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What.CD: A Legacy of Sharing

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ABSTRACT OF THE DISSERTATION

What.CD: A Legacy of Sharing

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This dissertation explores digital music experiences through the defunct website What.CD, a former BitTorrent tracker and associated online community. A large amount of musical activity has yet to be researched or taken into consideration by the recording industry because of its illegal status. However, the findings here, that are the result of quantitative analysis of the BitTorrent data and qualitative analysis of interview data, suggest that What.CD was a vibrant, dedicated group of individuals who avidly listened to music. Furthermore, the activity of users on What.CD should be integrated into current understandings of how music functions societally, especially in digital contexts.

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Introduction

This dissertation presents research conducted on the website What.CD, a private BitTorrent tracker in operation from 2007 to 2016. Its main purpose was as a comprehensive collection of recorded music. As an object of study, I explore many facets of the site including its data, its users, and its operating logics. However, the overarching argument of this document is that digital communities like What.CD are unique among online collectives in their organizing capabilities and democratizing potential.

Specifically, the practices developed and refined on What.CD can contribute to a more comprehensive understanding of how digital music functions in and outside markets. What.CD users were unequivocally avid music fans, and all their activity reflected that primary interest. That activity, the most important of which was listening (a concept further developed in Chapter 2), hint at powerful subversions to current hegemonic music practices like purchasing vinyl albums, using streaming services, and paying for digital downloads.

To further elaborate, What.CD represents an important technosocial possibility, which refers to the potential trajectory that alternative timelines offer. While usually temporally situated in the future, each possibility is also rooted in past events and developments. For instance, the internet's current state — its social, economic, and political stakes — is only one of many paths it could have taken. If any of its predicating factors, such as governmental and corporate development, had differed slightly, different possibilities might have emerged. In the case of What.CD, its short existence constituted one technosocial possibility that was too dissonant with current governance regimes. If some of the structural and cultural norms of online behavior had developed divergent to how they did, What.CD may still be around and celebrated for the vibrant community it became, rather than demonized.

As digitization has transformed society, music has certainly not been exempted. The way people buy tickets to see artists, connect with their favorite bands and musicians, and especially how they listen to music, has been radically changed from life before the internet. However, just as passionate communities rallied around genres and scenes in the 60s, 70s, and 80s, they now connect with artists and each other through culturally meaningful exchanges. In many ways, online access has opened new possibilities for musical exchange, such as through streaming services, direct contact with artists through social media and personalized fundraising efforts, and newly configured communities. This dissertation takes up one of those new communities called What.CD. As anything online is subject to increased transience and instability, though, it is a defunct community at the time of writing.

The Author's Subject Position

My own position as both a user of What.CD and a scholar documenting and analyzing the site placed me within a precarious configuration of the conventional insider/outsider identities. A recognition of this position is important for understanding this dissertation because it dramatically affects the outcomes and conclusions, as well as the type of research that is possible.

The insider position stems from spending a certain amount of time on the site, interacting with its users, and participating in music consumption. The feeling of being an outsider, ironically, comes from the same set of activities. While classic sociological research suggests that insider/outsider statuses are informed by the ways in which we perform, online spaces privilege a performance (Goffman, 1974). While physical interaction allows us to pick up on cues, all of which are admittedly culturally situated, including facial and body language, vocal

inflection, and clothing choice, digital representation of the self takes on entirely different contours that rely on textual nuances, and graphical ones to a lesser degree.

My feeling of being an outsider might also be attributed to other factors. I am not a data hoarder or even a collector. While I enjoy music and can probably tell the difference between a crappy MP3 and a lossless file, such activity doesn't even leave a mark compared to the terabytes of data some former users have on meticulously curated hard drives. Also, like many of the people I interviewed, legal services, namely Spotify, provide a convenience that's worth the \$5 a month they charge students. For all the railing against late stage capitalism I am guilty of, convenience is still king.

Both physical and digital identities require a certain amount of *time*, though, which can determine whether one feels like an insider or outsider. If a person spends enough time at a bar, they become known as a regular. If they frequent a gym, the other regulars and the staff begin to recognize patterns of arrival or equipment use. If an individual spends her time and money shopping on Amazon, then both the algorithms and the delivery drivers (and possibly thieves) begin to also notice patterns. Similarly, when people spend a lot of time on Facebook, their "friends" as well as the platform's internal machinery take notice and may react by unfollowing that friend (for people) or deploying certain ads (the machinery). Or, when a person tweets several times a day, develops a following in the tens of thousands, and gets that coveted blue check mark next to their name () , their activity shapes the type of user they are perceived to be. In all these examples, whether social contexts are constituted by people, machines, or both, spending adequate time there unites them all.

Of course, the linearity of the time spent in a social context is less important online. While being in the office from 9 to 5 means that a paycheck is being earned (a social norm that includes both a time and a place), tweeting regularly can be done on a considerably more

flexible timeline. In fact, increased flexibility is one of the most celebrated, and criticized, characteristics of online life. Building a fanbase and other types of work at 3 AM affords working (1) at home, (2) on the road, or (3) from a tent, which, on the one hand, grants freedom from the 9 to 5 schedule, but on the other, means that people are increasingly (1) losing connection to their families and friends, (2) not enjoying their vacations, or (3) homeless. Because of this flexibility that generally liberates scholars who do work online, I feel the opposite: like an outsider who doesn't spend enough time on the platform I am writing about.

Spending time on private trackers is something that has been written about from a firsthand perspective elsewhere. From an anthropological perspective, "showing up" is an important signifier of being invested, and certainly holds true for online spaces too. To really know what users are thinking about, and *how* they are thinking about their use of the platform. And I have certainly tried to be present, both on What.CD and its successors, to try and understand these logics. I take some consolation from these shortcomings in a couple of facts: not all users on What.CD were hardcore "superusers," (not an official designation) and there is no holistically quantitative way of measuring whether a person is an outsider or insider.

Participation on What.CD consisted of several different activities that will be described in detail later, but since it was a music-driven BitTorrent community, the most obvious marker of participation is the number of musical works uploaded. Some superusers had hundreds of uploads, while modest users might have 15-45. By the time I was a member of What.CD, it was virtually impossible to find original works that had not been uploaded yet. Moreover, the labor involved in uploading a new work was significant.¹

¹ Maybe this was because I had other stuff going on. I'm married, we just had a son who was born 3 months early, I teach courses for TA funding, and I try to not spend too much time staring at a computer screen. Maybe it was because I didn't make any friends on What.CD, unlike many users I communicated with throughout this project that keep in touch with other former

Despite these concessions, I am confident the following document fairly describes What.CD and its legacy. Despite the decidedly “digital” nature of this research, for some reason, it always brings me around to material practices and communities that are excited about music. So, while each What.CD member was in a special class of music fan, which more is written about later, they also, for the most part, like to go to record stores, concerts, dance clubs, and coffee houses to experience music in a way that playback off a smartphone or hard drive never could offer. My hope is that, as this research is read, it sheds some light on the relationship between people and music, and less so on the technological upheaval that surrounds it.

Methodologically, this dissertation uses two different data sources as primary research materials, a qualitative survey and a quantitative dataset. They are each considered independently in separate chapters, and are intended as complimentary components to give the reader a comprehensive picture of What.CD’s culture and function. The survey consisted of questions about What.CD’s culture, rather than about its position in a broader digital context, although some questions about this position were also asked. The goal of those questions was to gain a better sense of how What.CD users thought about the internal workings of the site, including their interaction with other users and with the construction of the platform. Responses were manually coded and categorized, and word frequencies were recorded using linguistic analysis software.

The dataset used in a separate chapter was an SQL database that the former What.CD administrators released through a Twitter announcement about a year after the site was shut down. It contains millions of entries for hundreds of datapoints, and was dissected using various

members one and a half years later. They did this through being on the same IRC (internet relay chat) channels every day, talking about music they liked and about the best way to transcode audio.

database analysis tools. The method driving this analysis centered on following particular markers around the database, as they appear in various contexts. Some of these contexts include musical genre, historical time period, user-made collages, tags and labels, and audio format. The goal of this analysis is to give the reader a better understanding of the importance of non-centralized data management, both for the internal impact it had on What.CD and for the external implications it might have for other digital platforms and cultures.

Other methods included in this dissertation center on cultural interpretation of legal statutes as it pertains to the users of What.CD and the legal contexts in which they exist, as well as critical cultural studies approaches to digital listening. These approaches are designed to rigorously consider the experiences of What.CD users as they might differentiate and align themselves with the experiences of other users online. Additionally, comprehensive conclusions about digital listening that can be applied to industry-related projects and the development of future listening communities are also a goal of these discussions.

This remainder of this introduction seeks to give the reader a background on What.CD and the BitTorrent protocol on which it operates. Then, in Chapter 1, I provide a theoretical background and literature review on which the rest of the dissertation relies. In Chapter 2, I further explore What.CD through its users and tools, and discuss the subject position of the typical What.CD user, specifically as that individual is formulated through the act of listening. This is an identity construction that deals with historically-situated digitization on one hand, and active listening practices on the other. Chapter 3 evaluates a database which houses What.CD's torrent data, by mining it for social significance, which reveals the great lengths to which volunteers spent countless hours documenting and archiving a massive volume of information, arguably a singular collection. In Chapter 4, the results of a survey administered to about 120 former What.CD members are examined for user sentiment about the site. Interestingly, nearly

half the respondents also use legal services like Spotify or Pandora. Then, In Chapter 5, I assess the legal context of music online in relation to how listening practices are shaped and affected. Chapter 6 explores these legal services and four characteristics they and their customer base exhibit: control, non-committance, convenience, and community. Finally, the conclusion investigates other legal and cultural factors that will have an impact on digital listening in the future.

What.CD

Peer-to-peer technologies have drastically changed the landscape of the music industry in the past 15 years (Smith & Telang, 2012). Because of these changes, several spheres have been profoundly affected: the legal, the social, and the economic, just to name a few. More than any other technology, the BitTorrent protocol has disrupted the music industry's conventional understanding and flow of consumer capitalism, regardless of the measurable damage it has done to their bottom line (Sinnreich, 2013). Although there are many studies that consider the economic and purely technical aspects of BitTorrent trackers, relatively sparse research exists on the cultural impacts of such technologies and the communities that rise up around them. While these sites never achieved widespread popularity, they represent social possibilities that are typically closed before they can be fully explored. Analyzing a set of practices that are, at best, legally questionable and at worst, wholly illicit, could easily be written off by the music industry as an endorsement of such behavior. However, considering the sheer volume of music available through such platforms, in addition to measurable amount of energy and time spent on them, they are an appropriate target for specific research. By considering the aspects of What.CD that can act as a model for future legitimate digital music communities, platform designers can keep technosocial possibilities open.

What.CD, a website that hosted a private BitTorrent community, is explored here as an example of a sociotechnical space that simultaneously bought into and transgressed the expectations for consumer capitalism. By establishing a technologically-oriented theoretical framework, this introduction seeks to establish What.CD as an understudied instance of digitization shaping specific consumptive musical practices. To do this, affordances and mechanisms of What.CD are explored with the goal of finding linkages between technical apparatuses and their broader social implications. Methodologically, I explore technical mechanisms like ratios² and file types as well as What.CD's own documentation (rule sets, wikis, and FAQs). Additionally, a survey with former What.CD users grants additional perspective in the formulation of a particular community, and a trove of data released one year after What.CD's shutdown grants insight into the torrent database it held.

It should be noted that in November of 2016, What.CD was shut down by the French government, but that former members have come forward and volunteered to be surveyed. At least two other alternatives to What.CD have sprouted up in its place, both of which have the prospect of being as prolific as what it replaced. These spaces will also be explored, but its users were not interviewed because of the possibility of exposure.

What is BitTorrent?

The BitTorrent protocol, which is how the What.CD community shared music, was developed in 2001 by Bram Cohen, an American computer scientist. At one point in time, it accounted for as much of 25% of the internet's traffic and is most widely known as a technology that enables piracy (Danaher & Waldfogel, 2012). It is a peer-to-peer system that allows for

² In this context, a ratio is the amount of downloaded data versus the amount of uploaded data within a private BitTorrent community. A healthy ratio indicates that a member is being a productive contributor.

decentralized distribution of files by allowing users to act as nodes which can simultaneously download and upload portions of files. Whole files are compiled from pieces that each user contributes until the entire file is downloaded, and then that file is shared in turn with the entire network. A few terms will allow What.CD to be more easily understood in the next sections:

- A *torrent client* is a piece of software that uploads and downloads files from other torrent users around the internet.
- A *torrent file* (*.torrent) is a small file which gives the addresses of the tracker, which tells the torrent client where the desired files can be located throughout the network
- A *tracker* is a central server that “oversees the computers and allows all of the clients to connect with one another” (Mazzei, 2015). Some trackers are decentralized, which further obfuscates geographic location of data.
- a *seeder* is a user that has completely downloaded a file and is now sharing it on the network.
- a *leecher* is a user that is currently downloading pieces of the desired file from another user.

Although BitTorrent technology can certainly be more complicated than this, these basic terms are as technical as the discussion will become, as this dissertation is primarily concerned with the social and cultural aspects of What.CD.

What was What.CD?

What.CD was a private tracker that required a username and password that operated from 2007 to 2016, obtained either through interview or invitation. The interview was difficult, as will be demonstrated many times throughout this dissertation. However, the site was self-

described as a “paradise for music lovers” (whatinterviewprep.com), because it had an incredibly deep repository of recorded music. What.CD refers to (1) the website, (2) the tracker, and (3) the Internet Relay Chat (IRC) network. Collectively, these components comprised a social world in which users interacted and created meaning in culturally specific modes. Music and digitization were the major values that the community rallied around, although both of those terms’ definitions and emphases are contingent on the community discourse itself.

Many of the ideas having to do with technology, digitization, and communication within this dissertation depend on philosophy that predates and then runs concurrent to internet development. Specifically, the philosophy of technology generated by Herbert Marcuse, Andrew Feenberg, and Bruno Latour is explored for its deeper explanations for seemingly superficial actions and behaviors. Furthermore, thoughts on capitalism and democracy from these authors bridge the discussion of What.CD to broader themes, which demonstrates how such a seemingly obscure online community can provide insight into how we might think differently about current technological development. The first chapter will explore these themes.

Chapter 1: Theoretical Framework and Literature Review

This chapter will set up a theoretical framework, walk through the main components of What.CD, and lastly set up the theme of the Listening Subject on What.CD. Its main tenets are: that a critical theory of technology is necessary for situating the activity on What.CD as culturally meaningful; and digital contexts inherit many characteristics of older social forms and are thus dependent on them for accurate interpretation.

Critical Theory of Technology

The use of tools to engage in socially meaningful activity dates to the beginning of industrialization. The construction and reconstruction of tools is also central to notions of work, productivity, and equality. While digitization provides a new context for the discussion of tool usage, such discussions are still grounded in many of the same struggles that Marx discussed well over a century ago. In the case of What.CD, internet-based tools were exploited for ends that were incongruous with the goals of industry power brokers, although not entirely out of step with markets. Andrew Feenberg writes

The need [for intervention] is obvious in domains such as music, where the power of the media to focus all attention on a few stars has devastating consequences for creativity and diminishes the worth of the many talents that fail to make it to the top. Recent developments on the Internet have begun to challenge the system and may in fact open music up to far wider participation. (2002, p. 9)

His predictions and observations about participation are accurate, especially considering What.CD. Within the user base, participatory behavior was rampant, which resulted in the discovery of many talented artists that never made it to the top of a Billboard chart. It is not

clear from Feenberg's prediction if market cooperation was expected or not, because it certainly has resisted the widespread normalization of many behaviors found on What.CD. What follows is a review of philosophical thought about the potential of digital technology to positively affect social interaction.

For Marx, the solution to a power monopoly was through technological systems, becoming the means to continually create surplus value, not for the capitalists, but for the workers themselves. He writes that

“The transformation of scattered private property, arising from individual labor, into capitalist private property is, naturally, a process, incomparably more protracted, violent, and difficult, than the transformation of capitalistic private property, already practically resting on socialized production, into socialized property” (Marx, 1909).

Arguably, the actions of What.CD users represent such a transformation into socialized property. As the music industry has already consolidated a large amount of cultural information and sought to capitalize on it, the site's membership sought to create an archive that existed outside of the industry's boundaries. Granted, the configuration of players in Marx's model rely on various relationships to labor, while that of What.CD rely on relationships to listening and digital interaction.

Additionally, Herbert Marcuse wrote that a Marxian interpretation of technology considers that “the machine never creates value but merely transfers its own value to the product, while surplus value remains the result of the exploitation of living labor” (2013, p. 31). Marcuse and his student, Andrew Feenberg see redemption in reclaiming the surplus value for the laborers who are working within the technological system.

Feenberg is embedded deeply within Marxist traditions and this has a considerable impact on the shape of his arguments. As a student of Herbert Marcuse, he began his

intellectual journey in the 1960s amid the social upheaval and the New Left. As such, he has some critiques of other major cultural discourses that have arisen since then, namely Science and Technology Studies (STS) and postmodernism. Briefly, his criticism of the former is its “inability to develop criteria of progress out of the analysis of local situations and struggles” (2002, p. 31) and its dependence “on the spread of a radical ontological operationalism that eliminates or redefines all the categories of common sense, philosophy, and social science” (p. 32). His criticism of the latter is that it “attacks all forms of totalizing discourse, including talk of potentiality, in the belief that totalization is the logic of technocracy” (p. 28). While certain aspects of a critical theory of technology align with those of postmodernism and STS, such as the necessity to consider social forces like gender and race as power dynamics, Feenberg seeks to distinguish his own pursuits as more pragmatic by using real-world computer-human interactions as examples (such as computers in educational and manufacturing contexts).

In the case of What.CD, while both STS and postmodern lenses are valid interpretive tools, a critical-technological approach grants the site agency beyond its components and discourse to allow its principles to be applied to other digital communities, especially ones that are generally seen as too corporatized, or where users feel like their participation in the public sphere comes at too great a cost to their privacy and autonomy.

Simultaneously, though, there are moments at which Feenberg attempts to combine STS and Critical Theory to bridge knowledge gaps that currently exist, also a valid approach for applying theoretical ideas to the analysis of What.CD. The motivation for trying to reconcile the two was born out of modern politics adopting “technocratic rationalism” in ways that Marcuse did not predict. Namely, “democratic interventions are inspired by participant interests rather than by a general disillusionment with capitalism. And they induce technical change not through a Great Refusal but through negotiations, some conflictual, others cooperative, between lay

actors or technical outsiders and those in command of the institutions” (Feenberg, 2017, p. 8). Whereas STS identifies networks as being comprised of individuals and technological objects, though, Feenberg still prefers to keep humans at the center of the reimagined technological rationalism. He also envisions technosystems that privilege knowledge that is formulated from horizontal social structures rather than from on top, an innovation that digitization has afforded. While such preferences remain vague, they do serve to connect Marx and Marcuse to modern discussions of capitalism and technology.

To further consider Feenberg’s critical theory of technology, we must also appraise instrumental views on one hand, and substantive views on the other. An instrumental view is based on the idea that “technologies are ‘tools’ standing ready to serve the purposes of their users. Technology is deemed ‘neutral,’ without valuative content of its own” (Feenberg, 1999, p. 5). A substantive view, alternatively, considers that “technology constitutes a new cultural system that restructures the entire social world as an object of control” (p. 6-7). Apart from the obvious implications such a view has for how computing and networking technology has changed society, we can also excavate slightly deeper to see how control is easily built into the lowest levels of our everyday tech usage, such as the smartphone, and how all kinds of systems depend on our relationship with such a device. The NSA, Facebook, Google, and any number of other institutions predicate their operative models on heavy use. This substantive view of technology has many advantages to an instrumental view, particularly that it leaves room for pluralism to exist within societies, even though substantive views do not break these possibilities as wide open as Feenberg would like.

Therefore, Feenberg seeks to separate his discussion from both substantive and instrumental views of technology by suggesting a critical view. This view, as a key selling point, is based on “public participation in technical decisions, workers’ control, and requalification of the

labor force” (2002, p. 12). Feenberg demonstrates that this theory, if it relies on either the instrumental or substantive viewpoint, relies on a substantive construction, since technology “denies that modernity is exemplified once and for all by our atomistic, authoritarian, consumerist culture” (p. 14). He pushes beyond the substantive, though, to describe how technological systems can be more egalitarian and rooted in uses a community like What.CD deems appropriate. Additionally, Feenberg elaborates on why he supports online communication and its democratizing potential:

But are online communities real communities, engaging their members seriously? The testimony of participants as well as extensive research confirms that the Internet is the scene of new forms of sociability that strongly resemble face-to-face community ... The behaviors and symbols that sustain and support the imagined unity of community are routinely reproduced on the Internet (2012, p. 14).

Regardless of the businesses that act as gatekeepers or the governments that surveil citizens, he maintains that escape routes and the formation of communities can nonetheless happen more freely online than they can in other physical or technological spaces. This is the justification behind studying the mechanics and communication tools created and used by What.CD.

Feenberg considers that dominant market logics may deny space for the technological pluralism with which technological systems should be developed. He also believes that entrenched systems “invisibly sediment values and interests in rules and procedures, devices and artifacts that routinize the pursuit of power and advantage by a dominant hegemony ... On this view, technology is not a destiny but a scene of struggle.” (1991, p. 15). We should then try to integrate dialectic policies into how fundamental systems, like the internet and the technologies that function on top of it, like BitTorrent, are viewed by industries and government entities. Jeremy Wade Morris (2015) writes that such integration has already occurred within

the music industry, as marketing data is extracted from piracy systems like Napster that were originally designed to sidestep the commodification of music: “Individual Napster users became an analyzable group of listeners and participants that could serve commercial ends. Napster provided a space for an audience that engaged in community-like behaviors, but one that was nonetheless built to be a commodity that would generate sellable data and patterns” (p. 33).

A word that Feenberg uses when describing his critical theory is “participatory.”

Although made famous by Henry Jenkins (2012) to describe the cultural shifts that took place after much of our lifeworld went online, Feenberg’s use of the term targets the underlying technology that made culture itself participatory. He writes that “in an industrial society ... democratization of work is indispensable to a more participatory way of life. And it is precisely in the domain of work that democratization poses the most difficult problems.” (p. 17). The question of democratization of digital work is one that technologists answer with resounding celebration, as web-based solutions have distributed workloads across an army of freelancers that are not bound by geography or a 40-hour work week. Rather, as Feenberg and autonomous Marxists have suggested, such a transformation of the West’s workforce has forced them into a position of precarity, and the designers of the systems that have afforded this precarity are the ones who gain the most benefits (Hardt and Negri, 2000). The type of participatory involvement that Feenberg sees as a solution to such precarity is deeper and more substantial than being able to work from a laptop in Starbucks without any health insurance.

Feenberg’s critique of Marcuse and Marx, rather than a framing issue concerning their ideas about technology as wrong or inaccurate, is that they portray an incomplete solution to how scholars and policymakers should approach the development of computing and networking systems to best serve workforces or general populations. Rather than a unified protest against capitalist oligarchs, Feenberg sees technologically-aware Marxism as “a protective umbrella

under which social creativity can operate at the microlevel of particular institutions and workplaces. A new society can be born only of an immense multiplicity of such activities, not from a politically enforced plan” (2002, p. 62).

So how is change within such a critical framework achieved? Feenberg suggests that it must start from a fundamentally different vantage point that takes an alternative trajectory to current technological development. Development of any kind is likely to reproduce ideas generated by its foundational principles, as the author is blatant about noticing: “This is the paradox of reform from above: since technology is not neutral but fundamentally biased toward a particular hegemony, all action undertaken within its framework tends to reproduce that hegemony” (2002, p. 63). As has been shown in some facets of the music industry, such as copyright, policymakers are constantly reeling and struggling with how to mitigate the effects of technology in society, rather than attempting to shape it as Feenberg suggests. Similarly, independent musicians are not trying to overthrow BitTorrent as a distribution system. Many celebrate its potential for exposure, especially on a site like What.CD (Sinnreich, 2013, ch. 4).

Feenberg’s theory also seeks to intervene in the conception of the relationship between the social sphere and technology. While spending most of his time in the traditional Marxist discourse of class struggle, he is also interested in demonstrating the usefulness of Marxism to identity politics and environmentalism. By going back to Marx’s writings and teasing out ideas that tie technological progress to the accumulation of capital, Feenberg posits that socialism need not be pitted against markets, but rather that their orientation should be recalibrated to fulfill the needs and desires of workers. As things stand, the domination of the managerial class is built into the logics of technology and therefore prevents democratization. Feenberg writes that, for conditions to change, we need “public participation in technical decisions, workers’ control, and requalification of the labor force” (2002, p. 12)

The conceptualization of technology within this critical theory recognizes that it is neither neutral nor instrumental within society (two descriptions common in Marcuse's discussion of technology in relation to Marxism), but rather "an 'ambivalent' process of development suspended between different possibilities" (p. 15). Alternatively, he describes it as a "scene of struggle" a "social battlefield," and to borrow from Bruno Latour, a "parliament of things" (p. 15).

The salvation of the working class, who today can be considered a clear majority of westerners as capital has become increasingly consolidated, is seen as a distant future for conventional Marxist thought, a coming-of-Jesus moment in which a "higher phase" arrives (Feenberg, 2002, p. 47). Rather than waiting for salvation and suffer alienation in the meantime, Feenberg suggests that current technological regimes necessitate a persistence of domination. He also writes that "whatever the merits of placing moral and political limits on technology in particular cases, history seems to show that it is impossible to create a fundamentally different form of modern civilization using the same technology as the West" (p. 13). Since an intervention of some kind needs to occur, finding vehicles through which such changes can arrive becomes the challenge. Elsewhere, Feenberg has written that the internet, more than any other set of technologies, can stage this intervention (2012, p. 3). First, though, we must rethink what the point of technology is.

One way to do this is through, at least temporarily, dispensing with the idea that efficiency should be the bottom line for technological development. Rather, the priorities of the "user" class should determine the functionality of technical systems. Without the involvement or sponsorship of any corporation, the technology was developed, although not entirely altruistically, with user desire in mind. Feenberg writes that "opening technical development to the influence of a wider range of values is a technical project requiring broad democratic

participation” (2002, p. 34). Although he does not directly identify what these values might be, we can assume that they are related to wider participation in communication and community decision-making mechanisms.

On the other hand, the type of democratization that BitTorrent has afforded is only for content sharing, not necessarily for power distribution. While content does not need to be managed by a central gatekeeper and the most popular torrents are also the ones that the most people want, What.CD is decidedly autocratic in its user structure³. Such a notion resonates with technological skeptics like Evgeny Morozov and Tim Wu, who argue that hegemonic regimes like corporate power and government involvement, as well as the ideological promise-making machines of tech journalism and Hollywood futurism, are responsible for the disconnection between technological possibilities and the more modest realities they deliver.

In researching What.CD, though, I have found that members were excited and motivated by a sense of community. As the chapter on user opinions will explore, survey data exposed some insights about the seemingly contradiction of users being thoroughly excited about a community organized through authoritarianism. Namely, while users were not excited about the strict rules and ratio requirements, such structures facilitated musical availability that no other community had access to. So, although other governance may have brought about the same excitement, What.CD’s demands certainly did not prevent enthusiasm from forming.

The ultimate end for Feenberg is to imagine a possible technological future outside of the current trajectory, the prospect for which is difficult to imagine since it does not exist at all. By seeking alternative “values” that align with the improvement of the lives of the working class,

³ A conversation with Stephen Witt, the author of *How the Music Got Free* (2015), illuminated the possibility that “democratizing” technology has yet to produce any better alternative to today’s democratic tendencies.

an alternative reality can emerge. The challenge lies in dismantling current hegemonies, a task that very few inside the academy or any industry have a reason to pursue. Feenberg himself seems aware of the audacity of his claims: “The optimists argued that computers would eliminate routine and painful work and democratize industrial society. The pessimists argued, on the contrary, that computers would put millions out of work and bring universal surveillance and control. There is a third alternative: perhaps the computer is neither good nor evil, but both” (2002, p. 90). In the third space, one that is characterized by a certain ambivalence, his ideas offer a promising starting place for theorizing BitTorrent as a potential democratizing technology.

Specifically, What.CD’s model has the potential to dismantle current paradigms that dominate markets without the consent of its customers. For instance, the ways in which current listening practices are still largely shaped by a format, such as web streaming or digital downloads. The original popular compressed audio format, the MP3, was optimized for its size, rather than its sonic integrity. As newer compression techniques have allowed for file size reduction without a supposed sacrifice in audio quality, hegemonic forces like dominant streaming services and research institutes where audio coding is developed make the claim that such tensions are now resolved. However, What.CD challenges this notion by demonstrating the popularity of uncompressed audio and documentation regarding analog-to-digital conversion processes. If such affordances were made available on a larger scale and were found to be popular, the importance of such a discovery lies in the routes to market dominance that are available to marginal ideas.

BitTorrent

Although cultural discussions of BitTorrent and other P2P technologies are certainly

present, such as Andersson's claim that its role has changed from "reactive" to "proactive" (2009, p. 64), most extant literature related to BitTorrent research largely consists of quantitative research related to economics, computer science, and information technology (Li et al., 2013; Vinkó and Hales, 2015; Wang & Kangasharju, 2013), some of which is discussed briefly below. Such studies are interesting because they sidestep thorny issues of legality and piracy often associated with media studies because they are primarily interested in technical matters like load balancing, network topologies, and bandwidth efficiencies. Through discussing these issues, though, we can see the possibility of analyzing BitTorrent as a possible alternative to corporate logics (those currently of Google, Facebook, and Amazon, or whomever this might consist of in the future). For instance, regarding BitTorrent, Mueller and Asghardi (2012) write that "the power to shape traffic flows redistributes control among actors in the Internet ecosystem, generating broad political economy debates about efficiency, fairness, innovation and transparency" (p. 462). Because of the direct impacts of technological decisions on the social sphere, the authors here conclude that discussions about the design of the protocol are very similar to discussions about the values they list. In this instance, the ability of internet service providers (ISPs) to perform deep packet inspections of the data coming across their lines makes them capable of a gatekeeper function that could render democratic participation more throttled than if such choke points did not exist. Such a concern is the reason for much of the advocacy activity surrounding network neutrality in many countries currently. Because BitTorrent traffic is specifically targeted because of its likelihood for piracy, and because deep packet inspection is performed through pressure from content industries, the resulting development of the network is directly shaped by corporate interests rather than the desires of most users that are easily found in their online behavior.

