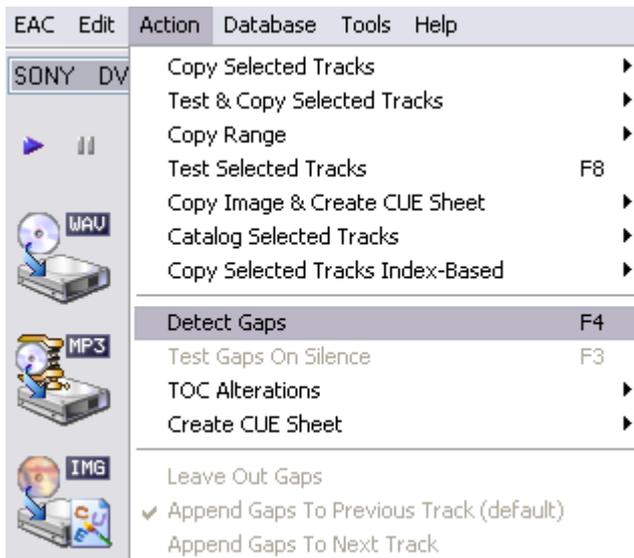
- Create a [CUE](#) Sheet by selecting Action > Create CUE Sheet > Multiple WAV Files With Gaps… (Noncompliant) from the menu bar.
- Save the .cue in the same folder you plan to save the compressed files in.
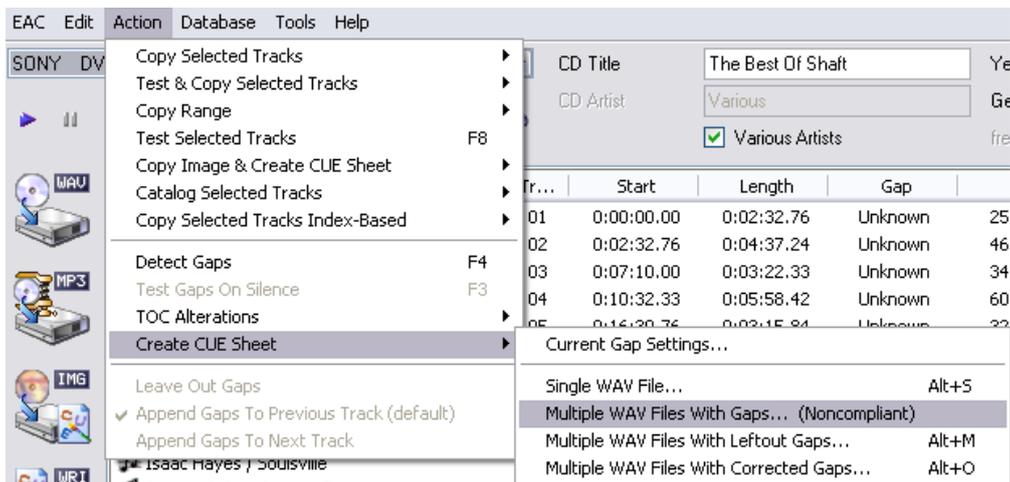
- Press Shift+F6. The folder that you saved the .cue in should be showing at this point.
- Select Save if this is the location where you indeed want to save the compressed files.

EAC will now start the extraction process. It will test read each track for errors and then read, copy and then compress the track using the external compressor. You will see another pop up during extraction. This is the external compressor encoding the file. It looks just like the window you get by clicking Start > Run and typing cmd. Do not close this window! It will open and close as it begins and finishes the compression, respectively. During extraction you'll sometimes notice red dots lighting up in the extraction dialog window and after the extraction com-

pleted you get a log with things like Peak Level and Track Quality. When a Read Error or Sync Error occurs, there's an uncorrectable error in the read audio data. After extraction you'll get a list of the exact locations of the suspicious positions.
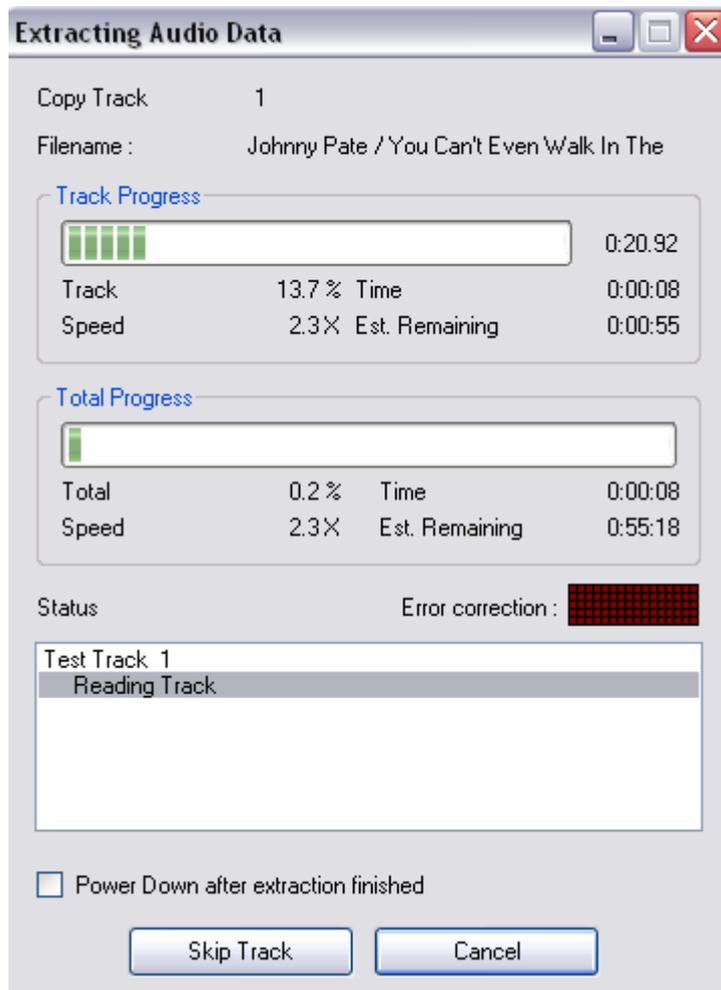
EAC has now completed the extraction process.