Similarly, Cuevas et al. (2013) find that, although a broad segment of the population

uses BitTorrent, there are a few sources of its contents that have political motives of some kind. Although BitTorrent has the potential for democratization, its use can be co-opted by entities that have the resources. In other words, the BitTorrent protocol can be gamed on public trackers, even though most pedestrian users have no interest in user exploitation, or for that matter, even copyright infringement. To that end, the authors “study content publishing in BitTorrent from a socioeconomic point of view by unveiling who publishes content in major BitTorrent portals and why” by conducting “a large-scale measurement over two major BitTorrent portals ... to capture more than 55 thousand published content objects that involve more than 35 million IP addresses” (p. 1421). Their findings suggest that, while BitTorrent can be (and certainly has been) used with democratizing tendencies, it can also be gamed by those who have the knowledge and desire to use it for their own ends. Within their study, the authors found that the motivation for most content publication was not what could be considered “democratic” (as will be discussed later, although What.CD cannot be considered purely democratic, it is more so than public use of BitTorrent).

Broadly speaking, BitTorrent use can be divided into public and private services. Public services consist of readily searchable repositories of content, mostly illicit. Private trackers [PTs], What.CD being one, required a username and password and are more tightly regulated by internal systems of accountability. Several studies of private services have come to novel conclusions regarding the communicative dynamics that are not present in public counterparts. Li et al. write that “core users are the base of the activity of the PTs and the number of them is stable in different PTs” (2013, p. 2274), suggesting that the stability that results from accountability creates a more predictable environment in PTs than in public torrent sites. Conversely, Blake Durham (2013) considers that the ideological underpinning of PTs is

antithetical to democratic tendencies: PTs are “not an inversion of capitalist culture industries but the formation of alternative but equally hierarchized inequalities of access” (p. 1).

One of the problems that arises from the dynamics of PTs is the saturation of content and the subsequent difficulties of encouraging downloading and finding new content. As was certainly the case on What.CD, finding content that was not already uploaded was challenging. Liu et al., in their discussion of private P2P incentives, consider that such challenges are not insurmountable, and are in fact a result of insufficient system design. “To prevent collusion,” they “propose an upload entropy scheme, and show through analysis and experiment that the entropy scheme successfully limits collusion, while rarely affecting normal users who do not collude” (p. 610). In this context, collusion means that users “cooperate with each other and artificially boost their upload-to-download ratios, thereby free-riding the system.” There are more subjective mechanisms for preventing collusion but cannot be relied upon to universally enforce fair upload and download dynamics.

Paul Aitken (2012) suggests that a different mechanism for preventing content deterioration is the structural barrier that prevents most internet users from accessing its contents. He writes that “private sites combat the potential debasement and corruption of the circulation of cultural production by closing themselves off to general access. In so doing, members are treated to a high quality and usually considerably more diverse catalogue of media” than exists on public trackers (p. 256). Such is certainly the direction in which What.CD went, as will be demonstrated below, as new content to upload became increasingly scarce. One of the Pirate Bay’s founders also corroborated such a suggestion and further developed the idea by claiming that as soon as a private or public BitTorrent site was turned into a profit-generating enterprise, the content available on that site almost always deteriorates (citing the Pirate Bay as an example of this in the early 2010s, Van der Sar, 2010).

Another problem is the rather steep learning curve that accompanies the use of PTs, as will be further demonstrated in the description of What.CD. Aitken notes that “efficiently searching for and finding BitTorrent content requires a considerable amount of knowledge and experience” (p. 57), and ignorance of the rules on PTs is not tolerated. Although the rules for many PTs seem to be like each other, the existence of such thorough rule sets implies the perceived uniqueness of the cultural space that they occupy. Additionally, there are instance of these rule sets coming across as a conscious effort to carve out new cultural space. Additionally, rule sets might be purposefully obtuse to weed out pedestrian users. This is the case on other PTs whose format is derived from What.CD using a specific content management system, Gazelle, which offers a certain set of affordances and is therefore partially deterministic.

Aitken further writes that private sites, with their rules, regulations, focus on obligation and reciprocity, and their exclusivity, are spaces in which the organization and administration of the circulation of cultural production are prioritized over simply liberating information from its commodity status” (p. 262). As will be developed in the dissertation itself, a discussion about the “commodity status” of goods seems to be a separate matter from the power that is not equally distributed in PTs – in fact, it has been described in totalitarian, authoritarian terms.¹

Relatedly, a technical issue that is closely tied to rhetoric surrounding the “sharing economy” is the egalitarianism of the BitTorrent protocol, and computer scientists often find that systems in which everyone is compelled to participate are more productive at sharing content than systems that only reward selfish behavior (Liu et al., 2010). Similarly, Vinkó and Hales suggest that learning from BitTorrent client peers can enable the most successful sharing outcomes: “cooperative (sharing) strategies outperformed free riding strategies,” and allowing peers to slowly mutate their behavior in reaction to the network allows not only sharing of content, but of optimal down and uploading scenarios (p. 181). By assessing the number of

participants on a BitTorrent network and their activity, public and private trackers can achieve an efficiency greater than if users are left to their own volition (Wang & Kangasharju, 2013).

Because sharing is generally seen in altruistic terms, especially online, a discussion of BitTorrent and sharing should rely on the sociological concept of *limited greediness* developed by Roca and Helbing (2011). They write that

the wellbeing of participants improves if they contribute to the public good, but there is a free-rider problem: why contribute if one can enjoy the benefits without bearing the costs, and why cooperate if one may obtain a greater personal benefit by cheating?... In particular, the punishment of free riders by cooperators is able to sustain and enhance initial levels of cooperation ... Our results strongly suggest that learning rules, particularly self-referential factors in decision making, can be a key component in the explanation of the emergence and stability of cooperation (p. 11370)

So, both rules and a modified regimen of sharing might encourage more cooperation and are generally present within PTs while being absent from public trackers. As Galloway and Thacker discuss (2007), cooperation and an obsession with networks that favor lateral connections over hierarchy and “verticality” (p. 25), identifying the exact nature of each “node” within a P2P network determines where political contingencies might exist: “Together [certain characteristics] compose a new, sophisticated system of distributed control. As a technology, protocol is implemented broadly and is thus not reducible simply to the domain of institutional, governmental, or corporate power” (p. 30).

Intellectual Property

Another issue that current literature deals with is how intellectual property policies are unsuitable for a digitally networked age, and a host of writers have weighed in as to why copyright does not work, how it can be fixed, how it should be abolished, and so on (Aufderheide & Jaszi, 2011; Bollier, 2013; Bollier & Pavlovich, 2008; Boon, 2010; Gillespie, 2007;

Levine, 2011; and others). Although I do not intend to directly deal with copyright within the dissertation from a legal or policy standpoint, there are several ways it is implicated from a cultural one. For instance, one need not address specific case law to see its traces within the need for secrecy within PTs, in how the music business has come unraveled since 2000, or in the infinite mysteries of fair use; not to mention the hot mess in which international copyright currently finds itself.

To briefly summarize this cultural treatment of copyright, I refer to the category of scholars that includes Patrick Burkhardt, Siva Vaidhyanathan, and the more general discussions of William Patry, among others. To make sense of how digitization has changed policy making approaches, Patry (2012) writes that “the Internet and other digital technologies have undermined the central premise around which copyright markets have historically been built: artificial scarcity” (p. 3). All these scholars, although they disagree about what a solution should look like, agree that there is a fundamental problem in the gap that exists between policies and practices. Patry also writes that this problem is because of inefficient policymaking: “Policymakers have been operating in an evidence-free copyright law zone for many decades” (p. 51). While Burkhardt tends to agree with Patry, many academics seem to suggest solutions that are too far afield from reality. It could be argued that Feenberg and his critical theory of technology also fit into this category with his overly broad use of the term “democratization.”

Vaidhyanathan (2003) is an advocate of a “thin” copyright policy that has certain regulatory limits since he thinks that the damage of irrelevant policies is harmful:

The tension in the law is not between urban lower class and corporate uberclass. It’s not between black artists and white record executives. It’s not always a result of conflicts between white songwriters and the black composers who sample them. It is in fact a struggle between the established entities in the music business and those trying to get established. It is a conflict between old and new (p. 134).

Because so much is yet undetermined, or as Feenberg suggests the Internet has not yet reached its final form, the damage of ill-conceived policies is damaging to cultural spheres which are often disconnected from their institutional counterparts like the recording industry. Even representatives of Vaidhyanathan's "new," like tech companies, are detached from these cultural spheres where the content (if it can be adequately described in such an industry-imbued term) originates.

Jeremy Wade Morris, while actively attempting to shift the focus from copyright policy to the formation of a digital commodity market, writes "digital goods call into question how scholars have typically understood commodities, and the case of music highlights how the digitized commodity form is reconfiguring the circulation and experience of cultural goods" (p. 43). Furthermore, he insists that by shifting discourse about digital music away from a focus on copyright, scholars can begin to see the importance of materiality that extends beyond current frustrations with inept intellectual property regimes. Such a line of thinking is also why I find it important to review the technical studies of BitTorrent and related technologies; by doing so, we can investigate exactly where innovation is occurring without having to worry about whether it is legal or not.

Patrick Burkhardt has written about the "celestial jukebox" and the results of a shift to digital music streaming (2010), as well as the impact of recent alternative political movements (2014). His contribution in describing the cultural significance of copyright uses Habermas's lifeworld to communicate what dire straits musicians are in: "Copyright law has helped to 'uncouple' the music lifeworld from other social subsystems to the point that the law is no longer called upon to justify itself with reference to its interventions into the music lifeworld. Rather, the law, together with power, money, and communication networks, works as a

‘steering medium’: it works independently of the lifeworld, colonizes it, and converts its cultural communications into formal, instrumentalist, market-based transactions (Habermas 1987, 365)” (2010, p. 15). Although it could be argued that, within capitalism, external forces have always acted as a steering medium, it is difficult to consider music recording without money, just as it is equally difficult to think about a musician’s incentive to create without the reward of money or fame.

Ben Wagner writes about the development of freedom of expression online, specifically of its dependence on specific technological interests and affordances. In his 2016 book, he makes that argument that technical and political choices that were made in the early stages of the development of the Internet and have not changed since. None of these choices were necessary then or now, rather they fitted a certain set of specific interests and have since become entrenched within Internet communities of practice and their institutions. It is also increasingly taken for granted as a liberal speech space that is assumed to be free by nature” (p. 179-180). What.CD, and P2P spaces more broadly, are generally outside of the bounds of state law, which doesn’t preclude them from being regulated by other forms of law that can also be framed as normative under the theory of critical legal pluralism. Kleinhans and MacDonald (1997) describe such pluralism as the process by which “manifold legal norms emerge, change, and negate or reinforce one another in social situations not derived from, tributary to or purportedly structured by State action” (p. 29). Such a definition implies that events outside of court decisions, precedents, and FCC intervention can still be as important as state law, which opens cultural discussions of regimes like copyright and censorship.

What.CD circumvents normal market structures in ways that have been well documented concerning piracy and internet distribution systems (Adermon & Liang, 2014). However, there are relatively few studies about the culture of music piracy, which should be

corrected since many of the members of What.CD would likely not consider themselves criminals. In fact, some incredibly avid fans of music can be found on What.CD, which is demonstrated through curatorial activities and extremely accurate record keeping. What follows is a discussion of current theories of technology and what they contribute to better positioning a study of What.CD as an important cultural space.

Philosophy of Technology

Henry Jenkins (2012) writes that consumer capitalism is capable of being reconfigured by fan involvement. Furthermore, he identifies five main aspects of fan communities that are particularly transformative: “its relationship to a particular mode of reception; its role in encouraging viewer activism; its function as an interpretive community; its particular traditions of cultural production; its status as an alternative social community” (p. 2). By circumventing normal market models that involve paying for a consumer good, or as is the case with music and movies, paying for a license to play a consumer good, digital distribution has allowed for new value systems to rise around new models. In turn, these new models are driven by specific technological affordances, such as network structures and increased bandwidth, both of which have paved the way for BitTorrent trackers to dominate peer-to-peer sharing technologies.

Such reconfigurations butt up against the music industry’s desire to fold new technologies back into the market logic: that the ultimate purpose and medium by which fans connect with music is capital, and if a surplus value is not created through artist-fan interactions, then something needs to be fixed. However, by taking a more critical view that questions *why* consumers are not paying as much for music anymore, and *why* brands cannot build audiences anymore, and even *whether* artists need a meaningful revenue stream to do so, we can begin to

see why What.CD flourished. Furthermore, we can also see why observing What.CD can provide a corrective to the way that industry professionals typically problematize the music industry.

Technology and Social Impact

In *One Dimensional Man*, Herbert Marcuse (2013) writes that

No matter how much such [technological] needs may have become the individual's own, reproduced and fortified by the conditions of his existence; no matter how much he identifies himself with them and finds himself in their satisfaction, they continue to be what they were from the beginning—products of a society whose dominant interest demands repression (p. 8).

Such a position, which is typical of Frankfurt School members, including Adorno and Horkheimer, criticize the “culture industries” for their blatant attempts to dupe the public (Adorno and Horkheimer, 2007). Marcuse was especially focused on the central figure of technology in shaping notions of democracy post WWII, though, and thus spends much of *One Dimensional Man* developing a cohesive argument for why contemporary technological system development is in opposition to democratic progress.

The absolution of system designers, to Marcuse, hinges on keeping their user bases comfortable. Their destructive tendencies can be overlooked or even completely hidden when masked by a sufficient number of affordances, advantages, and rules. Although Marcuse was writing in pre-internet contexts, one need look no further than a system like What.CD to see such tradeoffs. While, on the one hand, users are “liberated” from the oppression of capitalist pressure to spend money in a space like What.CD, they must also recognize how markets themselves influence the music they are likely to listen to, even if their musical tastes are informed by discourses that circulate in independent or alternative music markets. Additionally, they must constantly see the rules regime under which What.CD and other PTs operate.

Bruno Latour, as a seminal thinker within Science and Technology Studies (STS), played a role in shaping it as a multidisciplinary field that coalesced in the 1970s and 80s, even though many of its precursory bodies of literature were developed much earlier in the 20th century. Although its entire set of goals cannot be discussed here, a few important contributions that connect with a discussion of What.CD can be teased out of Latour's foundational volumes *Science in Action: How to Follow Scientists and Engineers through Society* (1987) and *Reassembling the Social* (2005). The goal of integrating these ideas into the current topic is to deconstruct the seemingly holistic object of a technological fact to uncover its motivations and internal logics. Taking a different methodological approach from Marcuse and Feenberg, STS seeks to deconstruct technology rather than culturally situate it.

Latour begins from the premise that a finished product of technology, such as What.CD before any excavation, is too late in the process to understand its full importance. It is therefore futile "to analyze the final products, a computer, a nuclear plant, a cosmological theory, the shape of a double helix, a box of contraceptive pills, a model of the economy; instead we will follow scientists and engineers at the times and at the places where they plan a nuclear plant, undo a cosmological theory, modify the structure of a hormone for contraception, or disaggregate figures used in a new model of the economy" (1987, p. 21). It does not seem like a methodological failure, then, rather than an emphasis on the result of sociotechnological processes instead of their composition. We must, therefore, look at the ways that What.CD users constitute culturally meaningful relationships with both the technology itself and with other users, to gain insight into why so much of time and energy is spent on this site.

Latour arrives at a notion of technological fact by rethinking any given field of study, such as What.CD as a web of contingencies rather than a sterile result that the scientific method delivered to someone in a lab coat. Although he draws on preexisting concepts from sociology

and anthropology to conceive of this web of meaning, Latour emphasizes that much of the contingency is invested in relationships between different individuals or classes of people like scientists, or in this specific case, What.CD members. He writes that “the instrument, whatever its nature, is what leads you from the paper to what supports the paper, from the many resources mobilized in the text to the many more resources mobilized to create the visual displays of the texts” (1987, p. 69). Within such a framework, there are several possibilities for a unit of analysis within What.CD, all of which are discussed below.

In addition to the scientific or technological fact being comprised of a collection of relationships, the concept of specific “knowledge” must also be reconsidered. Latour writes that “‘knowledge’ is not something that could be described by itself or by opposition to ‘ignorance’ or to ‘belief’, but only by considering a whole cycle of accumulation: how to bring things back to a place for someone to see it for the first time so that others might be sent again to bring other things back” (p. 220).” In the context of What.CD, such acts of sharing occur when users upload new content, thereby sharing it with the entire community and expanding the range of potential knowledge members can have.

Similarly, the “social” is another concept that Latour finds reason to reinterpret. His use of the term is unusual when considered in the conventional sociological context of “local, face-to-face, naked, unequipped, and dynamic” (2005, p. 65). Rather than focusing on the social to designate a certain type of interaction or relationship, Latour suggests that it can only be captured as a unique characteristic of those interactions. It is a “momentary association which is characterized by the way it gathers together into new shapes” and resists being made permanent (p. 65). Additionally, digitization scholars should be especially wary of the fact that the social is not a category similar to “the biological,” “psychological,” or “economical.” Rather, it describes the “modifications” and shifts that affect those domains that we should describe as

social. Lastly, Latour desires that we move away from describing *forces* as social, since this implies a vector with a certain direction and velocity. Rather, by describing these brief moments between objects as social, we can “distinguish in the composite notion of society what pertains to its durability and what pertains to its substance” (p. 66). As will be demonstrated through a more thorough discussion of What.CD, interactions between sociotechnical objects are the best moments at which to gain a precise understanding of how sociality bears out for users.

In deeper inspection of “the social,” Latour finds it entirely possible to have a set of nonhuman “actors” that can develop social ties. So technological artifacts like computers, applications, and digital networks all have interactions and relationships (see Figure 1). Latour writes that “anything that does modify a state of affairs by making a difference is an actor—or, if it has no figuration yet, an actant. Thus, the questions to ask about any agent are simply the following: Does it make a difference in the course of some other agent’s action or not? Is there some trial that allows someone to detect this difference?” (2005, p. 71). Such a configuration of describing social relationships allows us to put a technological tool like What.CD itself squarely in the center of a “social” sphere, in which it is acting and being acted on within a host of surrounding actors, which are people as well as other technological objects. Thus, an actor within the social mesh of What.CD can consist of various kinds of users, as well as the technology they use, including the BitTorrent protocol, IRC channels, and forums.

This chapter’s goal has been to establish a theoretical framework upon which the rest of the dissertation builds, and to ground research on What.CD in theories of technology that allow for a more meaningful exploration of the various tools and affordances that the site offers. A distinct concession from this exploration is that thinkers often fall on either side of the “internet exceptionalism” debate. On the celebratory side are authors like Lawrence Lessig (2006) and Yochai Benkler (2006). On the skeptical side are those like Evgeny Morozov (2012) and Tim Wu

(Goldsmith & Wu, 2006) who have justified concerns about the possibility for democracy to flourish in a space that is so heavily controlled by corporate power and surveilled by governmental regimes. Because all these authors' work is preloaded with certain philosophical and political assumptions, the above theoretical framework attempts to lay the groundwork for a discussion to which these authors might contribute additional meaning at a later point in further research. What follows in the next chapter is a descriptive layout of each of the important components of What.CD, as well as the connections they have to the theoretical framework described above.

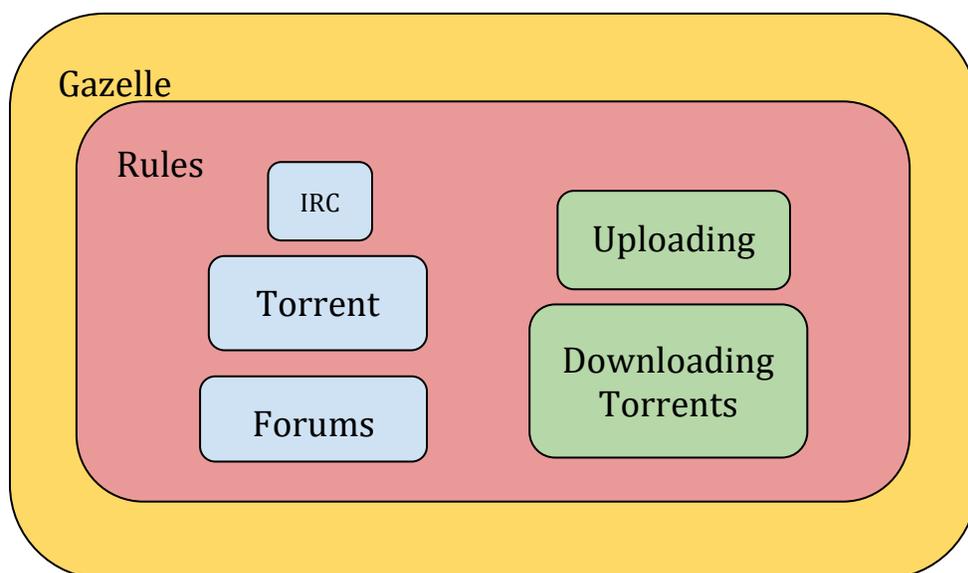


Figure 1: Conceptual Map of What.CD Components

Chapter 2: What.CD – Its Users and Tools

This chapter describes the various rules and other components of the social context of What.CD. danah boyd, using Gibson’s development of an affordances framework (1979), writes that social media platforms of different kinds offer affordances that facilitate certain social interactions (2010). According to this rubric, this chapter assesses What.CD for certain affordances and features that allowed it to function as a platform in which a strict set of rules created a structure in which members interacted. These affordances include: the rules themselves, uploading, downloading, torrent comments, forums, IRC channels, and the Gazelle platform on which What.CD operated. There were approximately 145,000 active members of What.CD, with a possible total of 200,000. Elaborate sets of rules governed communication and actions of nearly every kind on What.CD and the salient ones are briefly described below. Lastly, this chapter scrutinizes the listening subject as a unique identity construction dependent on the digital context of What.CD.

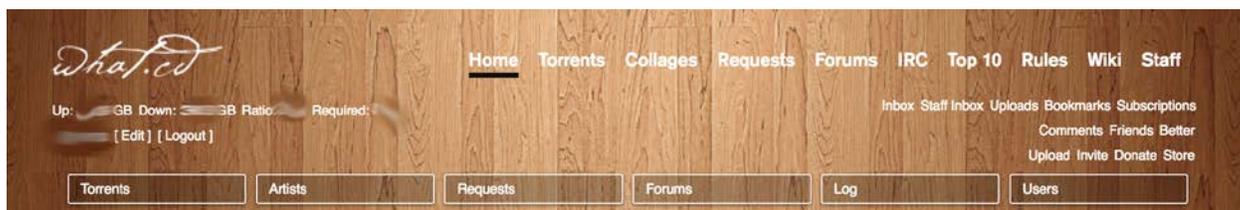


Figure 2: The top of What.CD with blurred user metrics

Rules

Rules governed everything on What.CD and were considered “paramount.” In fact, the very admittance of a new user was the result of following rules that predicated membership. An elaborate interview was conducted for candidates, to which an entire website of assistance had

been devoted (whatinterviewprep.com). According to What.CD's metrics, over 25,000 interviews had been administered by the time the site had shut down:

This system has been in near-constant operation for over 7 years. Thanks to the tireless efforts of the Interview Team (whose members come from all over the world), What.CD entrance interviews are conducted 24 hours a day, and in several different languages. Although some fail, hundreds of users pass the interview every month. Bit by bit, the number of interviews conducted by our team grows. Last year we celebrated the 50,000th interview, and we now have the honor of announcing that over 25,000 What.CD members have successfully earned their invitation by passing the interview.

However, these were not the only rules that had to be followed. Although there were only 6 major top line "golden" rules (each with many parts), those did not account for the rules governing naming conventions, best practices, creating torrents, chatting on What.CD's IRC network, or how to tag torrents. Although breaking some rules could simply result in a reprimand, others could ban a user from the site, either temporarily or permanently.

Compared to other private trackers, What.CD's rules were strict and plentiful. Public trackers such as The Pirate Bay and Kickasstorrents have little or no rules governing behavior, such as what kind of material can be uploaded or whether a certain ratio must be maintained. As will be demonstrated by describing more elements of What.CD, rules were very important to the governance of behavior and maintaining an atmosphere that encouraged musical exploration and a certain kind of social responsibility.

A paradox exists in this context, where rules govern a community that is seen from the outside as piratical. While forcing critics to reframe a seemingly "wild west" community as adhering to strict internal logics, such a paradox also exposes how rules are constitutive of most elements of What.CD's existence, rather than a force that molded user behavior. In other words, even though rules are usually interpreted as a method or tool of governance, rules on What.CD

should be thought of as affording certain capabilities and motivating interaction. For instance, requiring uploads to adhere to standards arguably encouraged more usage of the site, thereby demonstrating that rules not only facilitated interaction, but also constitute the culture in which users were listening.

It should also be noted that, in a discussion of rules, online spaces (and probably physical ones, too) are always shaped by rules, and communication can either be viewed as constricted or fostered by them. A social media platform is celebrated or excoriated for the things it allows users and corporations to do, the liberties it grants or the rights that it violates. What.CD and its rules, however, are analyzed in this chapter as neither enabling or limiting, but as cultural artifacts that can be loaded and unloaded with meaning as specific instances determine.

Marcuse's interpretation of the role of technological systems in our social lives is that they offer a tradeoff of certain kinds of fulfillment for a general loss of control. That loss of control is more generally representative of the oppression that such systems reproduce in a logic that has not ventured too far from the original capitalistic arrangement. For such thinkers, being aware of the rules that the designers of What.CD have put in place can give users a good idea about the obvious and hidden control mechanisms that are put in place. For Feenberg, on the other hand, the rules of What.CD are merely structural elements that provide for meaningful democratic communication. What.CD is therefore one of these "new forms of sociability" (2012, p. 14) that is possible on the internet and unprecedented in its ability to establish self-governance despite external trends toward increasing corporate control.

Uploading

What.CD, at its most basic, was a website and associated private BitTorrent tracker. As such, users had to maintain a certain ratio of uploaded to downloaded content. Uploaded content was generated through two ways: either through finding new material that had not been uploaded yet, a task that was increasingly difficult, or through fulfilling requests that other users had posted. The seed-to-leech ratios that each member had was a mechanism to motivate seeding, which may explain the incredibly deep repository of content. While a broader motivation might be to create the most robust musical library in human history, the political economy of a high ratio on What.CD allowed for a user to climb the ranks of user classes, as well as be seen in a better light on the site (anyone's ratio, as well as the amount they have up and downloaded, was publicly viewable, see Figure 3). Put more simply: users keep uploading either because it is a marker of status or because they want to keep downloading, and they download as an affordance of how much they have uploaded. Such a community organizational mechanism like uploading can be considered, at least currently, one that bypasses commercial models for internet development, and as a result, has the potential to contribute to new models. Feenberg writes that "any technology that offers new possibilities for the formation of community is thus democratically significant" (2009, p. 81).

Uploading New Content

A specific page on What.CD acted as a portal for allowing new uploads. It required that a user create a torrent file that included the new work, the type of files it contained, and much more detailed information (see image below). Being granularly specific with metainformation both allowed for standardization that users relied on and acted as a verification process for the uploader.

Your personal announce URL is: [REDACTED]

Torrent file: No file chosen

Type: **Music** ▼

Artist(s): [REDACTED] **Main** ▼ [+][-]

Album title: [REDACTED]

Do not include the words remaster, re-issue, MFSL Gold, limited edition, bonus tracks, bonus disc or country-specific information in this field. That belongs in the edition information fields below; see [this](#) for further information. Also remember to use the correct capitalization for your upload. See the [Capitalization Guidelines](#) for more information.

MusicBrainz:

Year: [REDACTED] This is the year of the original release.

Record label (optional): [REDACTED]

Catalogue number (optional): [REDACTED]

Please double-check the record label and catalogue number when using MusicBrainz. See [this guide](#) for more details.

Release type: [REDACTED] Please take the time to fill this out properly. Need help? Try reading [this wiki article](#) or searching [MusicBrainz](#).

Edition information: Check this box if this torrent is a different release to the original, for example a limited or country specific edition or a release that includes additional bonus tracks or is a bonus disc.

Scene: Select this only if this is a "scene release".
If you ripped it yourself, it is **not** a scene release. If you are not sure, **do not** select it; you will be penalized. For information on the scene, visit [Wikipedia](#).

Format: [REDACTED] ▼

Bitrate: [REDACTED] ▼

Multi-format uploads: [REDACTED]

Although most content was music, there were also ebooks, applications, audiobooks, and other categories. If a user found a new work, they were obligated to upload it in a certain fashion that appropriately documented the work and its format. But where would users find new works? The site's documentation suggested going to the dollar store, the library, borrowing CDs from friends, visiting newsgroups, and going to Bandcamp to download free albums. It was especially difficult to find content that has not been uploaded, though. For instance, there were approximately 200 different versions of Pink Floyd's *Dark Side of the Moon* alone. This includes every possible format, release, and remaster, and such availability is not an anomaly. Additionally, each version had MP3s at 320kbps, two different variable bit-rate MP3 possibilities, and a FLAC (lossless) download. With any given search that a user carried out, she also decided in which format she would download that work. Generally, buying music

legitimately online through iTunes or Spotify does not allow for the choices that What.CD gave to its users.

Fulfilling Requests

Requests were perhaps an easier way for new users to get their ratio up to an acceptable level (the exact calculation of a user's ratio is discussed below). There were thousands of requests for content that date from a few hours to years ago. Each request was accompanied by a *bounty*, which is the amount of bandwidth the requester offered towards the uploader's ratio if they fulfilled the request. Usually the bounty was commensurate with either the difficulty of finding that or the level of desire for that content. So, if someone offers 30 gigabytes for a vinyl release of Bad Brains' 1989 release *Quickness* as a lossless FLAC, the uploader would be obliged to follow the very strict rules concerning audio quality and naming conventions, and then claim the request as filled, at which point that user would have the bounty added to their ratio. If something about the upload was problematic because it has not followed all the *rules*, then the requester or a moderator can "unfill" the request, an action that can have dire consequences for the uploader. Such consequences include being banned from the site or being demoted to an inferior user class.

Downloading

Finding content that might interest a user could either be done through searching for specific torrents (a search bar was static at the top of any page, see Figure 1), finding out what other users have downloaded, or seeing what had been uploaded most recently. By clicking on a torrent after using one of these query methods, a user could see the artist, album, label, genre, album artwork, original uploader, track list, a URL for more information (such as a Bandcamp

page or the artist's website), to which collages the work belongs, and in which formats the work is available.