- Click OK. Do not close EAC because the external compression quite possibly be a track or two behind the extraction process. Be sure all encoding is finished before exiting EAC. Open the folder where you saved the compressed files. There will be a .log file. This file contains information such as the output format, the command line which was used, pre-gap lengths, peak levels, track quality, CRC checksums, and any errors that occurred during the extraction. You may want to compare the CRC checksums in the .log to the ones listed in EAC to make sure they actually do match. In the same folder, there should be an .m3u playlist which you can drop into the player of your choice and it will load all of the tracks for you. Congratulations! You've just made a proper rip.
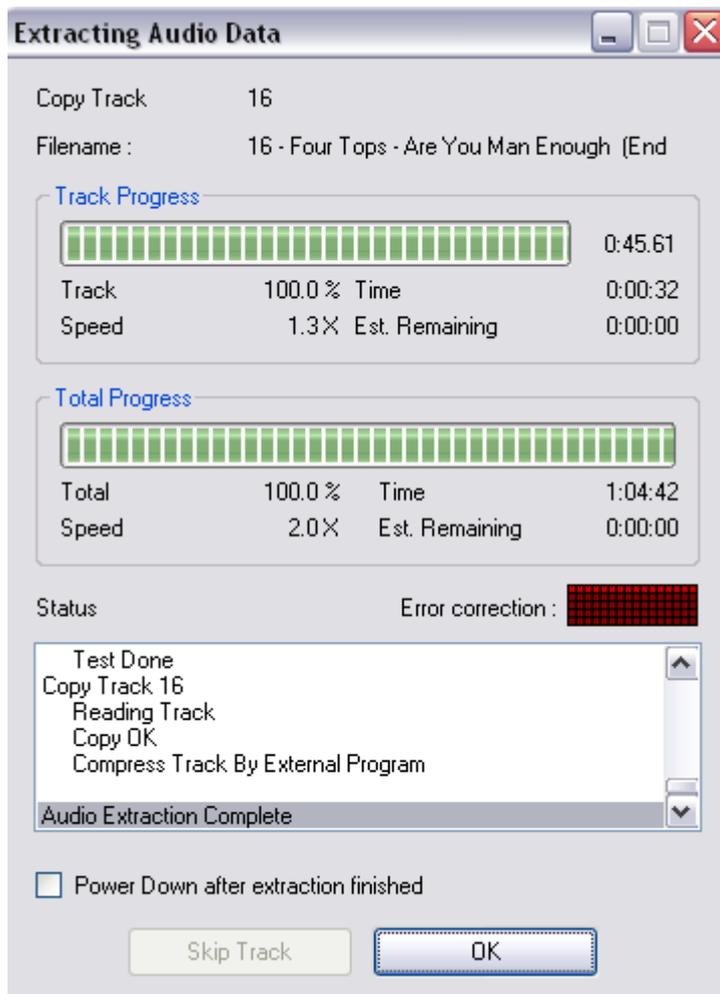
Glossary

(NB: In the glossary definitions, words that appear in *italics* also appear as entries in the list of glossary terms.)

Theoretical terms

Collective Desire: how we experience *cultural memory*, and thereby *socialised desire*, when we have access to the *mnemotechnique* of, and spatio-temporal structuring of our social interaction with, *mnemotechnical artefacts and mnemotechnics.* Desire becomes structured in this way through the process of *metastable individuation.*

Cultural Memory/Desiring Memory: How we 'recall' *mnemotechnics*, through the protocols that govern the spatio-temporal structure of our interaction with mnemotechnical artefacts. 'Secondary retentions'.

Disparation: The perturbative operation between hitherto disassociated domains in *metastable individuation*, which draws previously incompatible potentials together to eventually structure an *individual qua individual* following the process of *transduction*, and resolves a tension that existed within the *preindividual*.

Grammatisation: The process of encoding the flux and flow of information into discreet elements e.g.: a) instinctual vitality into *socialised* or *routinised desire*; b) *mnemotechnics* into *mnemotechnical artefacts*.

Individual Qua Individual: The notion that each *metastable individuation* implies a system that is a freestanding individual entity, which is neither subsumed by where it came from, nor does it subsume the elements of its system that allow it to operate. Moreover, each individual has a metastable relationship both to those elements that came together to create it, and to those elements that constitute its dynamic internal functioning that were drawn together through the processes of *disparation* and *transduction* respectively.

Individuation: An approach to the theorising of all entities (the living, the artificial, the invented) as always-incomplete operations rather than foundations or outcomes. This

thesis makes critical use of Gilbert Simondon's deployment of the term: "…*to understand the individual from the perspective of the process of individuation, rather than the process of individuation by means of the individual*."

Metastable Individuation: Where a change to one element in a given entity does not render that entity completely unstable to the point of being destroyed, but allows it to re-formulate in a slightly different constellation on the basis of *collective desire*, owing to the delicate and flexible proximity between elements in a given type of entity.

Mnemotechnical Artefacts: Delivery systems that enable us to access *mnemotechnics* – computers; the internet; LP's, DVD's, CD's, record players, CD players, DVD players, digital files and folders etc. 'Tertiary retentions'.

Mnemotechnics: written/audio/visual/binary *media* or *content*. The recorded document of memory. 'Primary retentions'.

Mnemotechnique: The productive knowledge of how *mnemotechnical artefacts* work, on the basis of which it is possible to recondition or amend the functionality of mnemotechnical artefacts.

Monostable Individuation: Where an entity has only one stable state of functioning, and where a change to an element of that entity renders it unable to work. It is resistant to a reconditioning of one or more of its functions, and seeks to replicate itself without creating the conditions for any sort of genetic change, thereby producing *routinised desire*.

Routinised Desire: How we experience *cultural memory*, and thereby *socialised desire,* when we are excluded from the *mnemotechnique* of, and spatio-temporal structuring of our social interaction with, *mnemotechnical artefacts and mnemotechnics.* Desire becomes structured in this way through the process of *monostable individuation.*

Signification: The *metastable individuation* of two or more dimensions of potential energy that find collective expression in a unique formulation of information, which can be defined as a specific 'signification' rather than a generic signal. Each individual expresses a unique signification because of its status as an *individual qua individual*.

Socialised Desire: The idea that how we experience desire or 'drives' is delineated by the social-organisational framework we are a part of. In the current society, where information and communication technologies are at the centre of material culture, our experience of desire increasingly depends on how we can access *cultural memory* through the parameters of our engagement with *mnemotechnics* and *mnemotechnical artefacts*.

Transduction: The process of internal structuring, or the reconditioning of elements within a given domain, that moves through the operation of *metastable individuation*. The 'in-forming' of information through the energetic processes set in motion by *disparation*.

Transindividual Collectives: Groups of people that interact with each other through their shared use of technical objects, where such agential operations are subject to *metastable individuation*. These technical objects, in information culture, are predominantly *Mnemotechnics* and *Mnemotechnical Artefacts*, and transindividual collectives are dependent on access to *mnemotechnique* in order express their 'shared use' of such entities.

Transindividual Value: Used to indicate the value of *mnemotechnical artefacts* in *transindividual collectives*. The term treats mnemotechnical artefacts in terms of the extent to which *mnemotechnique* can be gleaned from them through using them, which can then be employed to express modes of reflection and action in relation to others who have used the objects as part of a transindividual collective. It is a 'four dimensional' theory of value, where value is driven by: 1) quality of digital extraction, encoding and sharing 2) access to hardware/software mnemotechnique, 3) sharing in the collective desire that is produced, 4) the temporal structure of interaction.

BitTorrent/music filesharing terms

μTorrent: The most popular *BitTorrent Client* for Windows - notable for using only a small amount of computer memory.

Aac File: A *lossy*-compressed digital audio file - the standard audio format across Apple Ltd's range of products (iBook, iPod, iPhone, iPad etc).

Adware: A form of *malware* which automatically plays, displays or downloads advertisements on a computer – rife within pre-*BitTorrent P2P applications* such as *Kazaa* and *Limewire*, and within *spoof* and *decoy* files shared on public *P2P Networks*, such as the Kazaa and Limewire networks and *Public Trackers*.

Archival Grade Copy: A copy of a recording that preserves the exact structure of the original 'master' version.

B+P (Blanks and Postage) Trading: A method of trading live recordings of music, where black CD-R's or DVD-R's and self-addressed stamped envelopes are mailed to the 'tree', or the trader with the recording. The tree then copies the recording to the disc and mails it back to the 'branches'. The branches would then offer B+P to 'leaves' lower down the chain. Popular in the 1990s, and a precursor to *Etree*.

BBS (Bulletin Board System): Popular between the late 1970s and mid 1990s, a BBS is a home computer system running software that enables other users to log in and connect via a phone line and a modem. BBS's were amongst the first examples of the 'messageboards', 'chat rooms' and 'forums' that now proliferate on the internet. *Elite boards* running BBS software were the uploading and trading hub of the early *Warez Scene*.

Being Clever: *Leetspeak* for *Portforwarding* in *private tracker* communities.

BitTorrent: A *P2P protocol* created by Bram Cohen, currently the most popular P2P method for sharing large amounts of data. OiNK was part of BitTorrent's *P2P Network* in its capacity as a *private tracker*.

BitTorrent Client: A desktop *P2P application* which manages the *seeding/leeching* of data contained within *torrent files* between *peers*. Popular clients are *µTorrent* and Azureus (Vuse) for Windows, and Transmission for Mac.