Concerning private trackers, Chen, Chu and Li (2011) write that "because there are too many seeders in PTs [private trackers] ... members can hardly ... increase their share ratios. This phenomenon forces most members to seed for a long time to survive ... Obviously, this vicious circle can benefit members who are downloading, but it does harm to members who want to upload" (p. 1). In their computational estimation of the problem, the authors hypothesize that an optimal seed-to-leech ratio will provide for the best environment, in which both downloaders are encouraged to keep downloading and uploaders continue to find new material. On What.CD, different download categories determined how a torrent would affect a user's ratio:

Freeleech: Users can download the torrent without it affecting their ratio, except that it will increase the amount that is uploaded. New users are encouraged to utilize freeleeches to increase their ratio

Neutral Leech: Users can download the torrent without affecting their ratio, but, unlike freeleech torrents, the amount uploaded will also not affect the user's ratio.

Normal Downloads: When users download or upload torrent data, it is reflected in their ratio in terms of gigabytes.

Certain ratios had to be maintained, the calculation for which is not simple, within the What.CD wiki it stated:

Your required ratio depends on several things:

- How long you have been on the site.
- Your downloaded amount.
- How many torrents you are seeding.
- How long you have been seeding them over the past 7 days.
- Is your download ability disabled? (What.CD)

Additionally, the wiki described the basic ratio formula as “maximum required ratio multiplied by $1 - \frac{\textit{seeding}}{\textit{snatched}}$ ” (What.CD). So, a user’s ratio was not as simple as $\frac{\textit{uploaded}}{\textit{downloaded}}$, but rather took other social parameters into consideration that suggest certain cultural values. These include a user’s length of time on the site making them more valuable than new members, which signified the importance of continuity within the community. Also, the number of torrents a user was currently seeding and the length for which they had seeded played a part in their ratio, which also emphasizes the value in being reliable with the material that a user has downloaded so that it is available into perpetuity. The site’s wiki explicitly stated that torrents are calculated as being effectively seeded if they have been available for at least 72 hours in the past seven days. Lastly, and perhaps most obviously, unproductive members of the community, that is, those whose ability to download content has been disabled were also less likely to have a socially acceptable ratio.

Both uploading and downloading torrent data were important ways to maintain a type of citizenship on What.CD, one that consisted of unspoken communication and whose rationale exists mostly in numbers (ratio, number of gigabytes downloaded). However, what Bakardjieva calls “subactivism” takes citizenship to be “a kind of politics that unfolds at the level of subjective experience and is submerged in the flow of everyday life” (2009, p. 86). So, although numbers are certainly important, in each torrent a user decided to upload or download, a statement was made regarding musical taste, political sensibilities, and other community values. These values are further explored through textual communication in various channels below.

Interaction: Torrent Comments, Forums, and IRC Channels

Although the most novel way that users on What.CD interacted was through BitTorrents – after all, the rest of the tools on the site were pedestrian without the music provided through

torrents – the following modes of communication are important to what Sanjay Sharma (2013) calls the “technocultural assemblage” of a platform (p. 48), which is the constitutive effect of tools like GUIs and algorithms combined with the communicative practices of a group of users. For What.CD, torrent comments, forums, and IRC channels created possibilities for discourse about the music, the site itself, and other matters. Just like nearly every other part of the site, a set of explicit rules governed allowable behavior within these discursive spaces.

The way in which Feenberg’s Critical Theory of Technology comes into play on What.CD is perhaps most visible through these various types of interaction. The ways in which the platform had the potential to be democratizing, while not present in the language used in torrent comments, forums, and IRC channels, can be seen in the way that capitalistic tendencies are rerouted through these avenues. As users discussed and exchanged music, they actively fostered communities of taste and unique digital consumptive habits, all outside the purview of record labels and dominant streaming platforms.

Torrent Comments

In addition to the information listed above as part of a torrent’s page, there were also any comments that users have left (see Figure 4).

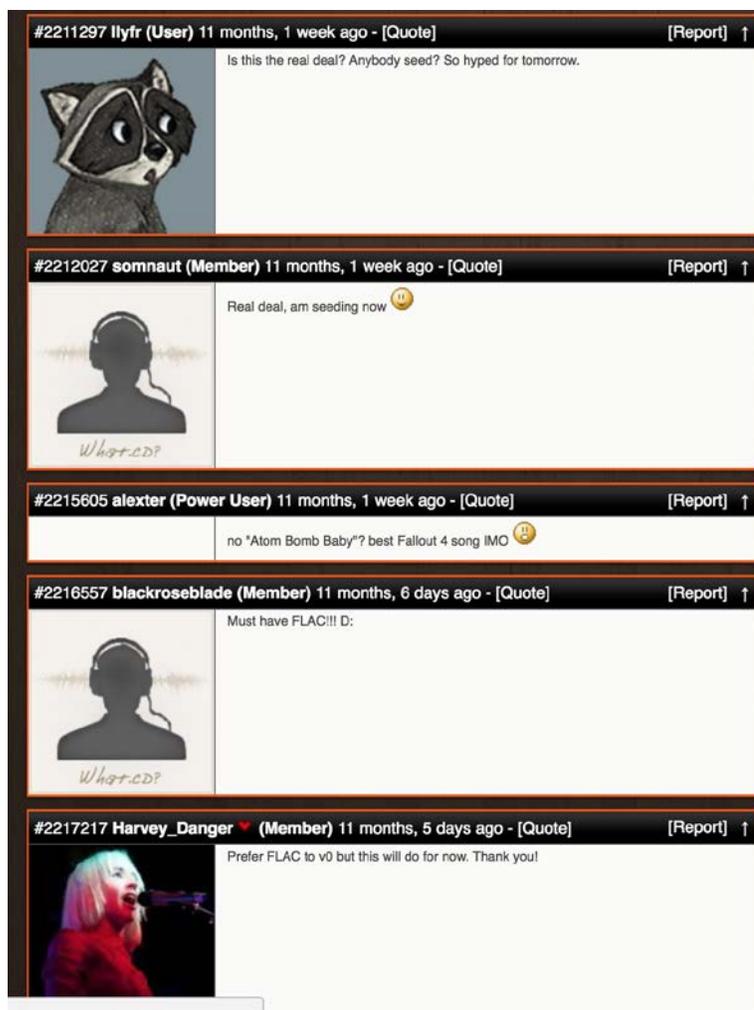


Figure 4: An example of torrent comments, from the page for the video game *Fallout 4*'s Soundtrack by Inon Zur

Usually, these comments pertained to the music from the referenced torrent or, as Figure 4 demonstrates, requests for seeds or notification that a user is seeding. In addition to building rapport, notifying viewers of comments that I am seeding signifies that (1) I care about this artist or album or (2) I care about my status on the site and about maintaining a certain ratio. In either case, the discussion that ensues, just like most of the discussion in the forums and on IRC

channels, serves an ancillary role to the main technosocial apparatus on the site, the torrents themselves.

Forums



Figure 5: Listing of Forums at What.CD

The forums were categorized according to whether topics related to: the site itself, community, music, and help (see Figure 5). A sense of community for users that rally around music was most fostered in the second two, as sub-categories might suggest. The rules that dictated acceptable

communicative practices within the forums encouraged a certain notion of productivity. The following rules were especially prescriptive:

- Don't use all capital letters, excessive !!! (exclamation marks) or ??? (question marks). It seems like you're shouting!
- No posting music requests in forums. There's a request link at the top of the page; please use that instead.
- Don't point out or attack other members' share ratios. A higher ratio does not make you better than someone else.
- No political or religious discussions. These types of discussions lead to arguments and flaming users, something that will not be tolerated. The only exception to this rule is The Library forum, which exists solely for the purpose of intellectual discussion and civilized debate.
- No language other than English is permitted in the forums. If we can't understand it, we can't moderate it.
- 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. (What.CD)

These rules could just as easily apply to many other forums online, and do not imply anything noteworthy on their own. However, with the understanding the What.CD was both rule-driven and music-driven, we can see the moderator's desire to funnel as much of a user's time as possible into contributing to music-related discourse. They also sought to cordon off discussion related to other topics in their own forums to keep topic matter highly categorized. Contrary to such desires, though, the amount of activity in each of the forums suggests that users enjoyed talking about non-music-related topics: The Lounge, which was a catch-all for discussion that was not specifically site or music-related, had the highest number of both topics (41,446) and posts (1,811,720). Compared to the next highest category, Music (25,628 topics and 778,106 posts), the amount of content within The Lounge was indicative of the need for discursive space whose guidelines deviate from the "nuts and bolts" of the site itself.

One forum that demonstrates the identity construction of What.CD users within their technocultural assemblage is The Laboratory. As is discussed below, the content management system on which What.CD is built, Gazelle, was designed by the site's creators and has been used by other private BitTorrent trackers, including those that were created after its closure. The impact of What.CD's technosocial practices were not limited to its site, but its logics are reproduced elsewhere. The Laboratory was where code-minded users discussed various tweaks to the website and tools that were built to augment the utility of What.CD, such as the Android and iPhone apps, custom stylesheets, and other data manipulation and monitoring tools. Because many What.CD users were not simply interested in compiling accurate and robust data about music (in this context, even the music can be considered data that should conform to strict standards), but also in coding solutions more broadly, The Lab represented the unique constellation of interests and communicative strategies that set What.CD apart from other online music communities.

There were also active discussions concerning music, pertaining to what people were listening to, how they listened, as well as the music that "vanity house" artists (those who are What.CD members and have an interest in distributing music they write) were creating and promoting. Some of the most popular threads, according to age and number of posts, were entitled "The 'What album should I start with?' Thread," "Judge others by their recently snatched," as well as threads devoted to particular genres like dubstep, house, and classical. These forum discussions indicate that the identity construction of many users on What.CD was tied up in communities of taste (Bennett, 1999) that must constantly be reconstituted through this specific communication mode. So, like many other social media platforms, members' identities were not only maintained through specific comments, but through the persistence and visibility of those comments. The novel affordance here, though, lies in the

distinctly *musical* and *collector* status that the site attracts. In other words, it was not common to find users that feel tepid about their membership at What.CD; enthusiasm and participation could be parlayed into higher ratios that contribute to the internal logic by which What.CD operated. Furthermore, many users knew others across several private trackers, enabling them to be invited to new ones that opened up in the wake of What.CD's shutdown.

IRC Channels

IRC Channels were perhaps the most cryptic and difficult to access of any of the textual communication tools available through What.CD. Internet Relay Chat, a format that predates web browsers and other modern chat tools, consists of a network of users who chat simultaneously, and are most associated with communities of programmers. Guillaume Latzko-Toth (2014) writes that "within the IRC environment, every human is first and foremost a user who may encapsulate different roles. One may be an IRC operator and yet a simple user on a specific channel, while simultaneously being a 'voice' on another channel. That said, not every user is human. The ecology of IRC entities is complicated by the presence of bots and scripts (i.e., non-human actants)" (p. 582). This description held true for What.CD's IRC network, on which there are a number of channels. Nearly all of them required a valid What.CD username and password (as specified in the IRC rules), but the #help and #general channels were accessible to anyone with the knowledge of the channel's address and the ability to use an IRC client (a special program that grants access to the IRC's interface). Also, if a user's account had been deactivated because of a poor ratio, they could visit the channel #disabled to reason with the administrators.

```

002ABC88N your unique ID
s2.what-network.net message of the day
- "The single biggest problem in communication is the illusion that it has taken place."
-
- !!! WE HAD TO RESTORE FROM SOME OLDER BACKUPS SO NICKSERV PASSWORDS MAY NEED TO BE RESET. !!!
End of message of the day.
There are 1153 users and 903 invisible on 2 servers
35 operator(s) online
470 channels formed
I have 2045 clients and 1 servers
Current Local Users: 2045 Max: 2129
Current Global Users: 2056 Max: 2140
Reply(396): whatnetllc.e01.0d9e9r_IP is now your displayed host
lanlanlan has changed mode: +x
s2.what-network.net has changed mode: -x
Reply(396): lanlanlan_member.what_cd is now your displayed host
Error(421): #INDIE Unknown command
Error(421): HELLO Unknown command

12:22 <#indie> moham is listening to Ryan Adams - Out of the Woods, from the album 1989 [Song]
12:24 <#what.cd> Fran has joined (423149@franciscawa.poweruser.what.cd)
12:24 <#what.cd> bval has joined (183260@bval.member.what.cd)
12:25 <#what.cd> Smt-x has joined (84799@semtx.member.what.cd)
12:26 <#what.cd> bonniDRA has joined (462689@bonniDRA.poweruser.what.cd)
12:27 <#what.cd> camrose has left ()
12:27 <#what.cd> Alain -> ircpolice
12:29 <irc.what-network.net> kurtyama has left IRC (Quit: Something probably broke, Back sooner or later.)
12:30 <#what.cd> dereranger has joined (463823@dereranger.user.what.cd)
12:31 <#what.cd> spenddama3 has joined (270774@spenddama3.poweruser.what.cd)
12:34 <#indie> moham debaser25 yesterday i watched Everything you Wanted to Know about Sex and also Love and Death
12:35 <#indie> moham Love and Death was great and i liked the first skit in Everything You wanted
12:35 <#indie> moham but it went p well downhill after that
12:35 <#what.cd> fzerax you know my friendly reminders are really doing you a favour
12:35 <#what.cd> fzerax the real irc police aren't as lovely as me
12:36 <#what.cd> fzerax plus i can't actually kickban anyone
12:36 <#what.cd> BloodyNobody it takes a lot more than briefly discussing political figures to trigger them though
12:36 <#what.cd> BloodyNobody like yesterday
12:39 <irc.what-network.net> tharue has left IRC (Quit: Leaving)
12:39 <irc.what-network.net> Modem1 has left IRC (Ping timeout: 241 seconds)
12:39 <irc.what-network.net> HZ1 has left IRC (Ping timeout: 241 seconds)
12:39 <#what.cd> indyifaster has joined (227730@indyifaster.member.what.cd)
12:39 <irc.what-network.net> indyifaster has left IRC (Quit: Textual IRC Client: www.textualapp.com)
12:40 <irc.what-network.net> puntshere1f has left IRC (Connection closed)

```

Figure 6: Screenshot of an IRC client logged into the What.CD network

There were also official IRC channels for specific music genres, which allow more granular conversational topics than the forum categories. Additionally, there were several unofficial channels that are not run by What.CD, which ranged from such topics like the #bonnaroo to chat in the #french language. Because of the specificity of channel topics and the volume of discussion generated, IRC is more likely the space for a more generative research of cultural identity construction for specific users and the music they listen to.

User Classes

There were several user classes had to meet certain requirements related to number of torrents uploaded, amount of data uploaded, amount of time as a member, and maintaining certain ratios. Like nearly every other component on What.CD, these layers of

users represented certain amounts of time and community contribution and they reward heightened attention to the values like diversity of uploaded content, persistence of torrent seeding, and encoding analog formats like vinyl and cassettes to digital ones like MP3 and FLAC. Some user classes, mostly secondary ones, were specialized and created an official space for users who wanted to share their own music (“Artist”), elite visitors from other private trackers (“Torrent Celebrity”), or those who maintain the site (“Delta Team,” “Build Team,” and “Alpha Team”). In connection with Feenberg’s discussion of class dynamics in technological systems, we see a contradiction between the predicted egalitarianism of technological alternatives and possibly autocratic tendencies of What.CD.

However, some user classes were mysterious and there was no opportunity to seek clarification, as is similarly the case in IRC channels — certain parameters prevent a user from privately messaging another user they have never encountered before, and the rules state explicitly: “Do not PM, DCC, or Query anyone you don’t know or have never talked to without asking first; this applies specifically to staff” (What.CD). Likewise, the user classes of “VIP,” “Legend,” and “Forum Moderator” all did not have explicit requirements for achieving that status. Rather, they were achieved by “being awesome” and not asking. One can only assume that they were reached by going beyond the requirements for lower classes, and the likely number of people that meet these high requirements was low enough that it does not require as explicit a discussion as the lower users. Generally, it is not a person who is promoting or demoting a user from one class to another; when I was moved from “user” to “member,” I received an automated message that alerted me to my promotion. Furthermore, the sense of mystery was perpetuated by comments that draw a clear distinction between ordinary users and the extremely elite. For instance, the secondary classes of Delta and Build Team could not

be reached through the user's own volition, but rather hinge on the contingency of "don't ask us; we might ask you."

Latour's development of the social can help us frame different classes of users as interacting within a context where connections are formed, especially in how more elite users demonstrate their status in various communication channels. A user's status determined their posture and standing within the community, but conversely, was also shaped by their choice of channel, the types of conversations they had, and the amount of time they spent on the site.

The Interview

To be a member on What.CD, an individual had to either be invited by a current member in good enough standing to warrant invites or pass a thorough interview, for which there was a dedicated website that prepared potential members. On that site, the following categories of knowledge had to be mastered (whatinterviewprep.com):

- Analog and Digital Music Sources
- Audio Formats
- MP3
- Transcodes
- Torrenting
- Spectral Analysis
- CD Burning and CD Ripping
- What.CD Rules

Knowing about these topics was necessary to be a contributing member of What.CD, and provided for a minimum commonality that all members shared when communicating across

forums, within torrent comments, or on IRC channels. Broadly speaking, the categories either belonged to external bodies of knowledge, such as formats and file types, or the internal rules and logics of the website.

The interview itself took place over IRC at the channel #What.CD-invites, and often required waiting 1-2 hours (or even longer) in a queue before a member of the interviewing team could get to the prospective member. Additionally, the prospective member had to have a certain minimum connection speed to even qualify for an interview. The interview could be taken a total of three times before ultimate failure was declared, at which point the only chance at membership was an invite from the appropriate member class.

Gazelle

The platform on which What.CD operated was an open source content management system called Gazelle. Gazelle began development when the site was first launched in October of 2007 and was considered to have reached a level of maturity indicated by its documentation, bug fixes, and coding standardization. It was maintained by What.CD administrators, and is used by many other private trackers. Its architecture also follows many of the conventions and logics stemming from What.CD, including torrent and user organization, facilitating forums, and creating user interfaces. For example, the following rules were taken from Project Gazelle's "Coding Standards:"

- All button labels shall use sentence case.
- All table headings shall use sentence case.
- All text-based buttons shall use the brackets CSS class. (github)

Although coding standards are common for many programming languages and platforms like Gazelle, by creating a strict regimen to which coders must submit, the solution to chaos that the

internet seems to breed through its unique democratization, at least for What.CD, was to follow a strict code of conduct. Because other sites use Gazelle, its tendencies and characteristics are modeled and replicated elsewhere (see Figure 7).



Figure 7: Passthepopcorn, a private tracker that uses Gazelle. Compare the UI and options to

Figure 3.

In *The Exploit*, Galloway and Thacker (2007) discuss how technological systems serve to fulfill social roles, and how those systems provide justification for some models and characteristics to dominate while others are forgotten or hidden through specific modes of control:

Control in networks must aim for an effectiveness that is immanent to the network, in the sense that the most perfectly controlled network is one that controls or regulates itself ... The network itself must be articulated as an object of design, implementation, and regulation. Control in this sense does not pervade the network but operates over it; control in this sense is topsight and oversight. (p. 36)

By maintaining Gazelle, What.CD indirectly controlled other sites, even though they fall outside the bounds of What.CD's native network. As some informal discourse suggests (not to mention the fact that "celebrities" from other trackers have a special status on What.CD), the relationships between private trackers can be characterized as achieving solidarity, which is, on the one hand, egalitarian, but as the authors above indicate, can also suggest relationships of power.

In Jonathan Sterne's *MP3: The Meaning of a Format* (2013), the audio file is interpreted as a container in which cultural values are stored and transported. For instance, he writes that the "MP3 offers an inviting point of entry into the interconnected histories of sound and communication in the twentieth century" (p. 2), implying that the file itself is held up by a vast network of cultural contingencies, some of which are technical, others of which are social. Similarly, What.CD can act as a place to start examining a network that is comprised of technical and social components. As this dissertation has already stated, deterministic and neutral approaches to technology deny the agency with which websites (just like audio files) take on historical and cultural meaning.

Similarly, Jeremy Wade Morris (2015) uses the development of a specific software interface, Winamp, to explore broader themes of digital capitalism: "As was evident from Winamp, innovations are firmly embedded in past ideas and practices, and there is much more to the music commodity than simply format and packaging" (p. 136). Morris employs a number of specialized terms to describe what happens when users play music through an early digital interface, such as "paratext", "micromaterial" and "transectorial" to describe the connections between past listening formats and newer, less familiar ones. As much as Winamp sought to be a rebellious, anti-establishment force in the burgeoning digital music experience that accompanied widespread personal computer use in the late 1990s, its paradigms were rooted in forms that its users were already familiar with from home stereo systems, recording technology, and other extant components of music consumption. In keeping in line with a market-oriented listening trajectory, Morris posits that Winamp "was simultaneously sketching out the contours for a sellable digital music commodity and selling the idea of the computer as the future device for music playback" (p. 45) Simultaneously, though, it opened up the possibility for the "commodification of music as a digital file" (p. 24)

Furthermore, the relocation of music from a fixed medium encased in various paratexts like a UPC code and album art to a disaggregated file that came with none of those trimmings placed digital music in a “liminal” space that hinted at commoditization since the new format was “not wholly detached from the broader forces, materials, and symbols that make popular music a commodity in the first place” (p. 47). However, it did temporarily detach the product from its economic symbolism until capitalistic mechanisms could reappropriate digital music through iTunes, Spotify, and other services.

This balance of the familiar and the new was accomplished through concrete visual cues such as skeuomorphs, which “are vestiges that represent the material weight of the past on the present (and the future)” (p. 50). An example is a slider within Winamp’s user interface that controls the frequency attenuation of an equalizer; although a blank field into which a numeric value is entered would function equally well, high end stereos have sliders, and were therefore familiar to Winamp’s user base. Skeuomorphs are also “more than just a design concept, though; they are templates for thought and experience” (p. 49) that allowed Winamp to take advantage of a new technosocial phenomenon.

Relatedly, Morris is interested in the role of interfaces in our interaction with technology: “Interfaces are the sites where users and cultural products meet. They contribute to both the use and exchange values of digital commodities, even if it might seem that Winamp’s interface innovations exacerbated the threats presented to music’s status as a commodity” (p. 60) Comparably, all of the different What.CD interfaces described above (Gazelle, the site itself, IRC chat) are all loci where specific commodities are dealt with, including music. However, What.CD, when compared to Winamp, has the added social complexity of users interacting with each other cooperatively and competitively.

An additional example of old and new was in the way that Winamp broke albums apart. Although the idea of an album is considerably weaker today in the context of streaming services, disaggregating an album into individual tracks, which was accomplished through the user interface maintaining a searchable library of tracks, allowed playlists to be easily assembled from music from multiple sources. Morris claims this “opened the music commodity up for new forms of aggregation” that have now become naturalized in the more advanced stages of the digital music ecosystem.

Finally, as it relates to What.CD and perhaps to the BitTorrent ecosystem more broadly, Morris writes that “the larger marketing efforts that fed music’s commodity status didn’t simply disappear with the advent of digital files, leaving the music commodity as nothing but pure use value. Recorded music files on computers, even in their most primitive forms, were still commodities in many senses” (p. 61). One of the tasks at hand, then, is to determine with more specificity how digital music acted as a commodity on sites like What.CD and other private trackers.

The Listening Subject

In this dissertation, the listening subject is situated in a cultural context as someone who gains meaningful experiences through the act of participating in the circulation of music on What.CD. Rather than the music acting as an “artifact” in a network centered on markets, though, the specific listening subject discussed here is concerned with alternative political-economic markers that are centered on technologically-mediated listening. The technology mediates audio at several levels: encoding/decoding, distributing, and keeping track of user status. Additionally, notions of sociality within this network are maintained through

technological ordering that configures the important modes of communication, which will be discussed below.

The work of Jonathan Sterne (2003, 2013), Veit Erlmann (2010), and other sound studies scholars has informed how listeners have been constructed throughout the 19th and 20th centuries by various discourses, especially as they are co-developed through technological paradigms and broader cultural forces. Although typically concerned with the aesthetic interpretation of the listener rather than the intervention that technology makes, these constructions are important for media studies because they predicate much of the contemporary obsession with technocultural solutionism, an example of which are streaming music services that will be discussed toward the end of this dissertation. Although a growing body of writing accounts for the many ways that sound is now validated, attention here will be paid to the individual and their role in creating, maintaining, and reifying the listening public of What.CD. Specifically, findings about What.CD pertain to its unique position in the world of digital music sharing, and the subject formation the site imprinted upon its users as What.CD Listeners.

Framing the listening subject as unique in a digital context is much the same task as framing him or her as a specific cultural subject in historical contexts. Of the latter, Erlmann writes that “while this figure has been and continues to be defined in predominantly ‘neutral,’ nongendered, and nonracial terms, the Western aural self is deeply caught up with the history and politics of difference.” (2016, p. 269). The challenge in imagining the act of listening as a contentious one lies in its perceived mundanity: we hear all the time and are surrounded by sound, and therefore recent scholarly explorations of sound (Bull et al., 2015) make it more difficult to take as seriously as visual and film studies (Kane, 2015). The listening subject is a site of scholarly inquiry, as Erlmann eludes to, related to issues of power and difference that have to

do with race (Veal, 2012; Weheliye, 2012), class, gender (Martin, 2012; Rodgers, 2012), and broader political-economic constructions. Additionally, the listening subject relates to discussions of affect (Aitken, 2012; Kassabian, 2013) and immaterial labor that empower the sense of hearing with a range of possibilities that have historically only been available to “active” subjects (Chion, 2012, p. 52).

Analyzing the listening subject can be a useful activity across various zones of scholarship that interface with historicity, anthropologically and sociologically-oriented fieldwork, music studies, and for media studies that are concerned with copyright, participatory culture, and commoditization in digital contexts. Music is the central object of listening discussed here, but the research does not investigate matters traditionally associated with music research like artists, genres, music theory, or transcription. Rather, songs and albums, as units of analysis, operate as artifacts that exist across networks and whose acquisition and retention are more telling than metrics like artist ranking and download sales. The listening subject is implicated in these networks and analytic units.

The Networked Listener

Kate Crawford writes that “listening is not a common metaphor for online activity. In fact, online participation has tended to be conflated with contributing a ‘voice’.” (2012, p. 80). One of the goals of fleshing out the identity of the Networked Listener, then, is to validate his or her capacity for listening in a specific networked context. Despite the implication that “listening” might represent a certain mode of online activity coded for our interpretation, the term “listening” is invoked here in as literal a fashion as possible: it has to do with materiality and hearing, not with “listening” to users online through a graphical user interface. From the beginning of its formation, though, the act of technologically-aided listening has been social.

Sterne (2013) suggests that, even at the dawn of internet popularity, sociality was built into music sharing:

Because it presented an alternative, especially in these early years, file-sharing betrayed the social character of musical exchange to its users, putting the recording industry's privileged position directly into question. The internet was a space of circulation where the record industry did not assert its dominance, and in that moment, file-sharing served synecdochally to call into question the industry's dominance tout court. (p. 204)

As a fissure created by the instability of new technological practices allowed users to pry open previously hegemonic listening practices, such chasms were quickly filled in by some of those same forces, such as the recording industry. However, such demolition was not all-encompassing, which is why the networked listener, while partially shaped by industries and markets, is also shaped by self-determining practices that are inherently social. Therefore, three characteristics are used here to describe the Networked Listener: being historically situated, decidedly parsimonious in its current iteration, and uniquely ambivalent to market forces.

Historically Situated

A Networked Listener exists in a social sphere characterized by multidirectional modes of perception. In comparison to eras in which listening was monodirectional, the Networked Listener is wrapped up in a networked public (boyd, 2010) and is just as likely to produce content as they are to consume it (Bruns, 2008). They are also prone to historical interpretation of technological moments, and Tiziano Bonini and Belén Monclús (2014) have identified 4 eras of listener participation: 1920-1945, 1945-1994, 1994-2004, and 2004 to now. Each consecutive era gains new footing as more participatory than the previous, as well as being responsible for reconfiguring technological and human elements of the listening sphere. For instance, following the popularization of the radio, "workers' radio clubs" formed in Germany in the 1920s, in which

groups of hundreds would gather in public halls and listen to music to develop critical listening skills that could be augmented through public discussion (Lacey, 2013). Such an occurrence both demonstrates the importance of the sociality of listening as well as the reconfigurations technology is capable of. These clubs were designed to allow listeners to “gather together and exchange experiences, information and knowledge” (p. 150), a set of activities media scholars most readily attribute to the internet age, but that Bonini demonstrates, permeate throughout the 20th century. He also discusses Benjamin’s rather early (1978) suggestion that there should be less distance between the writer and the reader as an example of the precursors to a contemporary understanding of listening.

The fourth and current era of listening is characterized by the popularization of social networking sites like Facebook, which are seen to be dominated and shaped by the logics of the network itself. A listener can therefore be considered as a “node” that operates with certain political, ontological, and technical capabilities (Galloway and Thacker, 2007). These capabilities allow listeners to remix (Sinnreich, 2010), interact directly with well-known artists through Twitter, or, as was the case with the What.CD Listener, create dynamic archives that operated at a comparatively large scale.

As particular inventions, such as the transistor and what might be called the “audible internet” (streaming services and their underlying protocols as well as affordances like bandwidth increases that allow for music to be downloaded) have transplanted listening practices into new contexts, the Networked Listener has emerged as a participant (or node) who, while not forced to participate, is at least forced to be aware of the other nodes of the network. Who else is downloading the same album, how popular that album is, the current size of the online network, and how valuable a sought-after album is are all indicators of the self-

aware network. Additionally, these are all items that contribute to knowledge that users must view if they participate at all.

Parsimony

Another characteristic of the Networked Listener broadly, and the What.CD Listener specifically, is *parsimony*. The term, which is generally characterized by being shrewd with resources and making conservative investments that are certain to pay off. Parsimony is used here to invoke a specific techno-driven aesthetic that follows from the core logics of the site, but it also results from the site's administration creating exacting regimes of rules (Durham, 2013). The What.CD Listener, rather than sharing music unconditionally, only did so when there was an immediate benefit to his or her own existence on the site. As a result, in this context, parsimony has to do with two domains: the technical practices of the networked listener and their subsequent impacts as forms of social control.