BitTorrent Tracker: A server that is usually run by *Public Trackers* and *Private Trackers*. The tracker enables communication between *peers* in *BitTorrent swarms* through informing each peer's *BitTorrent Client* of the location of the other peers in the swarm.

BitTorrent Tracker Pyramid: There are broadly five different access levels in the structure of public/*private tracker* filesharing through *BitTorrent*, ranging from the most difficult to access (*Scene trackers* and *invite-only trackers*) to open *public trackers*. For a diagram of this structure, see p. 199 of this thesis.

Block: Each *piece* in a *Torrent file* is made up of 256 or more blocks, which are each 16kb in size. They are the smallest transmission units in the *BitTorrent protocol*, and are the means by which pieces are transferred between *peers*.

Bootleg Trading/Traders: The practice of trading *archival grade* copies of live music recordings. Was popular before the internet through *B+P trading* and was rearticulated through the sharing of digital files on websites such as *etree.org*. These traders were amongst the first to use *BitTorrent* to share digital files.

CBR (Constant Bit Rate): A digital audio file that has been made using an *encoding* algorithm which maintains a constant bit rate over the whole passage of the audio, despite fluctuations in encoding needs (i.e. variations in noise, instrumentation etc) at different points in the passage. *iTunes aac files* are an example of CBR encoding.

Chan: *Leetspeak* for *IRC* channels. Chans are structured in much the same way as website messageboards, enabling 'threads' of group conversation, private messaging and some types of file transfer. There are two types of *Warez* IRC chans. XDCC chans are server-to-user and have broadly the same *Scene pyramid* status as the *FXP boards*. They typically utilise the same *scanning/hacking/filling* procedure as FXP. Fserve chans are user-to-user and involve users sending warez to each other from their own hard drives.

Choking Algorithm: An operation of the *BitTorrent client* software that works to improve the *seeding* and *leeching* speeds of *peers* in a *swarm* through 'choking' (not connecting

to) some peers and 'unchoking' (connecting to) other peers at different points in the seeding/leeching process.

Client-Browser Relationship: The separation of functions in a computing network, between a desktop-based client application and a web-based browser. This relationship works on BitTorrent through the separation between the *BitTorrent client* and *public/private trackers*, respectively.

Courier: A membership status given on *BBS Elite boards* to individuals and groups that copied *Warez* from one *Elite board* to another. Similar to the *filler* role in *The Scene* of the late 1990s/early 2000s.

Cracking: 'Breaking in' to software, or modifying it to remove unwanted or undesirable elements, such as password or copy protection. The practice was popularised through *release groups* in the *Warez Scene* of the early 1980s.

Cue file: In the process of the *DAE* of music from CD, *ripping* and *encoding* software such as *EAC* can create a cue image file, which can be used to burn a CD of the audio data that preserves all the original data that was generated when the CD was originally ripped, such as track order, pregaps, and CD labelling text.

DAE (Digital Audio Extraction): The process through which audio is *ripped* from physical media, such as CD or DVD, and *encoded* as a digital file.

Decoy File: Fake digital files, typically labelled as music, TV or film files, which actually contain s*pyware*, *adware*, trailers, white noise, virus threats or links to payable content. The global entertainment industry has employed companies such as *Overpeer* and *MediaDefender* to inject decoy files into public *P2P Networks* such as *Kazaa*, *Limewire* and *Public Trackers* in order to combat the free trading of digital artefacts.

DRM (Digital Rights Management): A term for technologies used to limit the use of and interoperability between digital devices and digital files. Apple Ltd. uses *FairPlay* DRM software to limit the use of iTunes-purchased digital files and Apple devices such as the iPod, iPhone and the iPad.

Downloader: Used by some to describe a *peer* that is downloading file *pieces* in a *BitTorrent swarm*. The term *leecher* is also used to describe this, but some prefer downloader, as it lacks the negative *freeriding* connotation of leecher.

EAC (Exact Audio Copy): Audio *ripping* and *encoding* software. OiNK recommended EAC for the *DAE* of music from CD because it can encode *FLAC files*, improve DAE by automatically identifying, correcting and verifying errors, and automatically produce a *log file* that can 100% prove an accurate rip.

Elite Boards: A type of *BBS* prevalent in the early *Warez Scene*, used to share and distribute software (usually games) made available by *release groups*, and also information about *cracking*. They set early standards of *Netiquette* in digital information encoding and distribution, and instantiated practices of private file trading that can now be identified in the operation of many *private trackers*.

Encoding: In *DAE*, the process through which *ripped* audio data is converted to a digital audio format such as *mp3* or *FLAC*.

Etree.org: A database that was the most popular online source for *Bootleg Traders* in the late 1990s and early 2000s. It expanded from 10 people in 1998 to a database of over 300 *FTP* servers and some *USENET* newsgroups serving over 12,000 users in 2001. Bram Cohen (the creator of BitTorrent) has stated that he developed BitTorrent in order to serve the Etree community.

FairPlay: *DRM* software that was built into iTunes from its launch in April 2003. Around the time of OiNK's tenure (2005-2007), it allowed music purchased through the iTunes store to be played only through the iTunes media player and QuickTime-compliant media players, on five computers that had been 'authorized' by the user that purchased them, and through FairPlay portable players such as iPod and iPhone.