The first of these domains tightly prescribed how the What.CD Listener should be hearing music. Generally, the What.CD Listener was compelled to discriminate, nearly to the degree that the What.CD user was associated with snobbery (Aitken, 2012). What.CD membership was very difficult to obtain and required that members could "hear music" in a way that allowed them to be discerning. On one hand, such discernment had to do with the quantity of music consumed, and with the act of listening on the other. In the field of critical listening, which overlaps the fields of audio recording and hi-fi enthusiasm, "clean" listening qualifies the equipment that is used, the type of recording, the environment in which the listening takes place, developing skills that mobilize appropriate descriptive language, and a host of other specific abilities (Harley, 2010). More specific to What.CD, though, are expectations concerning the practices of ripping and uploading audio. What.CD had rules in place for what software

could be used to “rip” CDs and vinyl and what bit rate at which that ripped audio should be sampled. Additionally, only original content could be uploaded (content that had not previously been submitted), and the metadata for that upload was held to equally stringent standards. Such isolationism was closely associated with the privilege of being a part of the site in the first place. What.CD’s refusal to allow casual listeners to participate created an atmosphere of parsimony, where users were forced to continuously catalog and critique the music library, rather than simply exploring it for pleasure.

Uploaded content, which users were required to contribute in tandem with any downloading done on the site, was generated in two ways: either through finding new material that had not been uploaded yet, a task that was increasingly difficult due to the vast number of tracks already in the library, or through fulfilling requests that other users had posted. The “seed-to-leech” ratio that each member had (further explained below) was a mechanism designed to motivate seeding, which may partially explain the incredibly deep repository of content. While a broader motivation might be to create the most robust musical library in human history, the political economy of a high download-to-upload ratio on What.CD allowed for a user to climb the ranks of user classes, as well as gain social clout on the site (everyone’s ratio, as well as the amount of data they had up- and downloaded, was publicly viewable). Put more simply: users kept uploading either because it was a marker of status or because they wanted to keep downloading, and they downloaded only as an affordance of how much they uploaded.

The second domain of parsimony is social control, a topic which has a deep sociological canon of its own (Cohen, 1985; Lemert, 1972; Wiatrowski et al., 1981), and is meant here as a mechanism for keeping the What.CD Listener in line. Just as rules shaped the What.CD Listener’s experience with a convention of parsimony, the Listener’s online life was equally dictated by

nearly autocratic asepsis by site administrators that resonates with Foucauldian and post-Foucauldian notions of surveillance (Andrejevic, 2017) characterized by machinic monitoring and self-policing. For example, the determination of user rank was often shrouded in a nebula that only site administrators could see through. There was also constant mystery surrounding decisions regarding the website's maintenance and coding, as well as how some top-level decisions were made. While social control was built into the rules of What.CD to encourage meeting the ideals of the Networked Listener, the goal of the rules was to engender a type of decision making that adhered to the core logics of the site.

Uniquely Ambivalent

The third characteristic of the Networked Listener is a special ambivalence toward market forces and to a commitment to What.CD as an organization. Simultaneously, there was also an ambivalence to the progress that the industry had made through streaming services like Apple Music and Spotify. Here, this ambivalence is interpreted as an interest in a cultural value system that does not align with either late capitalism or extreme copyright libertarianism that represent two poles on a spectrum. Paul Aitken (2012) writes that, because of this ambivalence, “we should be wary of discourses that overly celebrate piracy as a revolutionary force of emancipation and of discourses that see piracy as a wholly negative phenomenon for capital” (p. 1-2). Arguably, the ideological positions of piracy-advocacy and industry advocacy are diametrically opposed, with the networked listener caught in tension between them. Therefore, the constellation of forces acting on the networked listener involves the complexities of each of those polar positions as well as other actants.

Conclusion

The goal of this chapter has been to familiarize the reader with the main concepts pertaining to BitTorrent and private trackers like What.CD and discuss the Listening Subject and Networked Listener as identity constructions that What.CD members shaped as they participated in on-site activity. The ways in which users were trained to listen connects back to one of the main themes of this dissertation, that What.CD represented an important moment of departure from hegemonic forces within music capitalism. If the modes of listening described in this chapter could be advocated for, rather than fought against by the recording industry, then a public that represents a greater diversity of interests can result. Specifically, independent artists, casual listeners, and digital natives can all find digital music culture a welcoming, open environment rather than one in which fierce competition and costly labor is required. The next chapter will explore a dataset of What.CD torrents to connect music curation with specific social practices.

Chapter 3 – The Role of Torrent Data in Shaping a Robust Public Sphere

Introduction

A primary component of understanding the activity of What.CD is torrent information, of which a database was made available to the public approximately a year after the site's closure. This chapter will discuss that data at some length, and then attempt to contextualize it in both the larger digital environment that listeners belong to as well as according to the inner logics that emerge from patterns and trends within the data itself. Using various aspects of the data as entry points, this chapter seeks to bolster cultural discussions of What.CD with information from the torrent side of the torrent/user divide. As the recording industry itself finds such data useful for tracking customer habits, figuring out where listeners spent their time and energy on What.CD is an equally valuable exercise for finding important activity taking place in market adjacent spaces. Furthermore, the various rankings, lists, and charts compiled from the following data correspond to the underlying values that What.CD users constructed based on personal aesthetics and technical considerations, as well as values that were collectively, although non-democratically, agreed upon. What emerges from the data are trends and patterns that suggest that, while private trackers have been described as unegalitarian and even totalitarian at times, they are still places where many individuals spent a great deal of time and energy maintaining some form of digital decorum.

The Data

What.CD's Twitter handle released a trove of information on October 27, 2017 in the form of an SQL database that included the following tables (the descriptions have been added by me):

artists_alias – although an artist might go by several names, they all led back to the same “ArtistID” number, and this table consolidates various names into one ArtistID

artists_group – a basic table with alias IDs and redirects to the main ArtistID

artists_similar – this table assigns a “SimilarID” number to artists that have sonic qualities in common, so for instance, Bruce Springsteen and The Hold Steady share a SimilarID

artists_similar_scores – allows users to rate the similarity of artists from 0-100.

Collages – information pertaining to collages, including CollageID, name, number of torrents, number of subscribers, and last updated date

collages_torrents – specific GroupID numbers for works associated with particular CollageIDs

tags – lists tags, their tag type (“genre” and “other”), and number of uses

torrents – a comprehensive list of Torrent IDs, associated GroupIDs and all other possible metadata such as original format, media, torrent filelists and path, and encoding characteristics

torrents_artists – lists GroupID, ArtistID and AliasID for all torrents

torrents_group – lists GroupID, ArtistID, as well as name and other metadata of all torrents

torrents_tags – allowed for positive and negative votes to be collected on all tags according to TagID

All this data only pertains to torrents that were uploaded to the What.CD tracker, not to any user. As they wrote when the data was released,

We secured a backup of non-user data before destroying encrypted storage volumes. We've taken exceptional measures to ensure the safety and security of this data in the time since. We are now releasing that data via this curated package. The package contains torrent, group, and artist metadata. It also includes collages, select wiki articles, the internal log checker, the version of Ocelot used in production, and a collection of art files.

On one of What.CD's replacements, the following notice was posted following the release of the data:

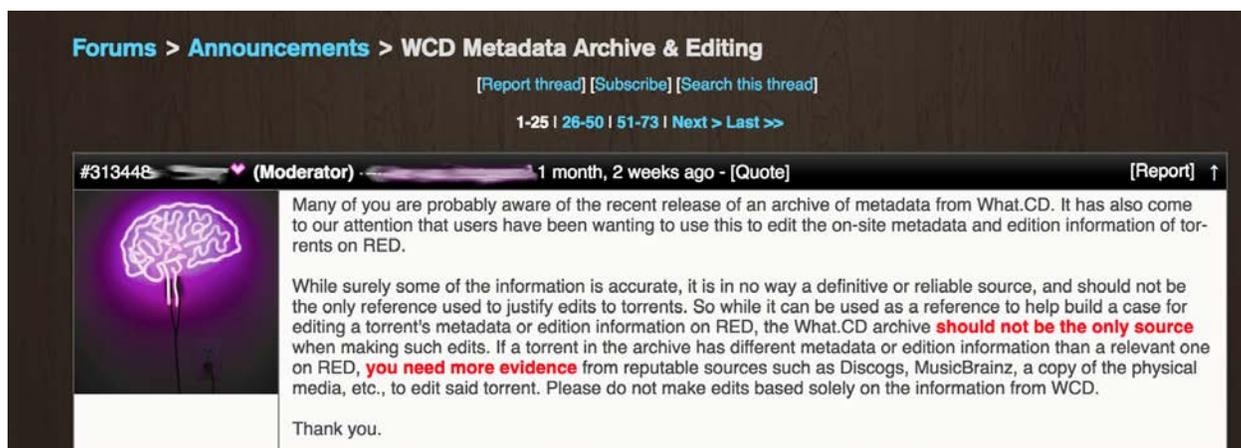


Figure 8: Screenshot of What.CD replacement announcement concerning What.CD Data

The moderators of the new site were also skeptical about the accuracy of the data, despite its source and comprehensive scale.

The data discussed in the remainder of this chapter is important because it can be used to connect the theory of Chapter 1 to pragmatic examples, such as Pink Floyd's *Dark Side of the Moon*. Ideas like Feenberg's *Critical Theory of Technology*, as well as some of its components like democratization, notions of digital labor, and digital socialization, are all bore out here. In each example of data being illustrated, the following questions should be kept in mind:

- How do the individual artists connect to broader genres, or into historical contexts?

- How is capitalism subverted through these data?
- How might these data affect listening practices?
- How are formats important to various aspects of the data?

By using these framing questions to orient the exploration of the What.CD dataset around themes, Chapter 1's theory can be used as a lens to both actively view the data and develop appropriate conclusions.

The selected categories for information are indicative of important metrics at What.CD and suggest the depth of the archive. The database was imported to a local SQL server, and two variables were analyzed, "artists" and "torrents." Specifically, the individual torrents were attached to specific artists, a task that had to be done manually through the SQL server interface. The resulting table has approximately 22 million rows of information, some of which are duplicate entries (There are often several spellings for one artist, such as "J.S. Bach" and "JS Bach"). There are about 3.5 million individual torrents, so the disparity between that figure and the artist-paired table can be explained by duplicates, but also works on which multiple artists contribute, such as compilation CDs or record label samplers. Additionally, each format in which a work was uploaded must be counted as a separate torrent, so often there are 4 or 5 torrents with the same title (or in the case of some works, *many* more). After names were connected to individual torrents, a frequency table was generated that displays which artists had the most torrents uploaded.

Some conclusions can be drawn from this frequency table. Firstly, the most numerous torrents belonged to classical artists, with Antonín Dvořák claiming 14,814 individual works. Among the top 100, after eliminating duplicates, other patterns also emerge.

Artist	Torrents

Antonín Dvořák	14814
Frédéric Chopin	10413
DJ Tiësto	9812
Bach, JS	8621
Moby	7630
Dvorak	7407
Frederic Francois	
Chopin	6943
Wolfgang A. Mozart	6832
Ludwig van Beethoven	6703
Jay-Z	5898
Händel	5838
Oakenfold	5649
Camille Saint-Saëns	5376
Béla Bartók	5285
Sergueï Rachmaninov	5124
Felix Mendelssohn	4940

Antonín Leopold Dvořák	4938
Tiesto	4906
Armin van Buuren	4829
deadmau5	4340
David Bowie	4217
Umpfrey's Mcgee	4132
Snoop Dogg	4119
Kanye West	4099
Piotr Ilyich Tchaikovsky	3996
Johannes Brahms	3966
Franz Peter Schubert	3956
On A Friday	3892
MF DOOM	3846
Richard M. Hall	3815
Moby	3616
Sergei Prokofiev	3584
Saint Saëns	3471

Chopin	3471
John Legend	3417
Avicii	3413
David Guetta	3383
London Symphony Orchestra	3366
Kid Cudi	3197
Lil' Wayne	3093
Chris Brown	3076
The Miles Davis Quartet	3058
Calvin Harris	3044
Beyonce Knowles	3042
faure	3028
Björk	2983
Pitbull	2960
C. Debussy	2960
Kool & the Gang	2949
Chocolate Puma	2930

George Friedrich Handel	2925
Elvis	2922
Vivaldi	2881
The Grateful Dead	2881
Robert Alexander Schumann	2864
Bob Dylan	2863
Pharell	2775
Royksopp	2751
Doctor Dre	2748
Astor Piazzolla	2747
Timbaland	2743
Eminem	2737
New Jacks	2726
Depeche Mode	2724
Phish	2720
Rihanna	2718
Meat Loaf	2703
Elton John	2636

Queen	2625
Étienne de Crécy	2621
Leoš Janáček	2584
Reggie “Redman” Noble	2577
Norman Cook	2577
Louie Armstrong	2577
Fatboy Slim	2562
Serge Rachmaninoff	2544
Marvin Gaye	2508
Ummet Ozcan	2496
Pearl Jam	2483
Nicki Minaj	2480
Paul van Dyk	2479
Maurice Ravel	2474
John Dahlbäck	2472
Bartholdy	2470

Felix Mendelssohn	2469
Jason Derulo	2445
Mötörhead	2443
Afrojack	2443
Gov t Mule	2442
Franz Liszt	2441
R. Kelly	2438
Herbie Hancock	2422
Armin Van Helden	2421
César Franck	2421
Massive Attack	2408
James Brown	2377
Berlin Philharmonic Orchestra	2366
Ultra Naté	2346
The Backstreet Boys	2340
Coldplay	2340

For instance, nearly all artists that are not classical belong to either the genres of hip hop or electronic dance music. These genres typically rely more heavily on remixes than other dominant genres like pop and rock, thus the total number of works attributed does not represent individual album releases. Here is a selected list of releases by Kid Cudi, a hip-hop artist:

	Media	Format	Year	Remaster Title	Work Name
1	CD	MP3	2008	4 Track CDM	Kid Cudi Vs. Crookers (2008) Day 'N' Nite CDM
2	CD	MP3	2008	UK Promo CDM	Kid_Cudi_Vs._Crookers-Day_N_Nite-(Promo_CDM)-2008-DV8
3	Vinyl	MP3	0		Kid Cudi – Day 'N' Nite (2007) (320 mp3)
4	CD	MP3	2009	Netherlands CDM	Kid_Cudi_vs_Crookers-Day_N_Nite_V0
5	CD	MP3	2009	UK CDM	Kid Cudi Vs Crookers – Day 'n' Night (v0)
6	CD	FLAC	2009	UK CDM	Kid Cudi – Day 'n' Night – FLAC
7	WEB	MP3	2009	13 Track Digital Single	Kid_Cudi_vs._Crookers_-_Day_N_Nite-(DIGI0275)-WEB-2009-UME
8	CD	FLAC	2008	7 Track Single	Kid Cudi – Day 'N' Nite EP [FLAC]
9	CD	MP3	2008	7 Track Single	Kid Cudi – Day 'N' Nite Maxi Single (v0)
10	CD	MP3	2008	7 Track Single	Kid Cudi – 2008 – Day 'N Nite EP [320]
11	CD	FLAC	2008	Promo	Kid Cudi Vs Crookers – 2008 – Day N Nite [FLAC]

12	CD	MP3	2008	Promo	Day N Nite [2008] [Data Records Promo] [V0]
13	WEB	MP3	2009	13 Track Digital Single	Kid Cudi vs. Crookers (2009) – Day N Nite [Web] [320]
14	WEB	FLAC	2009	13 Track Digital Single	Kid Cudi vs. Crookers (2009) – Day N Nite [Web] [flac]
15	WEB	MP3	2009	13 Track Digital Single	Kid Cudi vs. Crookers (2009) – Day N Nite [Web] [V0]
16	CD	MP3	0		VA-Promo_Only_Mainstream_Radio_August-2009-XXL
17	CD	MP3	0		VA-Ministry_of_Sound__Sessions_Five-(MOSA081)-2CD-2008
18	CD	MP3	0		Ministry of Sound Sessions Five
19	CD	FLAC	0		Various Artists – Sessions Five
20	CD	MP3	0		Fool's Gold Spring DJ Sampler
21	CD	MP3	0		3OH3-Want-(Advance)-2008-FNT
22	CD	MP3	0		3OH!3 – Want
23	CD	MP3	0		3OH!3 – Want [2008]
24	CD	FLAC	0		3OH!3-Want-[FLAC]-2008
25	CD	MP3	2009	Deluxe Edition	3OH3-Want-(Deluxe_Edition)-2009-C4
26	CD	MP3	2009	Deluxe Edition (Clean)	3OH!3 – Want (Deluxe Edition) v0

27	CD	MP3	2009	Deluxe Edition (Clean)	3OH!3 – 2009 – Want [320]
28	CD	FLAC	2009	Deluxe Edition (Clean)	3OH!3 – Want (Deluxe Edition) (Clean) (2009) [FLAC]
29	CD	FLAC	2009	Deluxe Edition	3OH!3 – Want (2009) [FLAC] {Deluxe Edition}
30	CD	MP3	2009	Deluxe Edition	3OH!3 – Want (2009) [V0] {Deluxe Edition}
31	CD	MP3	2009	Deluxe Edition	3OH!3 – Want – 2009 (Deluxe Edition)
32	CD	MP3	0		Diplo and Santogold – Top Ranking
33	CD	MP3	0		Diplo & Santogold – Top Ranking [2008] V2
34	CD	MP3	0		Top Ranking (320)
35	CD	FLAC	0		Top Ranking Santogold_FLAC
36	WEB	FLAC	0		Santogold x Diplo – Top Ranking A Diplo Dub (2008) [FLAC-16]
37	WEB	MP3	0		Santogold x Diplo – Top Ranking A Diplo Dub (2008) [V0]
38	WEB	MP3	0		Santogold x Diplo – Top Ranking A Diplo Dub (2008) [CBR 320]
39	CD	MP3	0		Adam’s Case Files
40	CD	MP3	0		Various Artists – 2008 – Scion CD Sampler-Fool’s Gold Remixed – 320
41	CD	MP3	0		Various Artists – 2008 – Scion CD Sampler-Fool’s Gold

					Remixed – V0
42	CD	FLAC	0		Scion CD Sampler Volume 22_ Fool's Gold Remixed (2008) – FLAC
43	CD	MP3	0		88-Keys-Death_Of_Adam-2008-C4
44	CD	MP3	0		The Death of Adam [320 CBR MP3]
45	CD	MP3	0		88-Keys – 2008 – The Death of Adam [MP3 V0 (VBR)]
46	CD	FLAC	0		88-Keys – 2008 – The Death of Adam [FLAC]
47	CD	MP3	0		The Alchemist – The Alchemist's Cookbook EP [2008] [V0]
48	CD	FLAC	2009		The Alchemist [2008] The Alchemist's Cookbook [FLAC]
49	CD	MP3	2009		The Alchemist [2008] The Alchemist's Cookbook [V0]
50	CD	MP3	2009		The Alchemist [2008] The Alchemist's Cookbook [320]
51	CD	MP3	2009		The Alchemist [2008] The Alchemist's Cookbook [V2]
52	CD	MP3	0		Kanye West – 808s and Heartbreak

The type of works listed here include albums that Kid Cudi made himself (row 8), albums he was “featured” on or contributed to in some other way (rows 43-46, row 52), tracks that his acapella vocal tracks were used on (rows 1-7), and compilations that he appeared on (rows 40-42). This type of information is not unique, equally comprehensive data was found on both Discogs and Wikipedia for Kid Cudi, so the differentiating factors with the What.CD dataset are file type, media type, and other metadata specific to each torrent. Such information can be viewed in the title of each torrent. File types include MP3 with further modifications (VBR and CBR; bitrates like 320; V0, V1 and V2) and FLAC. The year of release is also often listed.

It was hypothesized that the number of works for the top-producing artists was a function of the genres within which they exist, namely classical, hip hop, and dance. Therefore, it is important to look at one of the few artists not in those genres. Coldplay, which appears at the very end of the list with 2340 individual torrents, has the following works at the top of their list:

	Name	Origin	Format	File Info
2	Coldplay-Parachutes-2000	CD	MP3	V0 (VBR)
3	Coldplay – Parachutes	CD	MP3	V2 (VBR)
4	Coldplay – Parachutes – special edition – 2CD – 2001 – V0	CD	MP3	V0 (VBR)
5	Coldplay – Parachutes – special edition – 2CD – 2001 – FLAC	CD	FLAC	Lossless
6	Coldplay – Parachutes [VINYL][V0]	Vinyl	MP3	V0 (VBR)
7	Coldplay – Parachutes [VINYL][FLAC]	Vinyl	FLAC	Lossless
8	Coldplay – Parachutes [VINYL][FLAC]	Vinyl	FLAC	24bit Lossless

	96K]			
9	Coldplay – Parachutes – special edition – 2CD – 2001 [320]	CD	MP3	320
10	Coldplay – Parachutes (2000) – FLAC	CD	FLAC	Lossless
11	Coldplay – Parachutes – special edition – 2CD – 2001 – V2	CD	MP3	V2 (VBR)
12	Coldplay – Parachutes (2000) [Capitol Records-Netzwerk America – 0 6700 30162 2 3]	CD	FLAC	Lossless
13	Coldplay – Parachutes (2000) [V0]	CD	MP3	V0 (VBR)
14	Coldplay – Parachutes (2000) [VINYL EMI UK LP) 24-96 Rip	Vinyl	FLAC	24bit Lossless
15	Coldplay – Parachutes (2000) [VINYL EMI UK LP)	Vinyl	FLAC	Lossless
16	Parachutes	WEB	MP3	V0 (VBR)
17	Coldplay – 2000 – Parachutes (2008 – Limited Edition) [320 – Vinyl]	Vinyl	MP3	320
18	Coldplay – 2000 – Parachutes (2008 – Limited Edition) [V0 – Vinyl]	Vinyl	MP3	V0 (VBR)
19	Coldplay – Parachutes (2000) [320]	CD	MP3	320
20	Coldplay – Parachutes – 2006 (WEB – FLAC)	WEB	FLAC	Lossless
21	Coldplay – Parachutes – 2006 (WEB –	WEB	MP3	320

	MP3 – 320)			
22	Coldplay – Parachutes (2000) [VINYL] EMI UK LP) 24-96 Rip (V2)	Vinyl	MP3	V2 (VBR)
23	Coldplay – Parachutes (2000) [192- 24]	WEB	FLAC	24bit Lossless
24	Coldplay – 2000 – Parachutes (2016) [24-96]	WEB	FLAC	24bit Lossless
25	Coldplay – 2000 – Parachutes (2016) [FLAC]	WEB	FLAC	Lossless
26	Coldplay – 2000 – Parachutes (2016) [320]	WEB	MP3	320
27	Coldplay – 2000 – Parachutes (2016) [V0]	WEB	MP3	V0 (VBR)
28	Coldplay – Parachutes (2006) [V2]	WEB	MP3	V2 (VBR)
29	Coldplay – Parachutes (2000) [V2]	WEB	MP3	V2 (VBR)
30	Coldplay-Parachutes-2000	CD	MP3	V0 (VBR)
31	Coldplay – Parachutes	CD	MP3	V2 (VBR)
32	Coldplay – Parachutes – special edition – 2CD – 2001 – V0	CD	MP3	V0 (VBR)
33	Coldplay – Parachutes – special edition – 2CD – 2001 – FLAC	CD	FLAC	Lossless
34	Coldplay – Parachutes [VINYL][V0]	Vinyl	MP3	V0 (VBR)
35	Coldplay – Parachutes [VINYL][FLAC]	Vinyl	FLAC	Lossless

36	Coldplay – Parachutes [VINYL][FLAC 96K]	Vinyl	FLAC	24bit Lossless
37	Coldplay – Parachutes – special edition – 2CD – 2001 [320]	CD	MP3	320
38	Coldplay – Parachutes (2000) – FLAC	CD	FLAC	Lossless
39	Coldplay – Parachutes – special edition – 2CD – 2001 – V2	CD	MP3	V2 (VBR)
40	Coldplay – Parachutes (2000) [Capitol Records-Netzwerk America – 0 6700 30162 2 3]	CD	FLAC	Lossless
41	Coldplay – Parachutes (2000) [V0]	CD	MP3	V0 (VBR)
42	Coldplay – Parachutes (2000) [VINYL] EMI UK LP) 24-96 Rip	Vinyl	FLAC	24bit Lossless
43	Coldplay – Parachutes (2000) [VINYL] EMI UK LP)	Vinyl	FLAC	Lossless
44	Parachutes	WEB	MP3	V0 (VBR)
45	Coldplay – 2000 – Parachutes (2008 – Limited Edition) [320 – Vinyl]	Vinyl	MP3	320
46	Coldplay – 2000 – Parachutes (2008 – Limited Edition) [V0 – Vinyl]	Vinyl	MP3	V0 (VBR)
47	Coldplay – Parachutes (2000) [320]	CD	MP3	320
48	Coldplay – Parachutes – 2006 (WEB – FLAC)	WEB	FLAC	Lossless

49	Coldplay – Parachutes – 2006 (WEB – MP3 – 320)	WEB	MP3	320
50	Coldplay – Parachutes (2000) [VINYL EMI UK LP) 24-96 Rip (V2)	Vinyl	MP3	V2 (VBR)
51	Coldplay – Parachutes (2000) [192-24]	WEB	FLAC	24bit Lossless
52	Coldplay – 2000 – Parachutes (2016) [24-96]	WEB	FLAC	24bit Lossless
53	Coldplay – 2000 – Parachutes (2016) [FLAC]	WEB	FLAC	Lossless
54	Coldplay – 2000 – Parachutes (2016) [320]	WEB	MP3	320
55	Coldplay – 2000 – Parachutes (2016) [V0]	WEB	MP3	V0 (VBR)
56	Coldplay – Parachutes (2006) [V2]	WEB	MP3	V2 (VBR)
57	Coldplay – Parachutes (2000) [V2]	WEB	MP3	V2 (VBR)

All these releases are variations of the band’s album *Parachutes*, which was released in 2000.

That means there are 57 discreet “works” that have enough differences to categorically separate them. Such information, as with Kid Cudi, cannot be found in other artist discography databases, since all the differences in the *Parachutes* releases would be collapsed into one. The participants at What.CD made sure that seemingly miniscule differences were documented. For instance, rows 51-53 seem nearly identical. All three are “web releases,” which means they were downloaded from a digital source like iTunes or Bandcamp. Additionally, they all have

FLAC file formats, which is a higher quality alternative to the MP3. However, row 51 has a sample rate of 192 kHz, while row 52 has one of 96 kHz, half of the first. Row 53 does not have a specified sample rate. All three are lossless⁴, which indicates a certain relationship to the original audio from which it was taken. Two of them are also noted as being 24-bit files, which is a higher bit depth than most audio files (16-bit is widely accepted as an industry standard).

Other differences include the source format, which could have been a vinyl record or a CD. There are examples of two identical releases differing only in their source format, such as rows 7 and 10. Both contain FLAC file formats and have identical track listings:

Row 7

.flac s14757082s 01 Don't Panic.flac ÷
 .flac s33782757s 02 Shiver.flac ÷
 .flac s33654883s 03 Spies.flac ÷
 .flac s22417787s 04 Sparks.flac ÷
 .flac s30673606s 05 Yellow.flac ÷
 .flac s26715253s 06 Trouble.flac ÷
 .flac s3351332s 07 Parachutes.flac ÷
 .flac s25339322s 08 High Speed.flac ÷
 .flac s21282621s 09 We Never Change.flac ÷
 .flac s39781673s 10 Everything's Not Lost.flac ÷
 .cue s1279s Coldplay – Parachutes [VINYL][FLAC].cue ÷
 .m3u s570s Coldplay – Parachutes [VINYL][FLAC].m3u ÷
 .md5 s641s Coldplay – Parachutes [VINYL][FLAC].md5 ÷

⁴ Lossless audio files have an identical data structure to the audio they were compressed from, so while the file size may be smaller, no analytically-observed differences can be found.

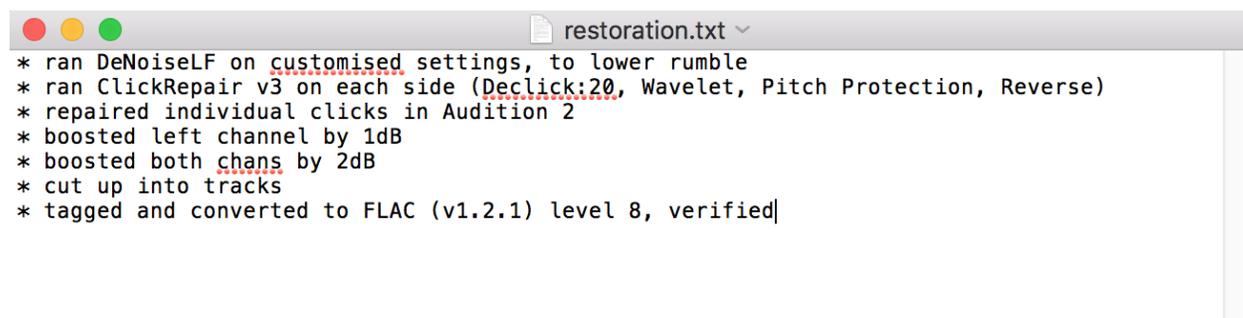
.db s18944s art/Thumbs.db ÷
.png s1110432s art/back.png ÷
.png s681485s art/cover.png ÷
.png s630686s art/inlay back.png ÷
.png s920578s art/inlay front.png ÷
.png s398195s art/label side A.png ÷
.png s415878s art/label side B.png ÷
.jpg s37690s folder.jpg ÷
.txt s1933s info.txt ÷
.txt s450s restoration.txt ÷

Row 10

.flac s15988653s 01 – Coldplay – Don't Panic.flac ÷
.flac s36691369s 02 – Coldplay – Shiver.flac ÷
.flac s36793643s 03 – Coldplay – Spies.flac ÷
.flac s24841657s 04 – Coldplay – Sparks.flac ÷
.flac s34341001s 05 – Coldplay – Yellow.flac ÷
.flac s29216705s 06 – Coldplay – Trouble.flac ÷
.flac s3684705s 07 – Coldplay – Parachutes.flac ÷
.flac s27605615s 08 – Coldplay – High Speed.flac ÷
.flac s23798145s 09 – Coldplay – We Never Change.flac ÷
.flac s44248817s 10 – Coldplay – Everything's Not Lost.flac ÷
.log s4776s Coldplay – Parachutes.log ÷
.cue s1477s Parachutes.cue ÷

The only differences between the two are the images contained in the vinyl version, since properly capturing the artwork was an important aspect of documenting the release. The music contained on both releases sounds nearly identical to an untrained ear, and arguably, even to discerning ones. Other differences in the 57 versions of *Parachutes* include special editions that were released after the initial release, 2-CD versions, those that were released in the UK, those that were released when iTunes began selling digital music, and releases that took place under other record labels.