FastTrack: The most popular *P2P Protocol* between approx 2001-2003. Its popularity was largely due to the fact that *Kazaa* used FastTrack as the infrastructure for its *P2P application* and *P2P network*.

Filler: On *FXP boards* in the *Scene Pyramid* between the late 1990s and early 2000s, fillers would receive admin login data for vulnerable business/University servers from

the *hacker*, fill the computer with the latest *Warez*, and then post 'leech logins' for the filled computers, which FXP board members could use to download the warez.

FLAC (Free Lossless Audio Codec) file: The currently accepted standard of the *lossless* audio format. FLAC is generally considered to have usurped *shn* as the highest quality lossless *encoder* because it is fully patent unencumbered, freely available for all platforms, can be freely integrated into *EAC* and, most crucially, its internal file structure enables the user to assert that the encoded FLAC rip is bit-for-bit identical in quality to the original CD track.

Freedb: An open source database of user-submitted tracklistings and other music-release metadata that was the source of much of the labelling of music files and tracklistings within torrent descriptions on OiNK.

Freeriding: In *BitTorrent* filesharing, a *peer* engaging in the practice of *leeching* or *downloading* all the *pieces* of a *Torrent* file, and then immediately leaving the *swarm*, resulting in no further *seeding*.

FTP (File Transfer Protocol): A standard application layer of the internet, working over *TCP/IP* connections, and is used to transfer data through a client/server architecture, where files are typically stored on a large FTP server, and downloaded by smaller clients, such as home computers. FTP is used extensively in the higher levels of the *Scene pyramid*, and was the most popular internet method for *Bootleg Traders* before *BitTorrent*.

FXP Board: A *BBS*-style message board used in the *Scene pyramid* of the early 1990s and early 2000s, that exploited a vulnerability in *FTP*, which enabled files to be moved from one FTP server to another, thus changing the architecture from 'client-server' to 'server-server'. FXP boards were thus able to distribute access to the FTP servers that had been *scanned*, *hacked* and *filled* by members of *The Scene*.

Gnutella: The most popular *P2P Protocol* between approx 2003-2005. Its popularity was largely due to the fact that *Limewire* used Gnutella as the infrastructure for its *P2P application* and *P2P network*.

Hacker (Scene pyramid): On *FXP boards* in the *Scene Pyramid* between the late 1990s and early 2000s, hackers would break into business/University networks and load FTP/FXP client software onto vulnerable computers, enabling the *filler* to load the computer with *Warez.*

Hacking : Any activity that comes under the rubric of solving problems in technical systems, often using 'reverse engineering' techniques to discover that systems technical principles through analysis of its structure, and thereby finding novel ways to improve on those systems.

Hashing Algorithm: A method of encryption and authentication used in computing that creates small datum known variously as 'hash values', 'hashes' or 'checksums' from larger-sized data. Each of the hash values correspond to a particular section of the data and can be used to verify the integrity of the larger-sized data. The *SHA-1* hashing method is used in *BitTorrent*.

IFPI (International Federation of the Phonographic Industry): An organisation that purports to represent the interests of the global recording industry. Since the popularity of the internet it has become notable, along with the *RIAA* and other national recording industry organisations, as the legal enforcer of intellectual property law for the 'big four' major labels.

IRC (Internet Relay Chat): The IRC protocol is a form of text messaging that takes place between multiple users in what resembles an internet chat/conferencing room called a channel or *chan*. Like *USENET*, it was a popular online method of communication before websites came to prominence, but is still used by those who desire a less public and/or more highly encrypted method of discussion and information sharing.

Invite-Only Tracker: In the *BitTorrent tracker pyramid*, a *private tracker* that is never open for sign up. The only way to gain membership is through being invited by a current member. OiNK was one of these communities, and all the best lossless and high quality lossy music trackers operate at this level.

iTunes: A digital media player used to organise and play back audio and video content, which also acts as an interface to manage content on Apple Ltd's digital devices, such as

iPod, iPhone and iPad. iTunes also connects to the iTunes store, which had over two thirds of the paid digital download market share as of December 2010.

Kazaa: The most popular *P2P application* and *P2P network* between approx 2001-2003. Used mainly for sharing *mp3* music files, and utilises the *FastTrack P2P protocol*.

kbps (Kilobit per second): A data transfer rate equal to 1000 bits per second. This suffix will often be seen in the description of digital music files (128kbps, 192kbps, 256kbps etc). Generally, the higher the kbps, the better the sound quality of the audio file.

LAME Encoder: An *encoding* algorithm used to encode *mp3's*. LAME encodes audio data in the *V0* and *V2* formats that were popular on OiNK and continue to be popular in *DAE* and music filesharing. LAME is generally considered the best 'lossy' mp3 encoder because it of its fast encoding, highly optimised presets, the fact it is supported by *EAC* and its ability to encode mp3 using the *VBR* method.

Leecher: Most often used to describe a *peer* that is downloading file *pieces* in a *BitTorrent swarm*. Has another, more negative connotation related to *freeriding*, where 'leecher' is used to describe a peer that downloads far more than they upload. For this reason, many prefer the term *downloader* for the former meaning, and leecher for the latter.

Leetspeak: A method of encryption that developed in the early *Warez Scene* and still permeates contemporary P2P filesharing, where potentially incriminating 'keywords' are changed in online conversations. For example, the original word for pirated software was 'wares', which then became 'warez' and is sometimes written as 'w4r3z'. 'Hacker' became 'haxxor' and then 'h4xxor', and 'elite' became eleet, eleete or even 313373.

Limewire: The most popular *P2P application* and *P2P network* between approx 2003-2005. Used mainly for sharing *mp3* music files, and utilises the *Gnutella P2P protocol*. Later versions also utilise the *BitTorrent P2P protocol*.

Log file: In the process of the *DAE* of music from CD, r*ipping* and *encoding* software such as *EAC* can create a log file, which documents the accuracy of the ripping and encoding process and can be used to determine how close the file is in quality compared to the original.

Lossless: A digital audio file format and form of audio *encoding* that enables the exact original data to be re-formed from the compressed data, so a lossless digital audio file encoded from a CD would be able to exactly replicate the original CD sound quality. Examples of lossless file formats are *shn* and *FLAC*.

Lossy: A digital audio file format is considered 'lossy' when it loses some of the data in the *encoding* process, and thereby can never reconstruct the original CD quality. All *mp3* formats are lossy, as is the *iTunes aac* format.

M3u file: In the process of the *DAE* of music from CD, r*ipping* and *encoding* software such as *EAC* can create an m3u file, which can be dropped in to most media players and will load the all the songs in the correct order, without having to drag and drop all the files or through making the media player search for them.

Malware: Or 'malicious software', designed to secretly access a computer system without the consent of the owner. P2P networks such as *Kazaa* and *Limewire* installed malware on its users' computers in the form of *adware*, redirection to unwanted websites and *spyware*. The global recording industry hired companies such as *MediaDefender* and *Overpeer* to fill these P2P networks (as well as *Public Trackers*) with *decoy* and *spoof* files that contain adware, spyware and viruses.

MD5 Checksum: Used to verify quality in the *lossless encoding* and sharing of audio. MD5 checksums are usually created for each file in the process of lossless encoding and are used to accurately verify the file against the original – a vital component in ensuring the proliferation of *archival grade* copies of audio files.

MediaDefender: A company employed by the global entertainment industry to inject *spoof* and *decoy* files into public *P2P networks*, such as *Kazaa*, *Limewire* and *Public Trackers* - now called 'Peer Media Technologies'.

MP3: A *lossy* digital audio file format based on a psycho-acoustic model that eliminates sound frequencies that are inaudible to the human ear. Mp3 can *encode* songs into files that are over 12 times smaller than the audio data *ripped* from CD tracks with a relatively minimal loss of sound quality.

Napster: The *P2P application* and *P2P network* that popularised P2P filesharing. Ran between approx 1999-2001, and used its own Napster protocol that was not strictly P2P because it relied on a number of centralised servers. Garnered 70 million users in just 6 months during 1999 and 2000.

OiNKPlus: The OiNKPlus application was designed by an OiNK member, and once added into the Firefox web-browser it made various forms of metadata appear in the individual torrent pages on OiNK by default. The metadata related to the particular music artist on that page, and linked to embedded music players, biographical links, links to proprietary content, similar artists and *torrent files* containing files by that artist on other private and *public trackers*. It has since been adapted and can be used on most currently running trackers that link to music torrents.

Overpeer: A company employed by the global entertainment industry to inject *spoof* and *decoy* files into public *P2P networks*, such as *Kazaa*, *Limewire* and *Public Trackers*.

P2P Application: A desktop software application that manages user access to *P2P networks* and the use of a *P2P protocol* in the sharing of digital files over the internet. For example the desktop software utilised by those accessing the *Kazaa* and *Limewire* networks (where the name of the application is the same as the P2P network) and *BitTorrent Clients*, such as µTorrent, Azureus (Vuse) and Transmission.

P2P (Peer-to-Peer) Network: A network that relies upon the bandwidth and computing power of network participants in order to share files, as opposed to the server/client method of relying upon a relatively low number of centralised servers to cope with the download requests. For example: the *Napster*, *Kazaa, Limewire* networks, and the *client-browser relationship* that structures *BitTorrent*.

P2P (Peer-to-Peer) Protocol: A communication standard that defines the digital message format and rules for exchanging messages within *P2P networks*. For example: *FastTrack*, *Gnutella* and *BitTorrent*.

PAR/PAR2 File: Used to find and replace missing or corrupted *RAR* files in *USENET* filesharing.

Peer: In *BitTorrent* filesharing, a peer is one instance of a *BitTorrent Client* connected to other clients and transferring data over the internet.

Piece: When making a *torrent file* through a *BitTorrent Client*, the *BitTorrent protocol* breaks down the original file into smaller pieces, usually 256kb, 512kb or 1mb. The size of the piece is proportionate to the size of the original file (i.e. a small eBook would be broken into 256kb pieces, a large video file into larger 1mb pieces). Each piece consists of 256 or more 16kb *blocks*, which are the transmission unit by which the pieces are shared.