Additionally, there is a “restoration.txt” in the vinyl torrent in row seven which includes information about how the vinyl album was converted from an analog format to the digital FLAC files:

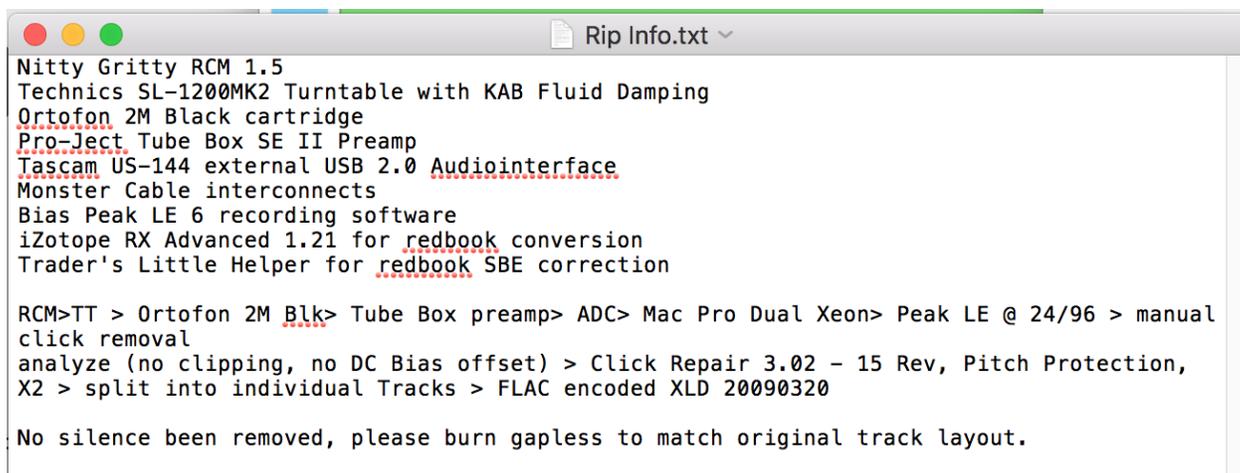
A screenshot of a text editor window titled 'restoration.txt'. The window has a standard macOS-style title bar with red, yellow, and green window control buttons. The text inside the window is as follows:

```
* ran DeNoiseLF on customised settings, to lower rumble
* ran ClickRepair v3 on each side (Declick:20, Wavelet, Pitch Protection, Reverse)
* repaired individual clicks in Audition 2
* boosted left channel by 1dB
* boosted both chans by 2dB
* cut up into tracks
* tagged and converted to FLAC (v1.2.1) level 8, verified
```

Figure 9: Screenshot of restoration.txt

With records that are older, ensuring as high a quality conversion as possible largely depends on the equipment and software implemented. Thus, there are at least three separate pieces of software used to “clean up” the audio after it was recorded into a computer.

In another vinyl torrent, a file called “Rip Info.txt” detailed the exact signal path the audio followed from beginning to end:



```

Rip Info.txt
Nitty Gritty RCM 1.5
Technics SL-1200MK2 Turntable with KAB Fluid Damping
Ortofon 2M Black cartridge
Pro-Ject Tube Box SE II Preamp
Tascam US-144 external USB 2.0 Audiointerface
Monster Cable interconnects
Bias Peak LE 6 recording software
iZotope RX Advanced 1.21 for redbook conversion
Trader's Little Helper for redbook SBE correction

RCM>TT > Ortofon 2M Blk> Tube Box preamp> ADC> Mac Pro Dual Xeon> Peak LE @ 24/96 > manual
click removal
analyze (no clipping, no DC Bias offset) > Click Repair 3.02 - 15 Rev, Pitch Protection,
X2 > split into individual Tracks > FLAC encoded XLD 20090320

No silence been removed, please burn gapless to match original track layout.

```

Figure 10: Screenshot of “Rip Info.txt”

Here, the turntable, the cartridge used therein, the preamp for the turntable, the digital-to-analog audio converter, and the cables used to connect the equipment are all listed. Three pieces of software are also listed and the sequence in which they were used, all information that is important for verifying that the best quality conversion was attempted.

Both sets of metadata demonstrate that, as can be corroborated in the rules of What.CD discussed elsewhere in this dissertation, evidence of the necessary labor to produce the content is nearly as important as the content itself. It thus suggests that listening in a specific mode was central to participating on What.CD through the conversion of vinyl, but that there were simultaneously many ways to listen. More on this topic is discussed in the chapter on What.CD users and their listening tendencies.

Another important component of the data that What.CD released is collages. As the introductory information about private trackers explains, collages were groups of torrents that had some organizational commonality, such as a genre, a record label, an era, or a ranking system such as Rolling Stone’s “Top 100 rock albums.” There are 27,329 collages, the largest 10 were:

Number	Name	Num. Torrents	Subscribers
1	Self Titled	11931	0
2	Guitars on Album Covers	8176	5
3	Delivery: A What.CD Request Contest	6292	10
4	Self-Released/Unreleased: Releases Without a Label	5686	5
5	AllMusic Pop/Rock Album Picks	3989	18
6	Pitchfork 8.0+ Reviews	3574	477
7	Video Game Soundtracks	3189	74
8	Albums From Greece	3178	17
9	Naxos	2879	20
10	Personal collage 12390	2712	14

The most popular collages, that is, the ten with the most subscribers were:

#	List Name	Tags	Subscribers
1	Pitchfork: Best New Music	indie alternative rock electronic experimental	1016
2	Resident Advisor Recommends	electronic experimental techno dubstep house deep.house tech.house minimal ambient drum.and.bass disco dance hip.hop idm uk.garage uk.funky grime bass	585

3	L.I.E.S. (Long Island Electrical Systems)	electronic house deep.house acid.house techno experimental	560
4	Hyperdub Records	dubstep hyperdub electronic uk.garage grime	553
5	Warp Records	electronic idm warp.records experimental ambient	510
6	Pitchfork 8.0+ Reviews		477
7	Ninja Tune	ninja.tune electronic trip.hop hip.hop downtempo	423
8	1080p		407
9	PAN	experimental abstract drone ambient noise electronic techno	399
10	Lobster Theremin	house deep.house techno	386

As can be seen here, dance genres have the most heavily subscribed collages, namely rows 2, 3, 4, 5, 8, and 10, indicating some features of collages that lend themselves to such music. A current private tracker very similar to What.CD states that a collage is a “collection of releases curated by an individual or group of users. A collage has a name, category, descriptions, tags, and the releases included in them. Any user can and may contribute to any collage except for personal collages. Interactions with collages are restricted depending on user class.” There are several categories for collages:

1. Personal
2. Theme
3. Genre Introduction
4. Label
5. Staff Picks

6. Charts

7. Artists

The collages with the most torrents belonged to “theme” (rows 1, 2, 3, 7, and 8), “label” (rows 4 and 9), “charts” (rows 5 and 6), and “personal” (row 10). The collages with the most subscribers belonged to “label” (rows 3, 4, 5, 7, 8, 9, 10) and “chart” (rows 1 and 6).

The total number of entries in all combined collages was around 35 million, with many artists and albums listed in hundreds of separate collages. To obtain this list, several different components of the original What.CD dataset were combined to match artist names with their IDs within the collages (collages, collages_torrents, artists_alias and torrents_artists). While the list is not a direct representation of the number of works on which the artist participated (the extremely high count numbers below are likely a measurement of the various formats and releases associated with one work), it does give some impression of the overall importance and impact that artist has. The artists with the most entries in collages were:

Number	Artist	References
1	Pink Floyd	179,154
2	Barry St. John	144,518
3	Radiohead	115,146
4	David Bowie	112,524
5	Kanye West	100,453
6	Jay-Z	89,236

7	MF DOOM	82,542
8	The Beatles	80,813
9	Nirvana	79,771
10	Doctor Dre	77,032
11	Kid Cudi	73,167
12	Doris Troy	72,475
13	Lesley Duncan	72,244
14	Clare Torry	72,226
15	George Martin	70,751
16	Miles Davis	70,634

The range of artists that such a metric displays is notably different from the other lists, as three artists are primarily known for their careers as background vocalists (rows 2, 12, and 13), and one is a producer (row 15).

Dark Side of the Moon

Walking through *Dark Side of the Moon* grants the data surveyor insight into how various works and artists are connected within the What.CD dataset. As an entry point, we can take the unlikely subject of Barry St. John, who performed backing vocals on some of the

tracks⁵. In the What.CD Dataset, her ArtistID is 341051, which, when searched for in the torrents_artists table, yields 5 works: Pink Floyd’s *The Dark Side of the Moon* (GroupID 1179), *The Girls’ Scene* (a 1999 compilation, GroupID 372247), Nazareth’s *Rampant* (GroupID 440263), *Goldmine Soul Supply – British Soul Volume 2* (GroupID 726680), and The Baker Gurvitz Army’s 1974 self-titled album (GroupID 72320523). St. John, while a singer songwriter in Britain in the 60s, 70s, and 80s, is most remembered for her work on *Dark Side of the Moon*. However, the simple act of looking up her ArtistID allows an interested listener to pursue both the music-industry and auditory impact St. John has left.

Sticking with *Dark Side of the Moon (DsotM)*, though, allows us to track the larger narrative of a rock album that has had a huge cultural impact in the west. By searching its GroupID, 1179, in a custom-aggregated table, nearly 790,000 rows of data are generated. This new table is sorted according to Collages that the album belonged to. Interestingly, 1,947 of the same works show up for hundreds of collages. Their core works are listed in this table:

Number	Torrent_ID	Media	Format	Encoding	RemasterYear	RemasterTitle
1	85487	CD	MP3	320	2003	Remastered SACD Hybrid
2	153341	CD	MP3	V0 (VBR)	2003	Remastered SACD Hybrid
3	175757	Vinyl	FLAC	24bit Lossless	1981	200g Audiophile Half-Speed Master
4	235686	CD	MP3	320	1994	Remastered
5	261611	CD	FLAC	Lossless	1994	Remastered
6	271617	CD	MP3	320	1988	24 Karat Gold CD MFSL Mastered

⁵ “Time”, “Us And Them”, “Brain Damage”, and “Eclipse” (A4, B2, B4, and B5) according to Discogs

7	382376	Vinyl	FLAC	24bit Lossless	1973	US
8	429799	CD	FLAC	Lossless	1994	Remastered
9	461848	Vinyl	MP3	V0 (VBR)	1973	Japan
10	462579	Vinyl	MP3	V0 (VBR)	1973	US
11	597916	CD	MP3	V0 (VBR)	1988	24 Karat Gold CD MFSL Mastered
12	842169	CD	FLAC	Lossless	2003	Hungary
13	930677	CD	MP3	320	1994	Remastered
14	963269	CD	MP3	V0 (VBR)	1994	Remastered
15	971741	CD	FLAC	Lossless	2003	Remastered SACD Hybrid
16	1042082	CD	FLAC	Lossless	1988	24 Karat Gold CD MFSL Mastered
17	1140204	CD	MP3	V0 (VBR)	2003	Hungary
18	1158858	Vinyl	FLAC	24bit Lossless	1979	MFSL Half-Speed Master
19	1180683	Vinyl	MP3	V0 (VBR)	2003	30 th Anniversary Edition 180g Vinyl
20	1220130	DAT	FLAC	24bit Lossless	1973	Alan Parsons Quadraphonic Mix
21	1264038	CD	FLAC	Lossless	1993	20 th Anniversary Edition
22	1266037	CD	MP3	320	1993	20 th Anniversary Edition
23	1266041	CD	MP3	V0 (VBR)	1993	20 th Anniversary Edition
24	1266043	CD	MP3	V2 (VBR)	1993	20 th Anniversary Edition
25	1277945	CD	MP3	V2 (VBR)	2003	Remastered SACD Hybrid
26	1305811	CD	MP3	V0 (VBR)	1984	United Kingdom / De-Emphasized
27	1310034	Vinyl	MP3	320	1973	Japan
28	1369229	Vinyl	MP3	V2 (VBR)	2003	30 th Anniversary Edition 180g Vinyl
29	1369246	Vinyl	FLAC	Lossless	2003	30 th Anniversary Edition 180g Vinyl

30	1369249	Vinyl	MP3		320	2003	30 th Anniversary Edition 180g Vinyl
31	1495247	CD	FLAC	Lossless		1983	Japan / De-Emphasized
32	1495296	CD	MP3		320	1983	Japan / De-Emphasized
33	1495331	CD	MP3	V0 (VBR)		1983	Japan / De-Emphasized
34	1501758	Vinyl	MP3	V2 (VBR)		1973	Japan
35	1578719	Vinyl	MP3		320	1981	200g Audiophile Half-Speed Master
36	1578725	Vinyl	MP3	V0 (VBR)		1981	200g Audiophile Half-Speed Master
37	1608900	Vinyl	MP3		320	1973	US
							Remastered Limited Edition + 3
38	1639230	CD	FLAC	Lossless		2000	Bonus Tracks
39	1713706	Vinyl	FLAC	Lossless		1973	Japan
40	1754420	Vinyl	MP3	V0 (VBR)		1979	MFSL Half-Speed Master
41	28945982	CD	FLAC	Lossless		2001	Japan Mini-LP Remaster
42	28962030	CD	MP3	V2 (VBR)		1994	Remastered
43	28984807	CD	MP3	V2 (VBR)		2003	Hungary
44	28988364	CD	MP3		320	2001	Japan Mini-LP Remaster
45	29067678	CD	FLAC	Lossless		1987	Canada / 20 th Anniversary Edition
46	29067684	CD	MP3	V0 (VBR)		1987	Canada / 20 th Anniversary Edition
							Remastered Limited Edition + 3
47	29191188	CD	MP3		320	2000	Bonus Tracks
							Remastered Limited Edition + 3
48	29191191	CD	MP3	V0 (VBR)		2000	Bonus Tracks
49	29332302	CD	MP3	V0 (VBR)		2001	Japan Mini-LP Remaster

50	29386648	Vinyl	FLAC	Lossless	1973	US
51	29540921	SACD	FLAC	24bit Lossless	2003	Remastered SACD Hybrid Stereo
52	29581598	SACD	FLAC	Lossless	2003	Remastered SACD Hybrid Stereo
53	29581603	SACD	MP3	V0 (VBR)	2003	Remastered SACD Hybrid Stereo
54	29612451	WEB	AAC	256	2011	Experience Edition
55	29614200	CD	MP3	V0 (VBR)	2011	Remastered
56	29615072	CD	FLAC	Lossless	2011	Immersion Edition
57	29615073	CD	FLAC	Lossless	2011	Experience Edition
58	29615150	CD	MP3	320	2011	Experience Edition
60	29615151	CD	MP3	V0 (VBR)	2011	Experience Edition
61	29616561	CD	MP3	V0 (VBR)	2011	Immersion Edition
62	29616573	CD	MP3	320	2011	Immersion Edition
63	29616714	DVD	FLAC	24bit Lossless	2011	Immersion Edition
64	29616752	DVD	AC3	640	2011	Immersion Edition
65	29617487	DVD	MP3	320	2011	Immersion Edition
66	29617492	DVD	MP3	V0 (VBR)	2011	Immersion Edition
67	29617619	DVD	FLAC	Lossless	2011	Immersion Edition
68	29621836	Blu-ray	FLAC	24bit Lossless	2011	Immersion Edition / Stereo
69	29624260	Blu-ray	FLAC	24bit Lossless	2011	Immersion Edition / 4.0 Quad Mix
70	29624294	Blu-ray	FLAC	24bit Lossless	2011	Immersion Edition / 5.1 Surround Mix
71	29648770	WEB	MP3	320	2011	Remastered
72	29675146	CD	FLAC	Lossless	2011	Experience Edition Japan
73	29687512	CD	MP3	V0 (VBR)	2011	Experience Edition Japan

74	29688328	Blu-ray	MP3	V0 (VBR)	2011	Immersion Edition / Stereo
75	29789246	CD	FLAC	Lossless	2011	Remastered
76	29789249	CD	MP3	320	2011	Remastered
77	29789252	CD	MP3	V2 (VBR)	2011	Remastered
78	29877010	Blu-ray	FLAC	Lossless	2011	Immersion Edition / Stereo
79	29936570	Vinyl	FLAC	Lossless	1973	West Germany / Limited Edition
80	29986254	Vinyl	FLAC	24bit Lossless	2011	180 gram Heavyweight Vinyl, Remastered
81	30016793	Vinyl	FLAC	Lossless	1981	200g Audiophile Half-Speed Master
82	30036207	Vinyl	FLAC	Lossless	2011	180 gram Heavyweight Vinyl, Remastered
83	30036210	Vinyl	MP3	320	2011	180 gram Heavyweight Vinyl, Remastered
84	30036214	Vinyl	MP3	V0 (VBR)	2011	180 gram Heavyweight Vinyl, Remastered
85	30061597	Vinyl	FLAC	24bit Lossless	1992	Russia
86	30102870	Vinyl	FLAC	24bit Lossless	1973	Japan
87	30133168	Vinyl	FLAC	24bit Lossless	2003	UK Remaster 30 th Anniversary
88	30381029	CD	MP3	V2 (VBR)	2011	Immersion Edition
89	30398958	Vinyl	MP3	V2 (VBR)	1981	200g Audiophile Half-Speed Master
90	30617133	Vinyl	FLAC	24bit Lossless	1997	UK Reissue
91	30617135	Vinyl	FLAC	Lossless	1997	UK Reissue
92	30620612	CD	FLAC	Lossless	1984	United Kingdom / Pre-Emphasized

93	30621022	Vinyl	FLAC	24bit Lossless	1973	Netherlands
94	30662403	CD	MP3	V0 (VBR)	1994	Remastered
95	30867290	Vinyl	FLAC	24bit Lossless	1973	A3 // B3 Matrix
96	30867355	Vinyl	MP3	320	1973	A3 // B3 Matrix
97	30867356	Vinyl	MP3	V0 (VBR)	1973	A3 // B3 Matrix
98	30867357	Vinyl	MP3	V2 (VBR)	1973	A3 // B3 Matrix
99	30867688	Vinyl	FLAC	Lossless	1973	A3 // B3 Matrix
100	30871861	CD	FLAC	Lossless	1986	Australia & Asia
101	30876465	WEB	AAC	256	2011	Remastered / Mastered for iTunes
102	30915337	CD	FLAC	Lossless	1985	Digital Mastering
103	30964614	CD	MP3	320	1985	Digital Mastering
104	30964615	CD	MP3	V0 (VBR)	1985	Digital Mastering
105	30964616	CD	MP3	V2 (VBR)	1985	Digital Mastering
106	31035520	SACD	FLAC	24bit Lossless	2003	Remastered SACD Hybrid Multichannel
107	31046460	CD	MP3	320	1987	Canada / 20 th Anniversary Edition
108	31046463	CD	MP3	320	2003	Hungary
109	31046469	SACD	MP3	320	2003	Remastered SACD Hybrid Stereo
110	31046473	Blu-ray	MP3	320	2011	Immersion Edition / Stereo
111	31073033	SACD	MP3	V2 (VBR)	2003	Remastered SACD Hybrid Stereo
112	31078479	Vinyl	MP3	320	1979	MFSL Half-Speed Master
113	31078480	Vinyl	MP3	V2 (VBR)	1979	MFSL Half-Speed Master
114	31078716	DAT	MP3	320	1973	Alan Parsons Quadraphonic Mix

115	31078717	DAT	MP3	V0 (VBR)	1973	Alan Parsons Quadraphonic Mix
116	31078718	DAT	MP3	V2 (VBR)	1973	Alan Parsons Quadraphonic Mix
117	31269182	CD	MP3	V2 (VBR)	1987	Canada / 20 th Anniversary Edition
118	31291170	CD	FLAC	Lossless	1986	United States
119	31291171	CD	MP3	V0 (VBR)	1986	United States
120	31291172	CD	MP3	V2 (VBR)	1986	United States
121	31291173	CD	MP3	320	1986	United States
122	31339962	Vinyl	FLAC	24bit Lossless	1978	Japan "Pro-Use Series"/Limited Edition
123	31542603	CD	FLAC	Lossless	1983	Japan / Pre-Emphasized
124	31543715	SACD	FLAC	Lossless	2003	Remastered SACD Hybrid Multichannel
125	31556188	CD	MP3	V2 (VBR)	1988	24 Karat Gold CD MFSL Mastered
126	31686053	Vinyl	FLAC	24bit Lossless	1973	
127	31686937	Vinyl	FLAC	24bit Lossless	1973	
128	31686995	Vinyl	FLAC	Lossless	1973	
129	31775803	Vinyl	MP3	320	1973	
130	31775804	Vinyl	MP3	V0 (VBR)	1973	
131	31775823	CD	MP3	V0 (VBR)	1986	Australia & Asia
132	31775841	Vinyl	MP3	V0 (VBR)	1997	UK Reissue
133	31837974	Vinyl	MP3	V0 (VBR)	1973	Netherlands
134	31854569	Vinyl	MP3	320	1973	West Germany / Limited Edition
135	31885429	Vinyl	FLAC	24bit Lossless	1973	Original UK Quad Pressing

136	31914763	Vinyl	FLAC	Lossless		1978	Japan "Pro-Use Series"/Limited Edition
137	31914764	Vinyl	MP3		320	1978	Japan "Pro-Use Series"/Limited Edition
138	31914765	Vinyl	MP3	V0 (VBR)		1978	Japan "Pro-Use Series"/Limited Edition
139	31914766	Vinyl	MP3	V2 (VBR)		1978	Japan "Pro-Use Series"/Limited Edition
140	31915157	Vinyl	FLAC	Lossless		1973	Original UK Quad Pressing
141	31915158	Vinyl	MP3		320	1973	Original UK Quad Pressing
142	31915159	Vinyl	MP3	V0 (VBR)		1973	Original UK Quad Pressing
143	31915160	Vinyl	MP3	V2 (VBR)		1973	Original UK Quad Pressing
144	31923111	CD	FLAC	Lossless		1993	24 Karat Gold UltraDisc II
145	32012247	CD	FLAC	Lossless		2015	Remastered
146	32058733	Vinyl	MP3	V2 (VBR)		1973	
147	32146147	Vinyl	FLAC	Lossless		2003	UK Remaster 30 th Anniversary
148	32146148	Vinyl	MP3		320	2003	UK Remaster 30 th Anniversary
149	32146149	Vinyl	MP3	V0 (VBR)		2003	UK Remaster 30 th Anniversary
150	32146150	Vinyl	MP3	V2 (VBR)		2003	UK Remaster 30 th Anniversary
151	32166044	CD	MP3	V2 (VBR)		2001	Japan Mini-LP Remaster
152	32245725	Vinyl	FLAC	24bit Lossless		1973	Original UK A2 // B3 Pressing
153	32276988	Vinyl	FLAC	Lossless		1973	Original UK A2 // B3 Pressing
154	32277769	Vinyl	FLAC	Lossless		1992	Russia

155	32284838	Vinyl	MP3	V0 (VBR)	1973	West Germany / Limited Edition
156	32284841	Vinyl	MP3	320	1992	Russia
157	32284842	Vinyl	MP3	V2 (VBR)	1992	Russia
158	32284872	DVD	MP3	V2 (VBR)	2011	Immersion Edition
159	32386394	CD	MP3	V2 (VBR)	1983	Japan / De-Emphasized
160	32419536	Vinyl	MP3	V0 (VBR)	1973	Original UK A2 // B3 Pressing
161	32419544	Vinyl	MP3	320	1973	Original UK A2 // B3 Pressing
162	32439183	Vinyl	FLAC	Lossless	1979	MFSL Half-Speed Master
163	32525855	Blu-ray	FLAC	Lossless	2011	Immersion Edition / 5.1 Surround Mix
164	32536750	CD	FLAC	Lossless	1984	Europe
165	32545115	Vinyl	FLAC	24bit Lossless	1974	West Germany / Quadraphonic
166	32750295	CD	MP3	V2 (VBR)	1994	Remastered
167	32903801	Vinyl	FLAC	24bit Lossless	1974	Japan
168	32975174	Blu-ray	MP3	V2 (VBR)	2011	Immersion Edition / Stereo
169	33075588	CD	MP3	V2 (VBR)	2011	Experience Edition
170	33111454	Vinyl	FLAC	24bit Lossless	1974	Japan
171	33151846	Vinyl	FLAC	24bit Lossless	1973	Original UK Quad Pressing
172	33184569	CD	MP3	320	2011	Experience Edition Japan
173	33221291	DAT	FLAC	Lossless	1973	Alan Parsons Quadraphonic Mix
174	33285864	Vinyl	FLAC	24bit Lossless	2016	Remastered
175	33285874	Vinyl	FLAC	Lossless	2016	Remastered
176	33285881	Vinyl	MP3	320	2016	Remastered
177	33285882	Vinyl	MP3	V0 (VBR)	2016	Remastered

178	33285924	Vinyl	FLAC	24bit Lossless	2016	Remastered
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Thus, it becomes clearer how there might be so many iterations of one album. Listed in this table are the torrent's ID number, original format, converted format, year of remaster, and remaster title. The media with which an uploader would have started is the first consideration, usually a vinyl record or CD. However, the occasional DAT (Digital Audio Tape) or Blu-ray disc also found their way to What.CD. Secondly, the format to which the uploader would convert their original media was either determined by the uploaders preference or by the needs of the community — if there was already a FLAC conversion, then various MP3 versions would be needed, for example. Thirdly, proper documentation in the actual uploading process would ensure that the uploader's contribution filled a gap in the *DsotM* corpus. While the various file formats, bit depths, and sampling rates were discussed earlier, the impact that such proliferation has on the size of the What.CD library can be seen here directly.

Some particularly interesting entries here are the quadraphonic mixes made by Alan Parsons, an engineer who worked on the original recording of *DsotM* (rows 20 and 173). Quadraphonic sound, a precursor to modern surround sound, had 4 discrete channels rather than the conventional 2 channels in common stereo sound. Equally rare were SACD (Super Audio CD) releases, of which seven rows of data are occupied in the table above. Furthermore, there are releases that have geographic specificity, such as Japan (row 10), Hungary (row 12), Canada (row 45), Russia (row 85), the Netherlands (row 93), and Australia and Asia (row 131). As digitization has transgressed many of the boundaries that the music industry traditionally relied on for profitability including nation states, What.CD allowed for pan-geographic collections that still cannot be offered by any legitimated musical service.

Additionally, by looking solely at the vinyl releases, we see there are 78 rows of data originating with this medium. 37 were converted to FLAC and 41 were converted to MP3. Of those 41, 15 were converted to 320 Kbps, 16 were converted to V0 variable bit rate, and 10 were converted to V2 variable bit rate. They range in release date from 1973 to 2016, and the records are further differentiated according to other characteristics such as 180 and 200-gram weight (a higher quality record), some thirtieth anniversary editions, and various label and remastering associations. In interviews with former What.CD users, many specified their use of specific releases because of their perceived quality, even their ability to hear the differences between a FLAC version of a CD release compared to a vinyl release.

The GroupID for *DsotM*, 1179, has the following artist entries associated with it:

Number	GroupID	Name
1	1179	Pink Floyd
2	1179	Pink Floyd
3	1179	Doris Troy
4	1179	Doris Payne
5	1179	Lesley Duncan
6	1179	Clare Torry
7	1179	Barry St. john
8	1179	Barry St. John
9	1179	The Screaming Abdabs

10	1179	Architectural Abdabs
11	1179	Doris Payne (Doris Troy)

Row 2 is an obvious misspelling for the same artist. Rows 3-8 and 11 are backing vocalists (Doris Troy and Doris Payne were the same person and rows 7 and 8 are also redundant), and rows 9 and 10 are pseudonyms from the band's early days. The presence of the backing vocalists' association with Pink Floyd explains their high ranking in the table above that mentions the most represented artists on What.CD and exposes the importance of their contribution in a manner that would otherwise remain hidden to most listeners. In other words, Barry St. John's general obscurity would have prevented many listeners from knowing about her if she had not been associated with *DsotM*'s GroupID. The backing vocal work on the albums mentioned above, as well as her own solo career, relegate her to listeners interested in specific subgenres of popular music.

The collages that *DsotM* appears in tell another component of the narrative of one work within the data of What.CD. It shows up in 409 different collages, 301 of which are "personal collages" that any member could create. Other collages of interest have titles like "100 Albums Every Science Fiction and Fantasy Fan Should Listen To," "15 Greatest Stoner Albums of All Time (Q Magazine)," "Albums that contain tracks with Alarm Clocks," "Beastie Boys: Paul's Boutique Samples," and "Surround Sound (multichannel) Albums." The various reasons a collage might be created can be seen in these names, such as listener-generated lists that focus on favorite works or publication-generated lists that rate albums with specific cultural parameters. In the case of the "Paul's Boutique" collage, the famous Beastie Boys album of the same name is deconstructed according to the various works it sampled during the making of the album. At

some point, *DsotM* was sampled, and thus was included in the collage. Other notable works of the 86 works included in this collage were:

Alice Cooper – Lace and Whiskey (1977)

The Beatles – Help! (1965)

John Williams – Jaws (1975)

James Brown – Soul Pride – The Instrumentals 1960-69

Diana Ross & The Supremes – 2000 Let The Sunshine In (1969), Cream Of The Crop (1969)

Public Enemy – Yo! Bum Rush The Show (1987)

So, in some ways, looking at various collages that *DsotM* appeared in is an archeological process that unearths connections between artists. Simultaneously, it invited listeners to interact with collage creators, who were themselves listening in various modes that compelled them to make a collage in the first place.

A further criterion on which collages were based was format groups, such as multichannel audio. Multichannel versions of *DsotM*, which is any format greater than stereo sound reproduction, could have been included in this collage, but also in collages that were solely collections of multichannel audio, such as the following:

ID	Name	# Tor.	Tags	S
647	Surround Sound (multichannel) Albums	1554	rock alternative progressive.rock audiophile pop multichannel 5.1audio	74

289			rock alternative progressive.rock pop audiophile	
1	Lossless Multichannel Music	426	multichannel 5.1audio	30
647	Surround Sound (multichannel) Albums	1554	rock alternative progressive.rock audiophile pop multichannel 5.1audio	74
206	Grammy Award for Best			
42	Surround Sound Album	8	surround multichannel	3
156	24-Bit/96kHz Quadraphonic			
9	Mixes	49	70s rock progressive.rock experimental psychedelic	14
317			surround surround.sound quadraphonic quad	
53	Possible Hidden Quadraphonic	27	multichannel	2

By collecting audio according to the number of playback channels, a listener would not only indicate the genres of music that they were interested in, but also the environment in which they listened to music, as surround sound requires a more elaborate array of loudspeakers than stereo, which could be as small as a set of earbuds. Both the quadraphonic and 5.1 mixes of *DsotM*, while appearing in the collages above, demonstrate value beyond their stylistic or cultural significance to listeners who are willing to listen to anything in surround, as the first row in the table above suggests.

What It Means

Searching these data exposes the multiple layers at which an artistic work is codified: collages, original media formats, destination formats, all artists associated with a work (composers, participating musicians, producers, and mix engineers), as well as layers of information relating to uploader conversion data. While being aware of such data at all times

was certainly not a requirement of browsing and listening on What.CD, it could be used to allow a user to find more precisely what they were looking for, as well as know more comprehensively what to seek out.

In that way, What.CD trained listeners to listen in a certain manner. Contrary to the logical conclusion that site administrators and staff were shaping these listening habits though, they were rather shaped holistically by the system of What.CD through its various components.

Collages

The intent of collages was to allow for groupings that did not exist through tagging, specific artist pages, and were to be “sensible” and “reasonably broad” (What.CD). To create collages, though, users had to be at least a Power User, which prevented many low-level members from creating their own. Anyone, however, could contribute to a collage once it had been created by editing descriptions and torrent information. Also, users could comment on any collage, which encouraged discourse about its contents and structure.

Some collages were also used, though, as an attempt to stimulate a more specific type of listening, such as those that were called “Staff Picks” and “Group Picks.” The former would be collected during special occasions, such as during holidays and site anniversaries, while the latter would be chosen by a “well-defined group of people” (What.CD) like the interview team. Often, these collages would be turned into “free-leech” selections for a certain amount of time, meaning that their downloading would not affect a user’s ratio. The result is some music operating outside the general rules of consumption and being granted a special, if temporary dispensation.

Collages are currently utilized in a few ways on legal platforms like Spotify and Pandora. However, the degree to which users can create and publish them is limited. More importantly,

there is no way to create a consensus about which collages are better than others. In that way, they are all “staff picks” with no real representation from the services’ listeners.

Formats

Audiophilic tendencies of a subset of What.CD listeners caused digital formats to be an important factor when considering downloading a torrent. Lossless files are particularly important if a listener is interested in reconstructing a CD, SACD, or Blu-ray, bit for bit, as the physical media would have looked originally. During interviews with former members, it became apparent that the listening and archiving habits of individuals who work in the music industry, as well as those who are primarily interested in audio quality (as opposed to file size or torrent quantity), made a priority out of downloading as many FLACs as possible. Especially in relation to torrents whose original media was a vinyl record, audiophiles on What.CD almost universally sought out torrents for that format, even if it was for a genre they were not particularly invested in.

Formats were also important, though, for ensuring all possibilities for potential downloaders. If an album was only represented by 320 Kbps MP3 files without any V0 or V2 CBR files, let alone FLAC, then it was considerably less valuable than a GroupID such as that for *DsotM*, which was represented by over 100 torrents. As the administration and staff of What.CD were interested in complete archival sterility to the point of mandating careful attention in various rule sets, the larger disk space required for these more accurate files was generally written off as a negligible annoyance, as it continues to be downplayed in What.CD’s descendants.

Original Media

As discussed earlier, the possible formats for original media were not a main concern for the What.CD community. Rather, they set as a barrier to entry the proper conversion and documentation. As a result, a large variety of media were found to have been converted on What.CD, including SACD, DVD, Blu-ray, Cassette Tape, CD, Vinyl, Soundboard (a live feed of a concert recorded directly from the mixing console, What.CD had an infamous collection of Phish bootlegs), DAT, and Web Rips. A lack of prejudice surrounding media meant that many musical communities that consider certain physical containers like these important to their cultural identity could retain those markers and still participate fully on What.CD.

For example, some record labels associated with a “lo-fi” sound only distribute their recordings on cassette tape. Instances of this within the What.CD dataset include members of the collage “Paxico Records,” which is a small, cassette-only record label:

Artist	Album	GroupID
Josh Hey	Ndeed	72444773
rxn	footnotes	72553689
GoYama x Lidly	The Ego Scale	72705937
Ahwlee	1991	72885264
Weirddough	Love Spells	73039396
Howie Wonder	heart beats	73062790
Paxico Records	PHILADELPHIA SUMMER OF	73121059

	'64	
BudaMunk & Fitz Ambroşe	BUDABROSE	73125506
CLOUD	SILHOUETTES	73125567
The Nativist	Various Options	73319405

Similarly, DAT recordings are generally associated with multichannel recordings (Pink Floyd – The Dark Side Of The Moon °Quad°), live concert bootlegs (Handsome Furs – Live At Neumo’s, Seattle 04.19.08), unreleased studio sessions (Jerry Garcia – Workingman’s Dead Studio Sessions – 1969), and other novel recordings (The Smashing Pumpkins – The End Is The Beginning Is The End (Remixes)). While many torrents consisted of mainstream formats, the lack of boundaries on origin formats allowed for a more varied body of music.

Artist Association

A What.CD Listener was able to quickly connect artists to a diverse body of work that, while capable of having missing pieces that users had not found or were not aware of, was generally comprehensive and potentially authoritative. Because uploaders were fans, their investment was not simply in an archive for its own sake, but rather the proof of their interest and devotion to a scene, artist, genre, or record label. As such, many times the collection of music and connected discourse on IRC, in What.CD forums, and in torrent comments represented a unique mode of fandom.

The ability of What.CD to create a web that centered on an artist was also a defining feature of finding music on the site, represented in the dataset through ArtistIDs. As was demonstrated in the cases of Pink Floyd, Kid Cudi, and Coldplay, torrent searches illuminate the connections between artists, their releases, and the torrents that represent those releases. Furthermore, artists can be connected with works with which they are tangentially related, such as through being a “featured” artist on a track or performing backing vocals, as in the case of Barry St. John and *DsotM*.

Currently on legal platforms, it is difficult to get full information about all the artists involved in a production that used to commonly be found in liner notes. They could take a cue from What.CD, as this information is likely readily available through extant databases.

Tags

Although not discussed at length in this chapter, tags were useful adhesive connecting many parts of What.CD, allowed for users to find works they would find interesting, and were archived in the dataset. When uploading a new torrent, users were instructed to include descriptive tags that would allow other users to easily find relevant music. A rule set governed the use of tags, and specified a format:

- All tags should be comma-separated on the upload form.
- You should use a period (“.”) to separate any words inside a tag. For example, “hip.hop” or “post.rock”.
- Abbreviations should be avoided. It’s “alternative.rock” or “progressive.rock”, not “alt.rock” or “prog” (What.CD).

As mentioned earlier, tags were also able to be voted on, since some were more relevant or useful than others. The top 25 most used tags were:

Tag ID	Tag	Tag Type	Uses
50	rock	genre	523626
23	electronic	genre	511323
42	pop	genre	292616
35	indie	genre	248758
155	hip.hop	genre	243459
5	alternative	genre	220196
25	experimental	genre	206355
33	house	genre	199404
38	jazz	genre	185211
39	metal	genre	182137
26	folk	genre	165149
53	techno	genre	147910
6	ambient	genre	146090
1614626	2010s	genre	129290
14	classical	genre	124678
47	punk	genre	117108
18	dance	genre	107763
4	1990s	genre	97046

54	trance	genre	85528
45	psychedelic	genre	84243
57	world.music	genre	72599
27	funk	genre	64353
12	blues	genre	63861
3	1980s	genre	62866
52	soul	genre	59778

Streaming services like Spotify pregroup music according to genre. However, the only mechanism for genre distinction were tags, thereby leaving it to What.CD members to determine how music should be organized. Tags were an attempt, like many of the other prescribed practices of What.CD like audio conversion and ratio maintenance, to regulate behavior.

The specific behaviors, though, were not suggested in a totalitarian environment that other private tracker research suggests existed. In the instance of tags, the rules did not prevent users from exercising their own judgment or creativity. By being aware of the conventions of tagging, users could more comprehensively find what they were looking for. The tags would have been fairly useless if there was no rule conformity, just as lines on a road do not prevent a person from driving to a desired destination.

Metadata

While metadata describes all the specific variables mentioned thus far, some aspects of the What.CD dataset that have not been discussed in this chapter also fall into the general category of metadata, including:

Metadata
Remastered
RemasterYear
RemasterTitle
RemasterCatalogueNumber
RemasterRecordLabel
Scene
info_hash
Size
Time

The “info_hash” above is encrypted information about the torrent. For example, using an editor, the following information was extracted from one of the Coldplay torrents discussed earlier:

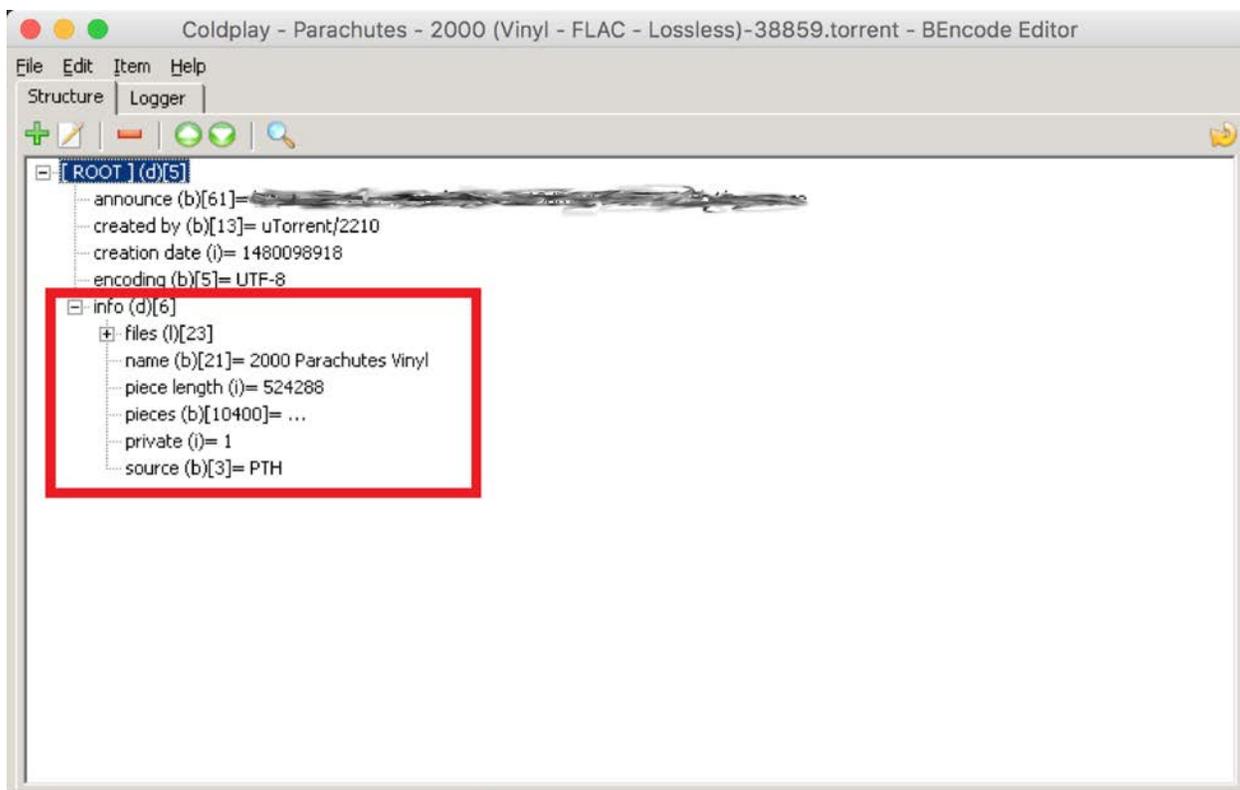


Figure 11: Torrent file hash info

The highlighted section contains the information included in the hash file, which is the number of files, torrent piece size (524,288 bytes), the number of torrent pieces, a “private” flag, since it comes from a private tracker, and source information. None of this is data that a What.CD user would have usually seen or have been concerned with, but ensures that the downloading node is receiving a complete torrent from the corresponding seeders.

Much of the other metadata pertains to remaster criteria, which was especially important for releases that had been released initially and then released a second time, such as for *DsotM*'s 30th anniversary edition. Such information would have allowed downloaders to differentiate between otherwise identical torrents, and would have allowed for the multiple record labels involved in various releases to be appropriately credited. Interestingly, legal services like Spotify don't have such a problem, their releases are sanctioned by record labels

and artists, and therefore remastered albums are never confused with originals. Additionally, on What.CD, “WEB” formats were torrents that originated in legal digital stores like iTunes, which houses remastered albums and originals alike. Because the data structures of What.CD allowed it to act as an archive just as easily as a source for listening (the sole purpose of legal services), remaster information was therefore important to appropriate levels of differentiation.

Conclusion

Brett Robert Caraway (2012) writes that “contemporary conflicts over file-sharing likewise hinge on the relative autonomy of new forms of cooperative social arrangements. Many of the file-sharers ... believe P2P systems offer a means of exodus from the coercive relation to the content industries—not just for themselves, but for musicians as well.” (p. 582). The data presented in this chapter are pragmatic evidence of a new social practice that What.CD developed without the influence of outside “coercive relations.” One of the larger themes of this dissertation is the formation of new technological practices and the social impact they have. By constructing an archive with guiding principles of accuracy and comprehensiveness, What.CD succeeded in surpassing most other collections, private and public, of recorded music and its metadata.

In the Chapter 1, Andrew Feenberg was invoked for his critical view of technology. He writes that his view is based on “public participation in technical decisions, workers’ control, and requalification of the labor force” (2002, p. 12),” which describes, in many respects, the shape of user intervention into technical practices on What.CD. The data the site collected, when compared to the vast quantities that social media sites like Facebook collect, revolved around social consensus, rather than user exploitation. While not wholly democratic or egalitarian, all

data points that this chapter has explored were collected with the goal of improving site functionality and enhancing curatorial possibilities.

Additionally, the broader narrative of taken up within this dissertation represents resistance to a hegemonic industry, as well as technological possibilities that hint at greater democratization that Feenberg endorses. That is, more users involved in a range of communication practices, regardless of power dynamics, has the potential to create a digital reality that a greater percentage of individuals find socially useful. The data analyzed in this chapter provide an example of how the nuts and bolts of such participation construct one such community.

The data that has been analyzed here, although publicly available, required a basic knowledge of SQL databases to access relevant components. Coupled with the theoretical framework provided in the first chapter, this analysis has sought to elucidate the connection between the underlying structures of the website that provide parameters for the site's inner logics and specific user behavior. In turn, these behaviors can be mapped onto larger patterns of cultural activity that have also been explored. As will be discussed in the next chapter that deals with user data and attitudes, the site was a mix of top-down authoritarianism and strong emotionally-driven user experiences that lent What.CD such a unique position on the digital music landscape.

Chapter 4 – Analyzing User Survey Data for Meaningful Dynamics

The previous chapter used a dataset released by What.CD's former administrators to explore the torrents that comprised the collection hailed as one of the greatest in digital history. By exploring different variables, its possible narratives were unwoven from the dense numbers and jargon in which digital information is often tied up. The amount of user investment in *Dark Side of the Moon*, for instance, represents hundreds of hours and considerable computing power to archive comprehensively. However, such information can only provide one side of a multifaceted story of What.CD, and does not effectively address issues of sociality, democratization, and cooperation that the site boasted. While Chapter 3's analysis provided comprehensive understanding of torrents, users were left largely out of the picture. Unfortunately, such data were not available for similar analysis because of security concerns. Because What.CD and most other private trackers operated in ways that are at least partly illegal, all user data was deleted at the time of the servers' seizure in November of 2016. If authorities had been able to connect usernames with "real-world" email addresses and IP addresses, irrevocable harm could have resulted.

This chapter uses a different approach to investigate the attitudes, processes, and dynamics among What.CD's user base as it pertained to the typical range of activities with which they engaged. While logged into the site, search bars along the top encouraged users to find new material. Figure 1, while taken from one of What.CD's successors, illustrates the search functions that were available. The two most important components of What.CD, then, were the torrents, assessed in Chapter 2, and users, whose activities are examined here. The small actions users would take in downloading certain music, discussing it, and listen to it all add up to a snapshot that offers a broader perspective about the overall user base.

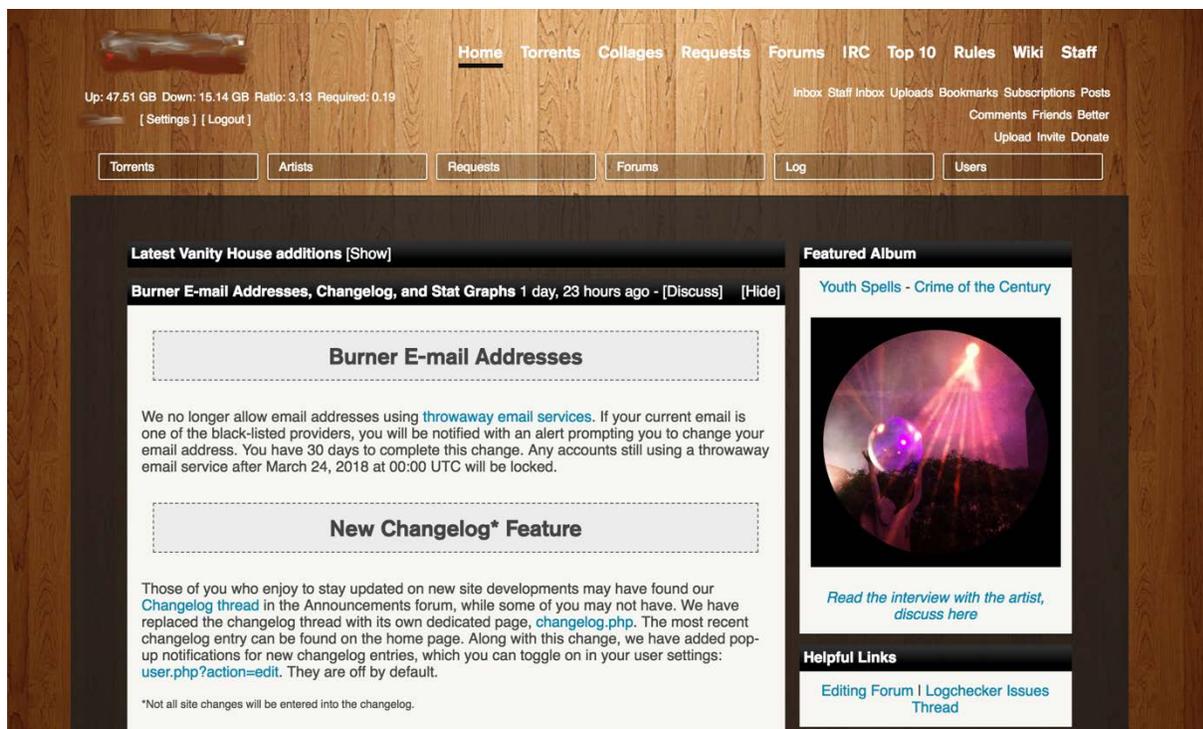


Figure 12: A screenshot of a private tracker's search functions, as well as other elements through which they can interact with torrents and each other.

Survey

In this chapter, user opinions that were gathered from a survey are evaluated through various criteria, including the nature of membership and the role of What.CD among other music services that users may have been using in tandem. The goal of this exercise is to draw connections between the responses to the survey and possibilities for widening digital participation in other domains. Specifically, how we might make social media and streaming music services more socially empowering rather than tools used for extraction of useful data by corporations is of interest?

A survey was conducted asking former What.CD users the following questions:

1. How long were you on What.CD?
2. How did you join (interview, invite)?
3. What user class did you ultimately belong to?
4. How would you characterize your use of What.CD (i.e., your sole source of music, a music-discovery platform, a community to connect with others, etc.)?
5. How would you describe the importance of What.CD to you personally and from a broader cultural perspective? So, for example, would you say the site was important beyond its utility to you?
6. Did you interact in (1) the forums or (2) IRC channels? Can you briefly describe that activity?
7. What type of music, if it's possible to describe that, would you say you listened to most through What.CD?
8. Did you also use any legitimate streaming or downloading services at the same time (such as Spotify, Pandora, or iTunes)? If so, what was the difference between that activity and what you did on What.CD?
9. Was there a particular format you were most likely to download on What.CD (MP3, FLAC), and why (it sounded better, the files were smaller, etc.)?
10. Were there any other specific activities you participated in (site development, moderation, other various contributions)?

The approach of this survey was to avoid questions of legality. While hints of the “piracy” aspect came up in some responses, respondents were never explicitly asked to reflect on the illicit nature of their behavior. While other studies focus on the legal battles and their cultural effects, a decision has been made in this dissertation to avoid these topics when at all possible.

However, Chapter 5 does deal with some aspects of legality. Rather, the site itself, its internal

patterns of behavior, and the possible industry interventions that can be made are the goals within this document. Correspondingly, as can be seen above, focus on specific user behaviors and user reflections about What.CD's culture. Outside of some basic classification info in questions 1-3, the focus of the questions was on user behavior and attitudes, not on their impressions of external forces like copyright law writ large.

Participants were found through recruiting on current private trackers and other online communities that focus on them. There are two private trackers that are considered the most direct descendants of What.CD, both of which were used to find participants. Additionally, the website reddit has a "subreddit" (a specific community within the larger site) devoted to BitTorrent trackers, located at [reddit.com/r/trackers](https://www.reddit.com/r/trackers). Lastly, a private subreddit for former What.CD members, located at [reddit.com/r/whatnextcd](https://www.reddit.com/r/whatnextcd), was also used for recruitment. Survey responses were collected using SurveyMonkey. 120 individuals provided responses, and no identifying information was collected. The goal of these questions was to ascertain the various cultural values held by What.CD users and possible logics that can be extracted from either standalone comments or patterns within the user sample. Accordingly, this chapter seeks to explore the responses to that survey based on various attitudes about the site itself, digital music, and about the site's governance.

Attitudes and Behaviors on What.CD

On the survey, questions 1, 2, 3, 5, and 10 all interrogated specific views about What.CD's structure, function, and culture. Like other digital platforms for a specific purpose, its design was intended to drive certain modes of interaction while limiting or outright prohibiting others. For instance, Gazelle, the software that handled load balancing and databases (backend management), only allowed for a maximum of 200,000 users, thus differentiating itself from

public trackers like the Pirate Bay that handle millions of users. In doing so, Gazelle's designers maintained both a sense of a closed, elitist community and a user base size that would ensure adequate torrent seeding. Similarly, the process of becoming a member, either through an invite or an interview, was designed to only let certain people in and simultaneously create a sense of community. In this section, specific attitudes of users will be explored according to their survey responses.

When asked how long they were on What.CD for, users responded according to this table and histogram:

Membership Length			
Value (years)	Frequency	Percent	Cumulative Percent
0.08	2	1.7	1.7
0.25	3	2.5	4.2
0.5	4	3.4	7.6
0.75	1	0.8	8.4
1	11	9.2	17.6
1.5	6	5	22.7
2	10	8.4	31.1
2.5	2	1.7	32.8
3	9	7.6	40.3

3.5	1	0.8	41.2
4	11	9.2	50.4
4.5	2	1.7	52.1
4.75	1	0.8	52.9
5	10	8.4	61.3
5.5	1	0.8	62.2
6	9	7.6	69.7
6.5	1	0.8	70.6
7	8	6.7	77.3
7.75	1	0.8	78.2
8	15	12.6	90.8
8.5	1	0.8	91.6
9	9	7.6	99.2
10	1	0.8	100
Total	119	100	

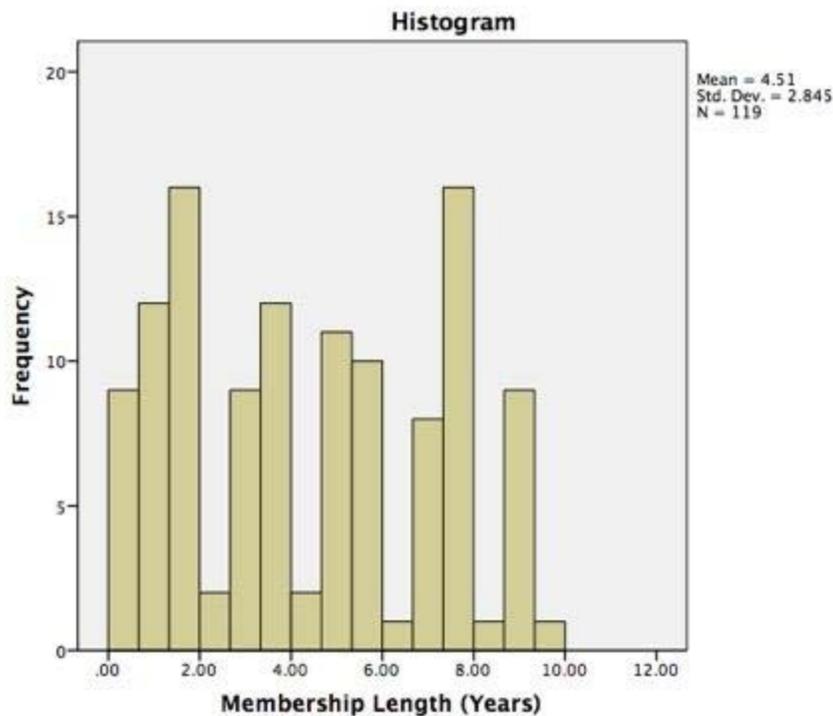


Figure 13: Membership Length/Frequency Histogram

Since What.CD only operated from 2007-2016, a span of nine years, the maximum allowed value is 9 (apart from one outlier who claimed 10 years of membership), with nearly 8 percent being on the site for its entire existence. It is worth noting that nearly as many people, 9 percent, were members for a year or less. As the histogram illustrates, nodes of users congregate around 2, 4, 5, and 6-year markers in a nearly even distribution. The mean duration on the site was 4.5 years, exactly half its age, with a standard deviation of 2.84 years. The most users joined at the 1-year mark (n=11), 4 years (n=11), and 8 years (n=15). 8 years represents 12.6 percent of all participants.

Interview/Invite

	Frequency	Percent	Cumulative Percent
Interview	56	47.1	47.9
Invite	61	51.3	99.2
Open Signup	1	.8	100.0
Total	119	100.0	

When asked how they joined What.CD, nearly half of participants (47 percent) indicated the interview process, while the other half (51 percent) joined through an invite. At the beginning of the site's operation, there may have been a brief time of open sign-ups, especially if users were known to be migrating from Oink, What.CD's predecessor. One participant indicated having joined through that method. While What.CD was still operating, a blog entry had mentioned that about 25% of people that were members came through interviews, so the numbers reported in this survey may be slightly high.

The interview was strenuous. Studying for it was time consuming, and there was little room for error while taking it. Many users have voiced frustration after taking it, and feel like it was too high of a barrier for entry to the site (see Figure 3). Because it was so difficult, one hypothesis is that users that gained access through the interview process valued their membership more highly than those who joined through an invite. Such a valuation would be

measured through more on-site activity, higher ratios, and survey language praising the site's successes.

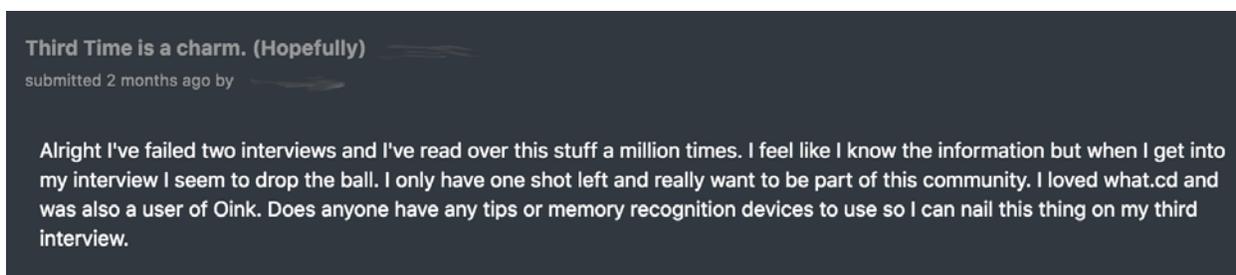
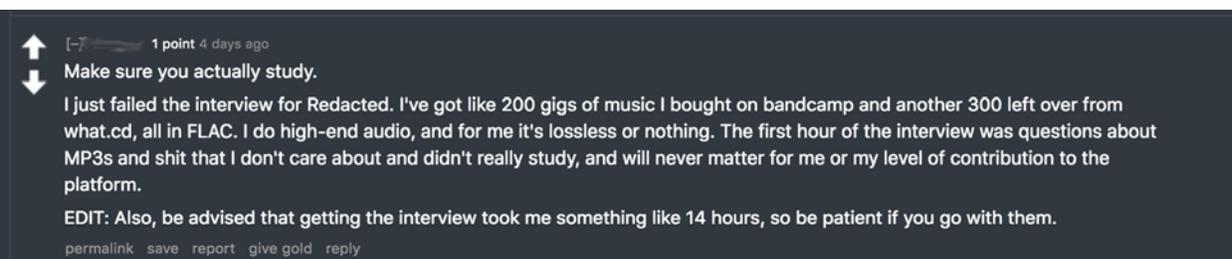


Figure 14: Comments from reddit.com/r/whatnextcd concerning the interview process for one of What.CD's successors, which was nearly identical to the interview for What.

User class was determined by the amount of activity uploading, downloading, and seeding torrents (a more thorough exploration of user classes is in the first chapter). The possibilities were:

- User
- Member
- Power User
- Elite
- Torrent Master
- Power Torrent Master
- Elite Torrent Master

Other user classes also existed, but were only attainable through administrative requests rather than maintaining metrics of any kind, such as "developer," "donor," "legend," and "staff." The following cross tabulation considers the relationship between how users joined What.CD and

the user class they ultimately attained, and may expose some attitudes and behaviors of those users.