Portforwarding: Also known as *being clever* in *BitTorrent* culture. This process, the popularity of which was influenced by FAQs and tutorials on *private trackers* such as OiNK, improved the speed of the *BitTorrent Client* in order to improve the efficiency of *seeding* and *leeching* between *peers*. Each user's BitTorrent client corresponds to a 'port' on their modem, and the process of port forwarding would 'open' that port to allow better connectivity. OiNK provided links to the best place to learn about it, namely portforward.com.

Power User: This position is usually reached by a member of a *private tracker* who has uploaded a certain amount of data and/or a certain number of files. A tracker will typically reward Power Users with between 1-5 invites, access to more features on the site and usually provide access to a secret 'Power User' or 'invites' forum, where elite members of other private trackers offer invites to those trackers.

Private Tracker: A type of website that provides private links to *torrent files*. Like *public trackers*, they usually run and manage both a BitTorrent indexer - the 'search engine' website which members use to 'discover' torrent files - and a *BitTorrent tracker* server - which manages the communication between *peers* sharing torrents that were downloaded via the indexer. Private trackers require users to either sign up or receive an invite before they can use the website, and therefore typically have far fewer members and link to fewer torrents than public trackers. The vast majority also impose *ratio systems* and utilise the *private tracker passkey system*. OiNK was an example of a private tracker.

Private Tracker Passkey System: A method of encryption and authentication used in the operation of the *client-browser relationship* by *private trackers* such as OiNK. Each user is allocated a personalised announce URL that enables the private tracker to 'talk' to and record all the information that passes between the tracker and each member's BitTorrent client. The announce URL also serves as a safety net for the Scene and audio trading groups, as it allows them to trace any activity that runs concurrent to their tenets of quality, efficiency and encryption to particular individuals, who are then usually warned or blacklisted.

Public Tracker: A type of website that provides public links to *torrent files*. Like *private trackers*, they usually run and manage both a BitTorrent indexer - the 'search engine' website which members use to 'discover' torrent files - and a *BitTorrent tracker* server - which manages the communication between *peers* sharing torrents that were downloaded via the indexer. Public trackers do not require any form of registration and let users browse arbitrarily and anonymously. Around the time of OiNK's demise, the five most popular public torrent discovery sites were Mininova, The Pirate Bay, Torrent Portal, Torrent Reactor and BT Monster, with these five sites alone linking to over 8 million torrents.

RAR file: An archive file format that breaks digital files into pieces and compresses them. The file can then be unpacked and pieced back together using RAR software (such as WinRAR). In filesharing, it is used to make file sizes smaller to enable quicker downloads. Used by some *Scene release groups* and predominates in *USENET* filesharing.

Rarest First (Piece Selection) Algorithm: Used in *BitTorrent* to control the non-sequential downloading and uploading of multiple pieces between *peers*, and was developed by the author of BitTorrent, Bram Cohen. It works on a 'rarest first' principle, where the *BitTorrent client* chooses to download the *pieces* held by the lowest number of peers in the *swarm*. This dramatically reduces the burden on the original uploader, as all the peers in the swarm share the responsibility of helping to circulate the least populated pieces, and also increases data redundancy, with the rarest pieces being available for download from multiple peers.

Ratio System: A technique used to encourage uploading, usually in private filesharing communities, where members are required to upload a proportion of what they have downloaded. The more they upload, the better their 'ratio' becomes, meaning they can download more files. This system dates back to the *elite boards* of the early *Warez Scene*. It also structured filesharing on the *Topsites, FXP Boards* and *IRC chans* of *The Scene* in the 1990s, and plays a major role in the operation of *private trackers* in *BitTorrent* filesharing culture.

RIAA (Recording Industry Association of America): A trust that purports to represent the interests of record labels and music distributors in the USA. Was founded in 1952 to manage and instantiate emerging technical standards in the industry, but since the popularity of the internet it has become notable, along with the *IFPI* and other national recording industry organisations, as the legal enforcer of intellectual property law for the 'big four' major labels.

Ripping: In *DAE*, the process through which audio data is extracted from a CD to a computer. The data is then *encoded* as a digital audio file format, such as *mp3* or *FLAC*.

Scanner: On *FXP boards* in the *Scene Pyramid* between the late 1990s and early 2000s, scanners would search for and identify vulnerable University/business networks, which then the *hacker* would break into and load FTP/FXP software onto vulnerable computers, allowing the *filler* to load the computers with *Warez.*

Scene Pyramid: The structure that *The Scene* uses to filter its *Warez* down through the different application layers of the internet, such as *FTP, IRC* and *USENET*. For a diagram of the Scene pyramid that remained broadly stable between 1999 and 2005, see p. 178 of this thesis. In recent years, the top two levels of the *private tracker pyramid* in *BitTorrent* (*Scene trackers* and *invite-only trackers*) have impinged on the Scene pyramid, with the former becoming equivalent to the *FXP board* function in the pre-BitTorrent Scene pyramid, and the latter becoming a major non-Scene source for digital files.

Scene Tracker: In the *BitTorrent tracker pyramid*, an *invite-only private tracker* with Scene *Topsite* access. Whilst all members can usually upload new content at lower levels in the BitTorrent tracker pyramid, only those with personal access to the Scene are given permission to upload to Scene trackers.

Seeder: Used to describe a *peer* that is uploading file *pieces* in a *BitTorrent swarm*.

SHA-1 (Secure Hash Algorithm 1): The type of *hashing algorithm* used by *BitTorrent*. It works by assigning both a 'value' and a 'key' to each *piece* of information that a *torrent file* relates to, with each hash in the torrent file used to decrypt the key to retrieve the value, and thereby enable access to the piece. This enables both the encryption and authentication of files in BitTorrent.

Shn (Shorten): The first globally popular *lossless* audio file format, developed by Tony Robinson of SoftSound in 1992/1993, which was able to 'shorten' the audio data of CD tracks by between 30-50% in the process of digital encoding without losing any sound quality. Shn files, and lossless files in general, became popular partly through the activity of *Bootleg Traders* using the *etree* database.

Spoof File: Fake digital files, typically labelled as music, TV or film files, which actually contain nothing. The global entertainment industry has employed companies such as *Overpeer* and *MediaDefender* to inject spoof files into public *P2P Networks* such as *Kazaa*, *Limewire* and *Public Trackers* in order to combat the free trading of digital artefacts.

Spyware: A form of *malware* which collects small pieces of information from a computer without the consent of the owner – rife within pre-BitTorrent *P2P applications* such as *Kazaa* and *Limewire*, and within *spoof* and *decoy* files shared on public *P2P Networks*, such as the Kazaa and Limewire networks and *Public Trackers*.

Swarms/Swarming: A group of *BitTorrent peers* who are *seeding* and/or *leeching* file *pieces* using the same *torrent file*. These groups have become commonly known as 'swarms' because they take the form of decentralised networks coordinating small tasks between peers in order to complete a larger task. The idea is that as more people join the network, the faster the uploading and downloading process becomes for all involved.

SysOp: The administrator or team of administrators/moderators of a multi-user computer network. This designation became popular in the *BBS elite board* culture of the early *Warez Scene*, and is also used to delineate the chief staff member(s) in *private*

trackers. The term derives from mainframe computing, where the 'system operator' oversees the operation of a server, usually a large computer system.

The Scene: The term '*Warez Scene'* gradually slipped out of parlance during the early 1990s and was replaced by 'The Scene'. This reflected a double shift. Firstly, from the use of *BBS elite boards* to the use of internet protocols such as *FTP*, *IRC* and *USENET* in order to store and distribute *Warez*. Secondly, from sole focus on pirating commercial software to an enlarged system that also stored and distributed music, TV, film and other digital files that were proliferating on the internet.

Topsite: Heavily encrypted internet sites, usually *FTP* servers, which are at the top of the *Scene pyramid*. Each Topsite is usually associated with one or more *release group*, and is where new Scene releases are copied to before anywhere else.

Torrent File/Torrent: A metadata file which can be created, uploaded and downloaded using the *BitTorrent P2P protocol*, and which is used to distribute files through BitTorrent's *client-browser relationship*. Each torrent file has two sections. The 'information' section contains the name and directory structure of the files, and also all the *SHA-1 hash values*, which correspond to each *piece*, but only contain information regarding which part of the file the piece is, the integrity of the piece, and where on that users' computer it can be found. No file pieces are contained within torrent files. The 'announce' section is utilised in the *private tracker passkey system*.

Transcode: Digital files that have been 'encoded upwards' i.e. from a 192*kbps mp3* to a 256kbps mp3. OiNK and its successors banned the practice because a transcoded file will never be as high quality as a properly 'encoded down' file of the same size.

USENET: An internet messaging system that became popular following the decline of *BBS* in the early 1990s. It is similar to BBS, but differs insofar as there is no centralised server or *SysOp*, and the messages are spread across a myriad of 'newsgroup servers'. The user typically subscribes to a server and uses it to browse newsgroups, which contain different types of threaded discussion. Users can also browse 'binary groups' which allow the transfer of data rather than text, which is still a popular way of spreading *Warez*.

V0 mp3: An audio file made through the *LAME* encoder, utilising the *VBR* method. The V0 format has an average bit rate of 245*kbps*, which fluctuates higher and lower depending on the encoding needs of the audio passage.

V2 mp3: An audio file made through the *LAME* encoder, utilising the *VBR* method. The V2 format has an average bit rate of 190*kbps*, which fluctuates higher and lower depending on the encoding needs of the audio passage.

VBR (Variable Bit Rate): Audio files that are *encoded* using the quality-optimised 'Variable Bit Rate' (VBR) method, where more bits are used in difficult-to-encode passages of audio, and fewer bits are used in less demanding passages. *V0 and V2 mp3 files* are examples of VBR encoding.

Warez: *Leetspeak* used to describe copyrighted works that have been shared freely and have resulted in a violation of copyright law. The phrase became popular through *elite boards* in the *BBS* scene of the early 1980s.

Warez Scene: Began as the structure of *elite boards* in the early 1980s (generally confined to North America and parts of Europe) sharing commercial software that had been *cracked* by *release groups* and spread throughout the elite board structure by *couriers.* The Warez Scene was distinct from commercial counterfeiting insofar as the works were not shared for profit. It morphed into *The Scene* in the 1990s, as the internet and the sharing of digital music, film and TV files became more prevalent.

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