	Interview/Invite			
		Interview	Invite	Total
User Class	No Mention	1	0	1
	Developer	0	1	1
	Donor	0	1	1
	Elite	22	21	43
	Elite Torrent Master	5	6	11
	Legend	0	1	1
	Member	3	6	9
	Power Torrent Master	1	0	1
	Power User	17	19	36
	Staff	0	1	1
	Torrent Master	2	2	4
	User	6	3	9

	VIP	1	0	1
Total	1	56	61	119

The most common groups were Power User and Elite, with 46 and 36 members, respectively. Approximately half of each joined through interview and invite, which indicates that the joining method most likely did not have any correlation with a certain amount of site activity. Thus, the hypothesis that members that interviewed may have felt more of a sense of ownership because of the increased labor required is proven to be inaccurate. However, it is interesting to note that most users were adequately active to become Power Users, which required uploading at least five torrents, a feat that would have proven especially difficult toward the end of the site's existence, since fewer holes existed in a comprehensive music library. Of the users that remained Users, six joined through interviews and three joined through invites, the opposite is true for Members, one class below Users.

The bar chart below describes the relationship between user class and length of membership. Of note is the one Donor and Legend belonged to the site for as long as it was in operation, nearly 9 years. Also, the greatest number of Elite belonged for 2 years or less, indicating that, even though the torrent collection was at its greatest in that time, members were still able to find recordings that had not been codified into What.CD's collection yet. The distribution of membership of Power Users seems to be the most even across the various time periods, with around 7 per span. The one survey participant who claimed Developer status was a member for 6-8 years, an unsurprising amount of time for someone who may have felt more a sense of ownership than other member classes.

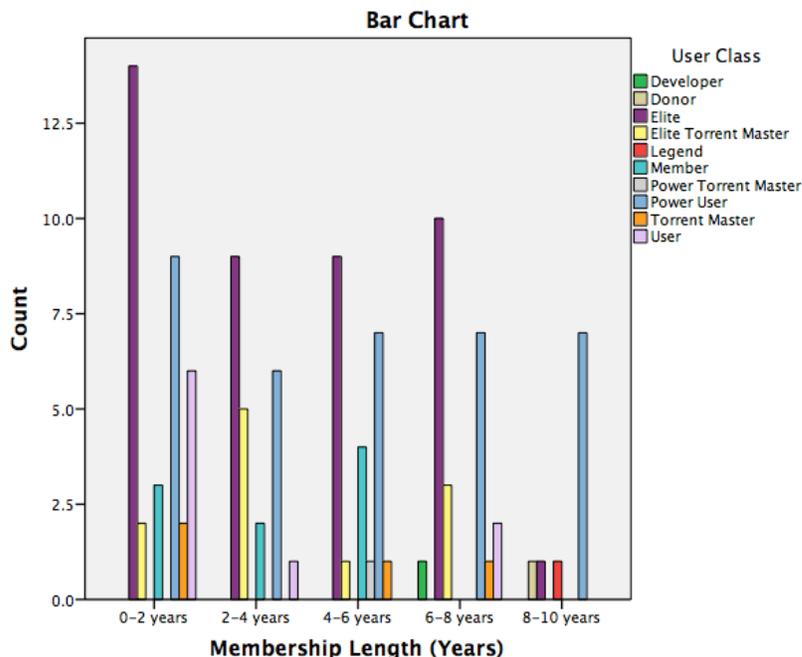


Figure 15: Bar Chart of Membership Length and Frequency

Question 5 of the survey interrogated notions of culture on What.CD: “How would you describe the importance of What.CD to you personally and from a broader cultural perspective. So, for example, would you say the site was important beyond its utility to you?” The responses from participants range from indicating major cultural importance to very little. On another axis, the responses reflect opinions about levels of use, in which some users were incredibly active, and others were only active to the extent that their ratio remained healthy or their musical needs were met. There is not any evidence that the two axes correlate, so it is entirely possible that users that were on What.CD daily did not think of it as a culturally valuable site. Conversely, some users could have used the site infrequently yet felt that it was culturally significant.

Keywords were compiled from Question 5 and then loaded into NVivo, a linguistic and qualitative research tool. The following word map was generated:

important	9	10	5.46%	important
library	7	10	5.46%	library
community	9	5	2.73%	community
knowledge	9	4	2.19%	knowledge, knowledgeable
musical	7	4	2.19%	music, musical
culture	7	3	1.64%	culture, cultures
preservation	12	3	1.64%	preservation, preserve, preserved
recommendations	15	3	1.64%	recommendation, recommendations
taste	5	3	1.64%	taste, tastes

Clearly, notions of the archival nature of What.CD were most often brought to mind in Question 5. At nearly 10% of the overall word usage, the site’s utility was most closely linked to its ability to store information in a useful configuration. Often, the decentralized structure of a private tracker was referenced as the reason for its success as an archive. One user wrote that “the loss of the metadata was the big loss to me. Communities come and go. The release of the data partially filled that gap.” This data was the result of the What.CD collective uploading and subsequently curating such a huge trove of information, much of which the previous chapter used as its impetus.

Another user described What.CD as “the world’s largest music library. A cultural monument of the digital world,” while still a different participant named it as “an irreplaceable resource. Information collected over years, by thousands of people, about thousands of artists and releases.” The actual number of artists is difficult to compare to other services like Spotify

or Tidal, but What.CD users were clearly under the impression that their archive was far superior to anything commercially available.

The mechanics of What.CD often attracted the attention of network specialists. One participant wrote that the utility of the site was impressive

Only from a technical standpoint. That it was able to host 250k users and track 2.5 million torrents in real time all while remaining anonymous and without major down time. 99% of paid websites aren't able to keep up those kinds of numbers. Let alone a free/anonymous service that only relied on donations. Amazing.

There is clearly some relationship between the fact that What.CD was able to maintain these impressive stats and its cultural importance. Otherwise, how would someone like this participant explain the technical excellence in the fact of no specific commercial motivation? Speaking of the tracker software itself, a participant wrote that

Gazelle, the backend code made for What.cd, is still used on lots of trackers. Many of their rules have been adopted by other trackers. They made a huge difference to the private tracker community, but I wouldn't say it goes farther than that.

While acknowledging the successes of Gazelle, this individual limits the scope of its impact to the closed world of private trackers, a sentiment rarely articulated elsewhere in the survey results. They are correct, though, that the development and implementation of such a tool has little utility outside of the technosocial sphere of a private tracker like What.CD. Additionally,

one participant even attributed his coding skills to the site: “I would never have become the programmer I am today if it wasn't for the hours spent working on What.cd.”

What.CD's utility was tied to its “community” values, which underlines the findings related to how generally useful the site was. Online communities are generally difficult to define, as they are amorphous, transient, have blurry boundaries, and are often more contested for their community status than a city or a mosque. Nonetheless, What.CD was clearly interpreted as a vibrant community by the respondents to this survey. Question 5's responses were manually coded in a cascading manner, in which the first filter was whether or not the site was useful. The following frequency table was generated:

Was What.CD Useful?	Frequency	Percent
N	17	14.7
Y	99	85.3
Total	116	100

A considerable majority found the site useful. The second filter sought to differentiate those who found the site useful for personal reasons from those who found it useful for “cultural” reasons (as nebulous as that term might be, it appears participants understood its meaning in this context), as well as those who found it useful for both. Of the approximately 100 participants who found the site useful, these percentages were found:

Cultural/Personal	Frequency	Percent
Not Useful	17	14.7
Both	18	15.5
Cultural	38	32.8
Personal	43	37.1
Total	116	100

The highest percentage of participants found the site personally useful, and the following comments summarize some of the sentiments from users who found utility in various features such as the following individuals:

Before I would just listen and download from YouTube, after w.cd I actually started to value quality, bought high end headphones, bought CD's, not only to upload them to the tracker, but also to just to build a music collection outside of my HDDs. Basically it took my music 'taste' to a whole other level. I think it also made me appreciate other art forms a lot more than before. And I'm afraid it released my inner datahoarder. I felt genuinely sad when it went offline. That's when, for the first time, I felt its effect on my life had far exceeded its immediate utility.

I actively purchase merch (mostly new vinyl) from artists I truly enjoy, and without What.cd my vinyl collection would probably be 25% of what it is. It's my opinion that others acted as myself, so that in a broader sense this was the most valuable impact of What.cd to the music world. I can say with certainty that through What.cd I exposed friends not on What to great new music that they would otherwise never have known of as well. To summarize, I believe the importance was a level playing field of exposure for artists. I won't deny that the pirating aspect was a big contributor to its effectiveness though.

It was like a big library for me. I actually work in classical music, and it was incredibly useful to have everything I needed available at a couple of mouse clicks. Yes, because of the effort put into curating the material, I think it was an important worldwide resource.

Of the 38 participants (the next-largest group) who found the site of purely cultural importance, individuals cited the ability to locate hard-to-find recordings:

From a broader cultural perspective, What.CD was pretty much the only place to find some rare releases that would otherwise be forgotten. Incredible works of art should be preserved and therefore What.CD was of great importance.

The same sentiment was echoed by another respondent:

One of the groups that I liked, at the time, had a few releases. But, one of the What.CD members was friends with the group. He uploaded stuff from them (probably against What's rules). That was impossible to get *anywhere* else. Furthermore, there was a supergroup that released one album. The album stopped being produced. Being in the States and the group being in Europe it was impossible to obtain (and I'm willing to buy stuff and get it imported), literally impossible. But, on What.CD the FLAC's were available.

Here we see that, while other users admit to piracy being baked into the What.CD model, many of its users were willing, and in some cases extremely motivated, to participate in the marketplace. Sometimes, as in the instance above, there was no way to find recordings other than through What.CD. While we might categorize such individuals as “super-listeners,” it is clear to see their devotion was to an artist and a subsequent desire to have a complete discographic record, however that might be gathered.

A sense of cultural importance could either be driven by What.CD's archival tendencies, or by its ability to foster a community, both of which have already been explored in some ways so far. One participant was so convinced of the site's community-driven ethos to call the site a “great, supportive, intelligent community, in addition to being a great place to find music recommendations and to download stuff.” While the site's ability to be community-driven was less commonly brought up than its value as an exploitable resource for music acquisition, the

fact that some respondents felt strongly about its accomplishments in connecting music fans with each other exposes the multiple and intertwined motivations its designers and users had.

Many survey participants mentioned their ability to find new music:

It really broadened my mind and opened me up to a lot of new musical landscapes. I discovered jazz and classical properly through What, for example, and found my taste in it.

I spent nearly 25% of my life downloading music from What. It helped open my eyes to new genres of music and helped me discover acts to which I never would have been exposed if not for What. I went to shows based on recommendations from people on the forums and met some incredible people (musicians, fans, booking agents, tour managers, etc.) at those shows. What is without a doubt the most important website I have been able to utilize over the course of my life. As a 31-year old who has grown up with the internet, I think that is a testament to how important it was to me.

What.cd was by far the most influential thing in my life on music consumption. I listened to/found far more through it than I ever did before or could have otherwise. It was the greatest music database ever accumulated, and on top of the music itself had more and more reliable data on music (album covers, different releases, metadata) than any other site ever.

While Question 5's purpose was to extract opinions about What.CD's utility, we can see that the content it produced bled into other issues that surround the site, including the availability of music, the purpose of its existence, and the site's role in the larger landscape of digital music repositories.

Attitudes about Digital Music

Some other questions on the survey interrogated various aspects of how former What.CD Members listened to music. Specifically, questions 7, 8, and 9 all centered on listening practices:

Figure 17: Word Cloud for Question 7

The term “rock” is the most commonly used genre descriptor (used 42 times in the question responses), which is broad enough to encompass a great deal of artists and bands.

However, words like “lossless”, “unreleased,” “obscure,” and “anything” suggest that stylistic parameters did not drive the search and download habits of all What.CD members. Many survey participants emphasized the breadth of musical variety they were interested in, rather than name specific genres. Additionally, many used the site as a music discovery engine, rather than just a place to locate rare or hard-to-find music they already had some preexisting knowledge of. It is interesting to note that simply reading through these comments will expose most people to genres that are generally unknown, like “filk,” a folk-based music with lyrics steeped in science fiction, or electro swing, which borrows elements of both modern jazz and dance-oriented electronic music.

For Question 8, the responses were tallied according to those who used legal services. 56 participants said they did not use any music service other than What.CD, while 60 confirmed the use of some other service. Of those 60, the following frequency table represents the services named:

Legal Services	Count
Apple Music	1
Boomkat	1
Deezer	1

Juno Download	1
Rdio	1
SoundCloud	2
Tidal	2
Youtube	2
iTunes	3
Bandcamp	4
Google Play	9
Pandora	9
Spotify	37
Grand Total	73

Respondents explained their use of other services, as well as their dissatisfaction with those services. However, the fact that a small majority of participants used What.CD in tandem with legal services indicates that they did not have an aversion to paying for music. The contrary is often true, in fact, as some of the above responses to Question 5 suggest. Below is a list of reasons that users mentioned specifically for preferring What.CD:

Reasons	Frequency
convenient	1
ease of use	1
easier to use	1
finding new music	1
functionality	1
music discovery	1
pay artists	1
regular listening	1
reliability	1
rip music for What.CD	1
simplicity	1
supplement What.CD	1
support independent artists	1
to fill What.CD requests	1
casual listening	2
discovery	2
support artists	2
variety	3

portability	8
convenience	9

Interestingly, some of the same reasons were named for preferring paid services (emboldened entries appear on both lists):

Reasons	Frequency
availability	1
DRM-free hoarding	1
harder-to-find music	1
higher quality	1
portability	1
privacy	1
reliability	1
cared about	2
community	3
control	2
convenience	3

ownership	3
discovery	5
quality	6
variety	9

“Portability” was used to describe the ease with which streaming services did not require any premeditated downloading, whereas What.CD files could be loaded onto a cell phone or music player (such as an iPod) and played. “Reliability,” similarly, carried positive valence for both types of platforms, since What.CD did not require any real-time internet connectivity, but such connectivity was dependable enough to be considered the more dependable option.

“Convenience” is broad enough to encompass characteristics of both platform types, for What.CD is refers to the ability to find whatever a user is looking for. For something like Spotify, it means being able to find desired music quickly, and more importantly, being able to play or download it on demand.

“Discovery,” interestingly, is a specific activity that participants in both groups found effective for their listening practices. For streaming services, affordances like themed radio stations and recommendation engines drive users to explore music that is somehow adjacent to music they are already listening to. What.CD members would have used components like collages, forums, and free-leeches to find new music. While in the first instance, an algorithm is making suggestions, the latter employed mechanisms curated by other users. It should also be noted that many participants also noted that What.CD was only useful for obtaining music they were already aware of. Also, for those who employed both types of platforms, there was some

crosstalk between the two — a user might be listening to a Pandora station and hear a song they liked, and then go to What.CD to find the entire album or discography of that artist.

Similarly, “Variety” resonates as a common characteristic of both platforms, a term that can be easily mapped on to paradigms related to any sizeable archive of music. However, it was much more commonly invoked when describing What.CD, especially in its ability to satisfy desires to find obscure recordings. One participant wrote that

Both platforms [Pandora and Spotify] were missing alternative versions of records. Sure, both services have Purple Rain, but the best version is the CD release from West Germany. WCD had it, others didn't.

In this instance, we see that it is not only variety of different musical artists, but of different versions of the same release, of which the previous chapter discusses the importance. The two approaches to variety expose the diversity of listening practices that digital music archives engender. While commercial interests like Spotify, Pandora, and Apple Music benefit from narrowing the possibilities of listening to the ones that their services fulfill, What.CD was shaped by the collective desires of its user base. So, if a user wanted to listen to the West German release of Purple Rain, they could request it or upload it themselves.

A fitting conclusion to the discussion of Question 8 is the following response concerning the use of different platforms:

I used iTunes, Spotify, and Bandcamp when it came along as well. iTunes is for sorting my music so it mostly resembles my CD-collection of yore, as it was my easiest way of processing the large amount of music I owned, and loading it over to my iPod. Spotify is just an easy way to play whatever I feel like listening, wherever there's internet. My "physical" music collection, as in the downloaded files, aren't as handy. Bandcamp is a handy way to support artists directly, and get a hold of music that's not on What.

In some ways, the spectrum of attitudes about digital music from this sample population do not diverge from that of the general public. Additionally, the activity of users on What.CD should be interpreted as “para-capitalistic,” as their motivations for uploading, downloading, and

communicating about music are all oriented around market-based activity, but extend to solutions that those markets have yet to consider or provide.

Attitudes about Governance

Early on in this project, a conversation with Stephen Witt, a longform journalist, began the process of thinking about What.CD and the various regimes under which it is governed. When I mentioned that the activity on What.CD seemed to be egalitarian, possibly even democratic, Witt was quick to disagree and offer an alternative explanation for the behavior of users on What.CD and other private trackers, which mirrors what other scholars have said on the topic (Durham, 2013). Totalitarianism dominates on private trackers; as previous discussion of the site's rules demonstrates, the pressure that each member was under forced them to digitally behave prescriptively. As a result, any analysis of activity and attitudes must be viewed through the lens of that predefined range. Similarly, copyright policy lurked in many corners of What.CD, it would show up from time to time on the site's forums, and was ever-present in the music that was being pirated.

The more tangible of these two regimes was certainly the site's internal governance, which, at first glance, suffered under a demand for strict adherence to rules regarding ratios, documentation, and argumentative behavior in forums and on IRC channels. The following section will explore user attitudes towards this digital totalitarianism, particularly in what its advantages and disadvantages may have been.

Such a discussion must begin from the premise that all the former users that were surveyed, and most members in good standing more generally, visited What.CD frequently and interacted with the site because it was something they bought into and about which they were

enthusiastic, albeit at varying levels. This graph illustrates the range of enthusiasm various user types may have embodied:

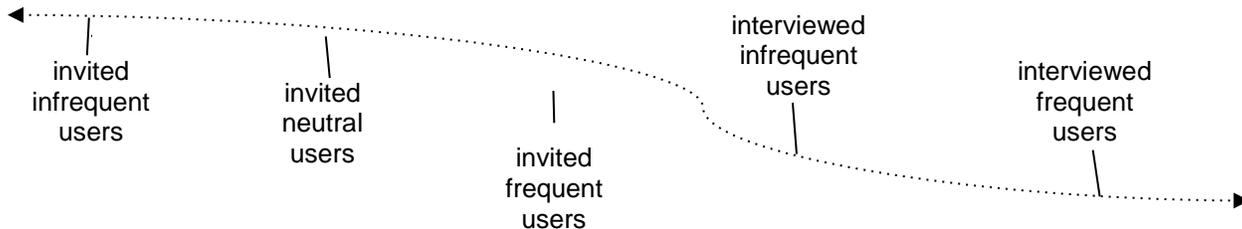


Figure 18: User Enthusiasm Spectrum

Generally, the method of joining What.CD had some relationship to the enthusiasm they had about the site. Members who were invited did not have to wait in a long queue or study for a rigorous entrance exam. Because their membership was not hard won, perhaps they viewed it as more disposable. In turn, this may have had an impact on the level and quality of their interaction. Conversely, users who did wait in a digital line (that may have lasted for hours) took the interview may have felt more ownership over their What.CD membership and thereby embraced rulesets as the key to being a productive community member, the result of which was improving an archive they were excited about.

The number of rules and the issues they governed were not superfluous or arbitrary. Rather, they acted as a guide to mediate and foster a shared enthusiasm. In that way, the governance had a direct relationship to the affective status of the site's user base. The extreme sadness, shock, and sense of loss expressed by What.CD users directly after its closure demonstrate its strength as a community despite a strong top-down power structure. As some

scholars argue concerning digital communities, authoritarianism, or at least hierarchical social relationships, must exist for meaningful interactions to occur (Richardson & Lindgren, 2017).

One of the early promises of the internet was egalitarianism, particularly in social spheres that may have previously been authoritarian or otherwise non-discursive (Papacharissi, 2004). Such egalitarianism necessitates horizontal relationships, that is, those between peers, that are as robust as vertical relationships, which indicate a power differential. However, the scarcity of examples of online social groups that demonstrate that digital ideology, which favors horizontal relationships, challenges the notion that the internet is a place where serious democratizing work can take place. One need look no further than any of the recent political movements largely organized online, such as the Arab Spring, Occupy Wall Street, Black Lives Matter, #MeToo, and a host of others, to see that leadership is required for longevity (Kavada, 2015). Similarly, What.CD was rife with artifacts that promoted ordinary member activity as the driving force of the site and the main reason for its success, while constantly being underpinned by rules, procedures, and top-down decision making.

Treré and Barassi (2015) explore the example of the Italian politician Beppe Grillo and his 5SM political party that came to prominence following a 2013 election. They assert that, while web-driven communication encouraged populism to a certain degree, the end results, “far from being horizontal and participatory, legitimized authoritarianism, populism and leadership.” While the initial campaigning and organizing took place on Web 2.0 platforms and had an anti-establishment manifesto, its techno-fetishism only served to reproduce the same power structures that preexisted the 5SM movement. The authors seem to draw many comparisons between old, Berlusconi-era tactics and this new, blog-oriented political movement.

In the same way, What.CD’s discourse and file-trading activity, while both criticized for its authoritarianism and celebrated in the light of technological utopianism, struck some balance

between them that generally reproduced social structures that sociologists and anthropologists are more familiar with. One survey participant responded, “I believe the importance [of What.CD] was a level playing field of exposure for artists. I won't deny that the pirating aspect was a big contributor to its effectiveness though.” Horizontal and vertical social structures are thus put into sharp relief, ultimately suggesting that neither description is very useful or accurate. Even hybridizing the two might leave some behaviors as unexplained, like the seemingly lax position the recording industry itself has taken on private trackers⁶. What is suggested here, then, is an approach to power grounded in the lived experiences of What.CD users, especially the participants of the survey instrument. Their comments, as well as the larger narrative extracted from them, suggests three findings: (1) enthusiasm was garnered *because* of the rule sets and copyright law, not in spite of them, (2) at some level, the rules became transparent to the site's operation for most users, and (3) horizontal relationships were valued more than vertical ones while vertical mobility may have had negligible impact on horizontal relationships.

The rule sets of What.CD, though more thoroughly explained in a previous chapter, were largely inherited from Oink, the site's predecessor, and have been passed down to What.CD's successors. They governed every action related to uploading and downloading down to a very granular level. They emphasized accuracy and procedural honesty, which became well

⁶ Caraway (2012), in a survey of some 250+ BitTorrent users, established that many do not fear the legal implications of filesharing that the RIAA and MPAA have historically threatened. This is either because protective measures like VPNs are used or because those industry groups have adopted a different strategy for curbing piracy. Lately, the recording industry specifically has chosen to go after more large scale offenders and using its international muscle to shut down websites like What.CD (Mitchell et al., 2018). However, even this action was preceded by nearly ten years of What's uninterrupted operation, during which the Pirate Bay was hounded by content industries. This suggests that the relatively small user base of What prevented it from being a major target by the RIAA until 2016. Generally speaking, private trackers present much less of a challenge to the recording industry than their public counterparts, and litigating their crimes in court proved hugely embarrassing for Oink's prosecutors (What.CD's predecessor, Sockanathan, 2011).

known community values as a result. Many other private trackers have also been affected by this practice and utilize similar mechanisms to govern behavior and activity. As users participated in uploading and downloading music, their enthusiasm for listening to a particular artist, for finding lossless audio, or for amassing a private archive all reveal the predicate enthusiasm for the rules that allowed for that content to exist in the first place. When asked how they would describe their use of the site, one user responded that it was a “great place to get obscure music in high quality, to discover new music via the extremely comprehensive tagging system and collages,” indicating the required adherence to the rules facilitated the accurate retrieval of highly sought-after music. Another user commented that “it was an important place for archiving/preserving music that otherwise could have been lost for good,” which also would not have been possible without What.CD’s structure and organization.

Such enthusiasm is clear to see when compared to the general indifference or even malaise that surrounds the use of public trackers like the Pirate Bay. Generally, internet users are not excited about the prospect of using the site, they merely do so out of necessity. Or, at the very least, there is very little sense of community excitement that stems from the use of those platforms⁷. Interestingly, there are very few rules there, too: there is no need to maintain ratios, upload original content, quality check audio, or fulfill requests. While assuming a direct relationship between the rules and enthusiasm at What.CD would belie the complexities of affect on the site (even as the term enthusiasm does), it is useful to map the general excitement onto a set of specific practices that were made available because of the rules.

⁷ Lysonski, & Durvasula (2008) establish that most people who pirate music are neither fearful of litigation nor ethically opposed to the activity. Furthermore, the enthusiasm that What.CD generated is never replicated in studies that seek motivations for public BitTorrent piracy (Hinduja, 2007).

As far as copyright is concerned, ambivalence dominated any discussions and the survey data analyzed, as a previous chapter discussed. Efforts within this dissertation have sought to decenter the general hegemony with which IP policy is treated, because user attitudes about it were just not as common, influential, or polarized as industry-oriented discourses generally imply. A few hints suggest general support of copyright, even though the very premise of the site requires its transgression. Namely, at least two people surveyed work in the music business that depends on copyright policy to remain solvent. Additionally, enthusiasm about a certain musical artist or work is difficult to extricate from a related excitement about the policies that govern its traditional distribution. One respondent wrote that “I believe the importance was a level playing field of exposure for artists. I won't deny that the pirating aspect was a big contributor to its effectiveness though,” indicating that while users were aware of copyright policy, breaking those rules was not as important as following the site's internal rule sets. Another participant wrote that “... legal or otherwise, so it was important for the preservation of these recordings. It was truly impressive in its scale.” While users generally knew about copyright, breaking those laws had no immediate consequence, and the risks that were associated with transgressing that policy were more than worth it for finding and preserving recordings.

The second finding, that the rules and other forms of governance became naturalized, offers insight into how users might generally stay interested in a digital space that, on its face, seems so oppressive. While a user was browsing for music, uploading new content, or discussing music in the forums, the rules were not bearing down as they might in a prison or a courtroom. Rather, their invisibility functioned in a similar manner to the governance found on social media and other digital platforms that have terms of service, license agreements, and explicit content policing. While interacting with the site, various affordances shaped by governance never

throttled simultaneous notions of community and the social importance all the kinds of interaction. One user commented that

“Personally, [What.CD] meant a lot to me. I checked it multiple times daily and heavily relied on artist and label notifications to keep up with new uploads. Culturally I think wcd was important as what I assume would have been the largest archive of high quality FLAC rips in the world, or of music generally. It was so well organized and cataloged. I also imagine there were many out of print, rare, and difficult to find albums that were available nowhere else...”

Simultaneously, we see the presence of the most appreciated aspects of the site, namely high-quality audio and meticulous organization, both of which were the result of governance decisions. In survey responses, though, there is never an explicit mention of the rules or their regime, because they became naturalized to users.

The third finding, having to do with horizontal and vertical relationships, suggests that relationships among peer groups were more important than relationships characterized by authority differences. Several respondents commented on the role of friend making on What.CD:

“I found some great friends on What though and we are still in contact.”

“A source of music, a way to discover music ... and a method to meet a couple good friends.”

“I chatted in IRC for a while but me and my friends moved to a different chat client after a while.”

“I made friends all around the world, and the forums because part of my daily routine. I felt like I knew some users there better than people I knew in real life.”

“Yes, for forums, I just chatted in many, various topics. I found that compared to public forums that What.CD was a lot more mature and friendlier. For IRC, I was mostly in #hiphop, and have met some fantastic individuals whom I still keep in contact today.”

In contrast to this sentiment, there is no mention of vertically-oriented relationships, negative or positive. No respondents thought that rule enforcement was fair or biased, only that site structure and organization facilitated certain modes of relationship development.

The beginning of the chapter took up the subject of user rank and what links that might have to other metrics, and unfortunately there was no data related to the relationships various ranks had to other members (friends, individuals whose activity they follow closely). However, the fact that some survey participants voiced an extreme feeling of loss of community, as well as friends they stay in touch with well after What.CD's closure indicate that the vertical relationships were considerably left impactful than those that centered on enforcement of rules.

Conclusion

This chapter analyzed data gathered through a survey instrument, specifically looking at how it reflected opinions and attitudes of former What.CD members. The goal of the questions was to ascertain the various cultural values held by What.CD users and possible logics that could be extracted from either standalone comments or patterns within the user sample. The findings related to discourse on the site, attitudes about digital music, and the role of site governance are all a critical component of the site's narrative, and to the effects of digital platforms more broadly. The next chapter will interrogate various notions of legality as they pertain to private trackers.

Chapter 5: Digital Music and Legal Issues: Why Discussing Piracy is Passé but the Law

Still Matters

Introduction

This chapter discusses the legalities of digital music in the context of private BitTorrent trackers and other services by considering current legal regimes and various national governance contexts. However, it does so with the pretext that everyone admits that piracy is illegal. Therefore, while a small space is taken up with a discussion of copyright, its industrial, philosophical, and practical shortcomings have been heavily documented elsewhere. Because copyright is woefully incapable of appropriately governing a vast swath of cultural activity online, I assume that both legal and illegal listening carry significance and should be treated equally by academics and the music industry. The music that members on What.CD shared was nearly entirely illegal under current U.S. copyright regimes, and very few users would argue that, the discussion in this chapter centers on processes that can narrow the gap between digital listening practices and the various policies that attempt to regulate them.

One example of the disparity that exists between listening and the law is in this example: In late September 2017, a European Parliament member unearthed a study on piracy. Julia Reda, a member of the German Pirate Party, found a 300-page study paid for by the European Commission by submitting a Freedom of Information request, a document she only gained access to after requesting it three times (Reda, 2017). After finally gaining access to the document, its findings revealed no certain connection between piracy and any sort of sales displacement (Ecorys, 2015). Advocates of the Pirate Party and Copyright Libertarians were quick to chalk the original commission up to a witch hunt and describe the ensuing report as

being factually impotent (Brown, 2017) and an attempt by content industries to demonize piracy as a reason for stronger media protection online. Those who suppressed the document within the European Parliament, on the other hand, allowed some scholars to suggest that piracy has overall negative effects on media sales (Herz & Kiljanski, 2016).

Both were equally bombastic claims, and what is most likely, however, is that a more complicated relationship between piracy and legal sales exists. Both the pirates and the industry representatives have ideologically-driven agendas that may prevent them from seeing the full picture of how piracy and legal markets interact, influence each other, and coexist in digital spaces.

Because of these real-world complications, this chapter suggests that a balanced view that takes legal contexts, on one hand, and cultural factors, on the other, into consideration will provide a more effective framework than either legal studies or cultural studies tools on their own. As a media example, digital music will be explored from both angles: specific legal contexts within Europe and the U.S., as well as the important cultural roles of both legal and illegal online listening. The main conclusion of this exploration is that listening is reductively categorized because of current epistemological regimes, and that illegal and legal listening play an equally important role in the understanding of digital media consumption.

In short, the suggestion of this chapter is that the statuses of "legal" and "illegal" grossly miss the mark for appropriately governing media consumption. This shortfall is the result of several factors which have all been thoroughly analyzed, namely the persecution of piracy (Sinnreich, 2013), the inability of copyright policy to keep up with technological change (Patry, 2011), and the difficulty in assessing the relationship between piracy and legitimated consumption (Ecorys, 2015). Also, many of the "illegal" acts of which individuals have been

accused are questionably so by a wide range of interests, not just copyright libertarians (Calboli & Ragavan, 2015).

In place of the legal/illegal dichotomy, it is suggested that legal scholars invoke terminology based on the general effectiveness of a platform or practice. Specifically, the fact that a platform facilitates copyright infringement should not deter us from thinking about the positive cultural effect it has on digital culture. This concept will be explored in the case study section. It is interesting to note that there is rarely an economic model that fits all digital products (film, books, video games, music). While this is somewhat recognized by policymakers and the respective industries, adopting the suggested terminology shift will allow for greater flexibility to shape laws around the practices involving those specific products.

Current Legal Regimes

Just like its impact on the movie or publishing industries, digital developments have had a transformative effect on music and how copyright deals with it. Siva Vaidhyanathan writes that “music, more than any other vehicle of culture, collapses the gap that separates idea from expression” (p. 117). The shifts that are written about are done with the assumption that, over the past 100 years, copyright’s term has increased to its current length of the life of the author plus seventy years at the request of content industries, namely the movie and music industries (Patry, 1996).

Some new media scholars are hesitant to draw a clean distinction between “the digital” and its predecessors especially when it comes to copyright policy, since its 100-year history has much to do with its current successes and problems. At the very least, the problems that arise with private trackers could not have taken place in a pre-digital world because they have to do with flawless copies and manifold distribution. Although many make the mistake of assuming

this means that society has been upended, the changes have been subtler and stacked on top of pre-digital practices. As Robert Merges (2011) writes, copyright policy is like a “sprawling, chaotic megacity... Construction cranes are everywhere. The old city center — the ancient core of the field— is today surrounded by new buildings, new neighborhoods, knots of urban growth, budding in every direction, far off into the distance” (p. 1).

Furthermore, Penalver and Katyal (2010), in their discussion property disobedience, although not fully endorsing illegal behavior, find some benefit to pushing the boundaries on IP ownership by equating it to squatting and other forms of physical property transgression: “Particularly in cases of protracted and pervasive acquisitive free riding, these transgressions may demonstrate the need for a responsive legal shift to update an ossified regime of entitlements or to address the presence of high transaction costs that preclude efficient transfers” (p 174). They use the term “altlaw” to describe someone who participates in a practice that exists in a legal grey area, such as sharing files under the claim of fair use. An altlaw’s action, while not fully legally endorsable, might give legislators and judges a good idea of where legal and technological solutions are best positioned because they directly suggest a consumer’s preference as far as formats and devices are concerned.

Unfortunately, the law, and especially the current state of copyright law in the U.S., does not do well with grey area. In delivering the opinion of the Supreme Court in 2007, Justice Souter wrote that someone “who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties” (MGM v. Grokster). The opinion also indicates that Grokster and other similar platforms had an explicit interest in attracting former Napster users, a piece of especially damning evidence when determining if Grokster was a “contributory infringer.”

A common discourse used by courts and plaintiffs in these filesharing cases is one that presumes that copyright directly protects, rewards, and incentivizes creators to keep creating. For instance, to quote Justice Souter once more, the “values of supporting creative pursuits through copyright protection” are ones that the Court should uphold. Patry, however, would argue that the legal system’s use of the term creativity differs significantly from its broader understanding: “copyright law has rejected the subjective approach to creativity usually found in the popular usage of the term” (p. 19). Because creativity is measured through the commercial success of a work, a trap that Merges (2011) also seems to fall into when defending the current copyright regime, vast swathes of artistic practices are either ignored or minimized. For example, authors who have either released work under Creative Commons licenses or infringe on copyrighted works in the process of making their own truly creative work (and thereby forfeit any financial remuneration for their work) are not covered by current notions of creativity found in the Copyright Act.

Many thinkers (Lessig, Vaidhyathan, and others) have considered the commons more seriously when it comes to copyright and the Internet. Bollier and Pavlovich (2008) write that it “is a new paradigm for creating value and organizing a community of shared interest” and a “vehicle by which new sorts of self-organized publics can gather together and exercise new types of citizenship” (p. 1). Although copyright policy resonates with some online activity, like selling it on iTunes or licensing it for Spotify streaming, many practices, like filesharing, fall so far outside the bounds of what can resonate with current policy that it can do nothing but condemn it.

The commons, historically tied to issues of land usage in England and the American West (Penalver & Katyal), also make sense for thinking about the cultural content that authors have at their disposal within specific contexts (such as the U.S., YouTube, electronic music).

When all these contexts are partially or wholly digital, the ease and likelihood with which users can copy content exposed issues that courts had, until the 2000s, yet to deal with. While courts have almost exclusively condemned the new uses as patently infringing according to current copyright law, they have simultaneously placed a stigma on legitimate uses of filesharing technologies and any expansion of the commons that authors in which authors may be interested (Sinnreich). In the case of Arista, Limewire's role as a "vicarious" copyright infringer (among other things) means they had the "intent to foster ... infringement" (Moser and Slay, 2011, p. 200). On its face, the use of sound recordings on a platform like Limewire, regardless of their legal status, should be considered an expansion of the commons, and the inability of the Court to acknowledge such an expansion is indicative of the previously mentioned disconnect between copyright policy and musical practices (and therefore its usefulness).

Siva Vaidhyanathan, in a historical analysis of the development of copyright in the U.S. and particularly Mark Twain's role in it (2003), notes the fact that, over the course of his career, he was first an unestablished author who benefited from piracy and then one who benefited from stronger copyright enforcement. Although the author is clear in emphasizing that great thinkers often contradict themselves as they pass through different points of development, such a change in opinion indicates that different types of authors prefer different copyright treatments. The current copyright regime, as rewarding as it can be for some, is also inflexible in the options it presents to a large percentage of its practitioners. In infringement cases, there is little argument that legal standards for infringement have been violated; additionally, the argument that conditions for such activity to be considered infringement were set by the creative industries during the passage of the Copyright Act of 1976 and the Copyright Extension Act of 1998 is not hotly debated (Tehrani, 2007), and therefore such suppositions deserve a

legal reconsideration. A resulting “nation of copyright infringers” indicates the degree to which courts were out of touch with practices and norms.

There are a great many reasons why legal scholars find copyright problematic:

- For Aufderheide & Jaszi (2011) and Bunker (2010): The problem is the shrinking of the fair use doctrine, and the solution is broadening the type of material and circumstances it can be claimed.
- For Balkin (2014), the problem is that communication practices have become too privately centrally controlled, and the solution is to rethink “new school” regulation to conform to the changing technological landscape.
- For Bollier (2001) and Pavlovich (2008), the problem lies in policy not keeping up with technological developments, and the solution is following “open movements” to their logical end to come up with a “new species of citizenship” (p. 294-304).
- For Boyle, the problem is a shrinking commons, and the solution involves reinventing it before we can save it (p. 7).
- For Burkhart, the problem is that copyright law caused an invasion into the lifeworld that disconnects our musical consumption from any traces of reality, and the solution is to radical activism through organizations like the EFF (chapter 1).
- For Mazzone (2011), the problem lies in “the gap that exists between the rights that the law confers and the rights that are asserted in practice” (p. 12). The solution lies in modeling copyright policies of other countries and empowering citizens to fight against the overreach.

- For Silbey (2010), the problem lies in agents of change using the same rhetorical strategies that their opponents are, which are largely based on mythological origins of the author (2008). The solution is to pay closer attention to this discourse (p. 267).
- And for Tushnet (2004), the “problem is that the concerns of copyright, though they relate to the production and circulation of speech, are orthogonal to those of free speech, and neither one can be resized to fit the other” (p. 590). The solution is to keep the arguments and discourses somewhat separate, a suggestion that goes against the ideas of Bunker (2009).

The issue that seems mostly answered at this point is the novelty of the digital turn. Both scholarly studies and more popular notions of the digital have reached a point of maturity that is reflected in thinking beyond the processes themselves. Richard Rogers (2013) writes that Internet research should move “beyond the study of online culture and beyond the study of the users of ICTs only” (p.4) to consider useful frameworks like political action, extreme inequality, and true innovation. Rogers goes on to say that we should “follow the methods of the medium as they evolve, learn from how the dominant devices treat natively digital objects, and think along with those object treatments and devices so as to recombine or build on top of them. Strive to repurpose the methods of the medium for research that is not primarily or solely about online culture” (p. 5). The emphasis on moving forward from research that centers around particular online communities as sites of resistance or solidarity makes sense in that modern practices are usually housed in the physical world.

One of the issues that will inevitably persist into the next 15 years is that of who controls copyright policy. Although most scholars suggest reforms of various kinds to narrow the policy/norm gap that is a yawning chasm, policymakers in the U.S. do not seem to be in touch

with them or even with D.C.-based organizations that promote reforms such as Fight for the Future, FreePress, Credo, Public Knowledge, the EFF, and Demand Progress. Rather, members of Congress and employees of the Copyright office are more likely to listen to lobbyists and industries that can hire powerful law firms. The issue of control over copyright policy is also part of a broader concern about the rights of a democratic society to pursue values that fall outside those of corporate, transnational interests.

Unsurprisingly, then, the control over the future of copyright policy has two parallel and interwoven sets of topics: its corporatization and the transnationalization. Corporatization, which is very real according to much literature but also a specter that avoids direct identification, is evidenced by the lengthening of copyright terms, which has largely been achieved through lobbying of content industries. In both the Copyright Act of 1976 and the Copyright Term Extension Act, the length for which an author can hold the exclusive rights was increased to its current time of life of the author plus 70 years. Additionally, corporations flex their litigation muscles through the witch hunt for pirates. It has been noted that not only has this proven ineffective for curbing piracy, but it has also alienated the music industry's customers (Sinnreich, 2013). Although some artists such as Howard Kaylan and Mark Volman from The Turtles⁸ and organizations like the Future of Music Coalition believe in long copyright terms that might prevent them from being used productively by the public, there seems to otherwise be an agreement that an increasingly long copyright term is not good for authors or their audiences.

⁸ In 1989, Kaylan and Volman sued hip hop group De La Soul (http://articles.latimes.com/1989-07-23/entertainment/ca-392_1_de-la-soul), for a song that had long been out of popular rotation. Additionally, the FMC has noted on several occasions they are in agreement with the lengthening of the copyright term as it seems beneficial to professional songwriters, some of whom are powerful members of their constituency (futureofmusic.org).

Levels of Governance

What.CD's legal status was never questioned in that it was decidedly illegal. However, its users are still citizens of countries all over the world, namely in the west. It is therefore appropriate to consider the legal regimes provided by different countries and jurisdictions with the goal of demonstrating how fragmented and ineffective they currently are. Such inefficacy may have left space open for What.CD to thrive for so long, but also causes problems like the permeation of U.S.-led copyright initiatives that are culturally damaging and uneven prosecution of internet users across these various jurisdictions. When an agency of the French government shut down What.CD, they were not doing so in a vacuum. The site's shutdown was a major loss of culture by all its members and proponents.

Under current law, digital music is also governed by laws bound to geographical regions at several levels, such as the European Union and North America. To consider the national legal contexts of a few different places and the possible impact they have on the more holistic approach to digital music governance that is being promoted in this chapter serves to demonstrate how copyright problems are not just American. The information used to analyze various contexts comes from the repressed document referenced in the introduction (among others), because it provides a perspective in which any "cultural" discussion is decidedly absent. That is, it does not deal with parameters such as moral directives, hegemony, or human experience. Because of this treatment of the law, it allows us to see the way that many current legal scholars operate and consequently, how such blind spots might be remedied.

While the question of how the practices of piracy are societally treated has been the subject of previous scholarship, its focus has been on other domains of communication, rather than the law specifically. For instance, Jessica Beyer and Fenwick McKelvey (2015) desire to draw attention away from the legal condemnation of pirates and focus on its epistemological

differences to capitalist culture. Additionally, they assert that piracy is "a set of ideals grounded in collaborative culture, nonhierarchical social organization, and a reliance on the network" (p. 891), a claim that contradicts with some real-life instances of piracy. However, it does accurately describe the sentiment with which What.CD's users describe their relationships with each other and the site itself.

Furthermore, and perhaps more in line with this chapter's recommendations, Ilya Kiriya and Elena Sherstoboeva (2015) suggest that copyright measures in Russia are both steeped in a Soviet history of censorship and a modern instrument of control. They write that "piracy is a cultural phenomenon rather than an economic or legal problem in Russia ... the new Russian antipiracy law may represent a new censoring mechanism operating under the pretext of copyright protection" (p. 840). While censorship in an authoritarian state can take many guises, fighting piracy certainly is a convenient one. However, it should be emphasized here that piracy, from this chapter's perspective, is only a legal issue. If a law did not define piratical activity as deviant, then it would not receive the political and institutional ire it currently suffers. While much can be learned from seeing piracy as a set of social practices, it is this author's desire to shift actual legal paradigms rather than dismissing them as ineffective.

It should also be mentioned that, as digitization has created slippage in recording industry revenue, policymakers and industry experts in most countries have tried to adjust earnings reports to consider streaming revenue. In early 2017, the International Federation of the Phonographic Industry (IFPI) reported a 6% growth in revenues over the previous year, but with the caveat that any growth "should be viewed in the context of the industry losing nearly 40% of its revenues in the preceding 15 years" (p. 10). However, as will be discussed later, such adjustments are dubious since digitization is hardly a finished project, and therefore should not be used as concrete measures of success or failure. While the IFPI is focused on ensuring the

survival of their industry and celebrate the successes of streaming, they do little to ensure that they are not simply trying to make up for the massive losses experienced during early digitization.

Briefly, several national contexts will now be examined for specific copyright enforcement tendencies. The diversity of attitudes that various federal governments and enforcement agencies take towards intellectual property policy create a patchwork that exacerbates the problem of ineffective laws for digital content. What.CD's users were scattered across the globe, and while none were ever the victim of any particular national copyright enforcement, their legal standing would have differed dramatically according to the appropriate jurisdiction. By assessing the current status of several different countries, the goal of this section is to demonstrate how ill-prepared current legal paradigms are to deal with new and culturally relevant ideas about content sharing and distribution.

The United States

As a country whose content industries are undoubtedly important on the global stage, the U.S. certainly has the most egregious legal problems when it comes to addressing piracy. Additionally, its economic power grants it leverage in extending its policies to other countries by way of trade agreements and industry groups (for example, the IFPI is mostly just the international arm of the RIAA, both of which are discussed in this chapter). The U.S. is also where the most negative effects of anti-piracy legislation can be seen, especially its ineffectiveness and damage to the legal marketplace.

Some of the most innovative new forms of digital consumption are also coming from the United States, such as BitTorrent, which is discussed below, as well as the blockchain protocol as a means of distribution. Widely known for its use in cryptocurrencies like Bitcoin, blockchain can

also be effectively used as a filesharing method that is much more secure and capable than BitTorrent. Stifling innovation has a chilling effect on the software and music industries, which co-develop in digital spaces and whose legal parameters equally impact consumers.

France

France has the most concrete notions of digital copyright infringement and penalizes users who upload and download content (Ecorys, p. 48). A three-year prison term and a €300,000 fine are possible penalties, which can be applied to users who download and upload, but also to people who write software that allow those activities. More than any other country in the EU, this legal provision is the most severe for activity that, in other legal contexts, is seen with ambivalence since that software could just as likely be used for non-infringing purposes.

There are the "copyright police" in France called HADOPI, who send out warnings to internet users who have infringed. Between 2010 and 2014, they sent out " 2,756,788 first warnings, 283,673 second warnings, and has issued 983 deliberations" (p. 51). HADOPI also tries to make internet users aware of legitimate channels of digital consumption, which seems to result in free advertisement of those channels. Some of them are rather difficult for small artists to sell their music on, especially compared with illegal routes like BitTorrent or blockchain. So, if new artist is trying to gain listenership through a route that is not sanctioned by HADOPI, they suffer vilification for not having the capital to access these legitimate channels.

Spain

In Spain, laws governing digital marketplaces and illegal media consumption seem to be more relaxed than other places in Europe. Distributors can get in trouble for illegal activity, and typically not end users, a notable difference from both France and the U.S. Distributors are also given 48 hours to remove the infringing content before a judgment is made. Only 403

complaints were lodged by rightsholders in the same time that thousands were in Spain, indicating the differences in enforcement.

This more relaxed approach to copyright enforcement either indicates the Spanish government's general attitude to illegal digital consumption, or a lack of resources to allocate to the problem, or perhaps both. Intellectual property is not a major industry in Spain, so they may just have less at stake. However, the resulting flexibility for consumers might allow for laws to change more easily to suit a broader spectrum of digital listening in the future.

Germany

Like Spain, consuming infringed content is not illegal, although downloading illegal material may constitute reproduction in certain contexts. However, "downloading is only related to mechanical reproduction rights and is legal for private purposes if the source where the content has been downloaded from is authorized and no payment is received" (Ecorys, p. 58). There is also no policing agency like HADOPI in Germany, which results in very few individuals being prosecuted for copyright infringement. Generally, the only cases that were brought to court were companies and websites charged with infringing thousands of copyrights.

Poland

Polish laws regarding media use and copyright favor authors as a class capable of creating and controlling content. Within the court system, it has yet to be determined if downloading files can be fit into a private use clause or not. Like Spain, Poland does not have a large content industry to protect, and therefore does not have an agency that specifically deals with copyright infringement. According to Ecorys, there are "ongoing, systemic problems with prosecutions and the judiciary with rights holders" (p. 63), which leaves non-market-based activities to develop outside of the context of "piracy."

Sweden

Sweden is unique because of the influential roles of two of its organizations, the Pirate Bay, one of the most prolific music piracy websites, and Spotify, the most successful legitimate online music service. Palmås, Schwartz, and Larsson (2014) argue that the two online phenomena did not coincidentally develop. Rather, they sprouted from the same technosocial context that included high broadband and mobile internet penetration and familiarity with filesharing. In fact, the ties are so close between piracy and legitimacy that they were once indistinguishable:

The content that they needed for their beta version was copied from their own and their friends' music collections. In other words, the cloud-based streaming service heralded by many people as the successor, or perhaps antidote to file sharing, itself began as an archive of non-licensed media content. (p. 415).

Because Spotify was able to transform their initially illegal enterprises into ones in which record labels would eventually profit, they were seen as a success story. By observing a culturally meaningful activity (filesharing) and harnessing its core logics, Spotify's creators were able to legitimate their service without changing any of its core functionality. They were one of the few, though, that was able to make this transition.

The European Union

The EU as a whole has pursued a single digital market solution that seeks to "modernize the framework of exceptions and limitations and to achieve a well-functioning copyright marketplace" (European Commission, 2017). The main devices it would achieve such a modernization through are deterritorialization, minimization of tariffs, and industry-wide compliance with such measures. This solution, while simplifying a complex legal landscape, would itself resemble many of the regimes of EU member countries.

From this analysis of various countries' approach to digitization of music, we can see that a specific vocabulary and approach to problem solving eliminates the possibility of learning from illegal listening. In every national context, there is some version of prosecution of illegally downloading music. Ironically, there has been some movement by intrepid individuals within content industries to use BitTorrent data to predict what content is truly popular (Van der Sar, 2017) while those industries flatly blame illegal activity for a host of problems.

One national context that has not been considered here is China, since its regulatory environment is not connected with its western counterparts in any significant way. However, as Glyn Moody (2016) notes, China's streaming service QQ Music is one of the only streaming services to turn a profit. Moreover, the deals that have been struck between major record labels and QQ Music are most likely more reasonable because of the homogenous nature of the Chinese market, compared to the fragmented nature of the marketplace in the west. Also, with the cultural differences that might afford Chinese policy makers with different legal frameworks and paradigms than are entrenched in the E.U. and U.S., legal scholars should also not discount QQ Music's success simply because of the piracy problems that China is mostly known for.

Community

As was explored in the legal context of Sweden above, illegal music communities nearly always inform legitimate practices: BitTorrent filesharing led to the creation of Spotify, and even before this, Napster acted as a model for how digital music sharing might work. Napster and other illegal services often act like communities in aspects of sharing (the music itself as well as related interests), establishing decorum, and adhering to a mutually decided moral code. If these community values can be transferred to be represented in the legal realm, then laws are more likely to reflect the desires of listeners. What.CD users demonstrated the possibilities of

community outside of legally sanctioned activity, which is why some of their practices would be wisely observed by current policy makers. In many European countries (and in the U.S. to a lesser extent), collective rights organizations are charged with representing certain classes of artists, such as songwriters or musical performers. As entities with the legal authority to represent all artists within that class, they are assumed to represent community values. If such an organization existed for listeners of digital music, then their interests could also be represented in legal and political settings. It is not difficult to imagine how such a union might arise out of the ardent music fans on What.CD and other private trackers.

In 2015, the Copia Institute wrote that "in Sweden, the success of Spotify resulted in a major decline in the file sharing of music on websites like The Pirate Bay. A similar move was not seen in the file sharing of TV shows and movies... until Netflix opened its doors" (p. 3). A similar effect was found when Apple first legitimated digital music sales through iTunes (Waldfogel, 2010). Therefore, communities form around digital paradigms of sharing whether they are legally legitimated or not. Finding ways to advocate for and legally justify protections around highly prosecuted behavior, like file sharing, would allow for the gaps between legal streaming and piracy to be made smaller, if not closed completely.

Hegemony

Record labels and lawmakers operate from positions of power that is not usually representative of a population's desires or practices, a fact that is rarely recognized by those organizations. To the contrary, the Recording Industry Association of America (RIAA) often bemoans the paltry sums it receives from digital listening despite seeing record profits (Geigner, 2016). There are many reasons for this hegemony: political strategizing that has allowed for

recording industry trade groups to dominate legal discourse (Patry, 2009), disproportionate resources to pursue a goal, and a refusal to consider alternatives to their own agenda.

While it is a common trope in cultural studies to understand the complex hegemony/resistance relationship (Kellner, 2003), this relationship is usually simplified in legal contexts. As has been said once already, binaries are most convenient, and perhaps necessary for traditional legal thinking. Complexities do not easily lend themselves to sound court decisions or effective legislation. However, these binaries, which make hegemony considerably easier than if the legal arena interested in digital media governance were pluralistic, also create a suitable atmosphere for that hegemony to take root.

Real world legal examples of this hegemony center around how U.S. courts interpret "Fair Use" for digital music. Hegemonic parties have gone as far as suing a woman who posted a YouTube video of her daughter dancing to a Prince song which played faintly in the background (Lenz v. Universal Music Corp., 2015), suing sampling artists who have no legal method of affordably expressing their art (McLeod and DiCola, 2011), and penalizing internet users who download a handful of songs (BMG Music v. Gonzalez, 2005). While Fair Use is a doctrine designed to grant copyrighted works flexibility in consumption, both the body of work that can be protected under Fair Use as well as the situations in which it can be claimed have been gradually shrinking and are difficult to ascertain (Samuelson, 2016).

In fact, in a recent study in which digital content creators were interviewed, it was found that "social norms that emerge among these content creators do not always track to what the law actually says, but are often guided more by ethical concerns. Our participants showed surprisingly similar patterns of understandings and confusion, impacting technology use and interaction online" (Fiesler & Bruckman, 2014, p. 1023). What.CD, while largely comprised of content consumers rather than creators, demonstrated a similar internal code of behavior that

shaped data and interaction. The law, or more accurately, the various jurisdictions under which manifold laws would come into play, were of little or no concern to the site until it was shut down. Instead, musical activity flourished through sharing in ways uninhibited by outmoded regulation. Although the alignment of ethical behavior and what the law endorses is assumed to be ideally synonymous, we find that hegemonic forces have widened the gap between the two in digital contexts. By keeping hegemony in check, a more suitable application of legal principles to a greater array of cultural contexts can be achieved.

Sharing

Sharing, as a technocultural practice, has been written about extensively by Lawrence Lessig (2002, 2004, 2008, 2009), who has championed the cause of an open internet free of antique regulation. He pushed Creative Commons as an alternative to conventional copyright, which has had both rhetorical effects on the copyright debate as well as a tangible impact on how content creators publish their work. Unfortunately, this work has not been taken to heart by the music industry or lawmakers to any meaningful extent. The recording industry reliably asserts that traditional legal regimes, especially copyright, is what protects and sustains the entire musical ecosystem in the West (Sherman, 2015), a claim which is dubious at best.

While the shortcomings of copyright have been written about extensively by legal scholars, music industry insiders, lawyers, and musicians, the cultural practice of sharing has yet to be effectively translated into legal language. In 2015, the U.S. Copyright Office even completed an extensive music licensing study that resulted in a report that attempted to identify copyright's key stakeholders and their legal needs in a digital environment. Unfortunately, even this document did not yield the results necessary to connect new cultural developments to extant policy structures. Despite its concessions that "music creators should be

fairly compensated for their contributions" and "Usage and payment information should be transparent and accessible to rightsowners," the report's core logics are decidedly vacant of any recognition of sharing as an important part of any digital culture (Copyright Office, 2015).

Cultural Factors

A common discourse used by courts and plaintiffs in these file sharing cases is one that presumes that copyright directly protects, rewards, and incentivizes creators to keep creating. For instance, to quote Justice Souter once more, the "values of supporting creative pursuits through copyright protection" are ones that the Court should uphold. Patry (2011), however, would argue that the legal system's use of the term creativity differs significantly from its broader understanding: "copyright law has rejected the subjective approach to creativity usually found in the popular usage of the term" (p. 19). Because creativity is measured through the commercial success of a work, a trap that Merges (2011) also seems to fall into when defending the current copyright regime, vast swathes of artistic practices are either ignored or minimized. For example, authors who have either released work under Creative Commons licenses or infringe on copyrighted works in the process of making their own truly creative work (and thereby forfeit any financial remuneration for their work) are not covered by current notions of creativity found in the Copyright Act.

The lack of language from such agenda-setting sources addressing the importance of sharing may explain the gap between policy and practice that has been mentioned before in this chapter. A specific recommendation would be for governmental and industry institutions like the Copyright Office, the RIAA, and the IFPI to craft specific resolutions about sharing. These documents should start with these new cultural practices, rather than trying to fit them into older logics. Legislation like the Digital Millennium Copyright Act (DMCA) in the U.S and the EU's

Single Marketplace initiative pigeon-hole artists, technologists, and lawmakers into old paradigms rather than encourage forward thinking legislation (Robinson, 2016).

Listening's Role in Legal and Illegal Music Platforms

In the dissertation's literature review, a quote from Andrew Feenberg emphasizes the potential of "democratic interventions" to drive technological decision making. He further writes that, rather than a "general disillusionment with capitalism," most users of legal and illegal music platforms "induce technical change not through a Great Refusal but through negotiations, some conflictual, others cooperative, between lay actors or technical outsiders and those in command of the institutions" (Feenberg, 2017, p. 8)." Through the act of listening on What.CD, users constantly negotiate their own positions as well as technical changes that affect the site's social sphere. For instance, by building new site functionality that enables new modes of listening, site administrators are negotiating with other user classes to change institutional norms. Similar changes occur through legal services like Spotify, but with considerably less flexibility or room for democratization.

Legal markets have a surprising amount of overlap with market-adjacent platforms like What.CD. Listeners often suffer from oversaturation, or what Anita Kassabian calls "ubiquitous" listening (2013), which can follow them around and play at their disposal across devices, locations, and contexts (ch. 1). Essentially, ubiquity is what legal streaming services have achieved by allowing users to access limitless music on any possible device, and the same volume of music could be found at What.CD. The only difference in the two platforms was the bottlenecks to this ubiquity: price for legal services and available bandwidth for What.CD. What.CD users, rather than sharing music unconditionally, only did so when there was an immediate benefit to their own activity on the site. On legal platforms like Spotify, a similar

behavior can be observed in allowing full albums to be listened to on a mobile device only when customers are paying subscribers.

Similarities also lie in how both types of services are crafted and how they envision their user bases listening and interacting with other listeners. For instance, the values of cooperation and sociality are emphasized in both types of platforms through various communication tools. Also, both types of services are interested in having an active role in shaping precise listening experiences that involve file types, advertisements, and user interfaces.

For the purposes of this chapter, sound as an industry-related artifact is inseparable from the technology that carries it, and in some important ways, the technology predicates the capabilities of the sound. Trevor Pinch and Karin Bijsterveld write that “sound is no longer just sound; it has become technologically produced and mediated sound” (2012, p. 4), suggesting that, while technological mediation has always been important to analysis of markets of all types, it is especially central to uncovering the importance of the relationship between legal and illicit types of listening.

Listening through legal and illegal digital platforms is also characterized by a special ambivalence toward market forces and especially toward the service they use to for listening. While the activity of users on What.CD was not in direct defiance of hegemonic control of the music industry with which it has become known (Burkart, 2010), the networked listener was certainly aware of the control’s role in digital distribution (namely, that it had impeded the kinds of distribution that the networked listener preferred for most of the 2000s).

The specific task of listening, both on What.CD and on legal platforms, occurs within contexts that encourage specific characteristics as described above, and is ultimately shaped by market forces since that is where the music and the disseminating technologies originate.

What.CD might have been the partial exception to that rule, but still could not escape capitalism entirely, since the contents of the torrents would be decidedly vacant without market influence.

Conclusion

This chapter has attempted to find connections between legal policies and cultural factors surrounding illegal digital consumption, specifically of music. The goal of finding such connections has been to seek out possibilities for a more balanced view for legal frameworks. Piracy, while certainly illegal to various degrees depending on the jurisdiction, is nearly universally panned by lawmakers as bad for industries, consumers, and creators, a claim that simply does not stand up to relevant research, especially the “found” Ecorys report discussed throughout this chapter. The next chapter will scrutinize listening practices on What.CD as they compare with legal streaming services.

Chapter 6 - Listening Practices and Characteristics of Streaming Services

As streaming services have emerged as a dominant player in the music industry, their impact on listening habits have proportionately affected industry norms and audience expectations. Compared to private trackers, streaming as a technological model has gained widespread legitimacy, so its associated listening practices are described here. In this chapter, such services are examined using four main characteristics: control, non-committance, convenience, and community. Additionally, these services are situated in historical and technological contexts with which they are connected, such as previous physical formats and modern music piracy. The development and use of streaming services should be predicated on community-driven values, such as equitable access and fair compensation, rather than corporate ideologies like market dominance and strict rights maintenance.

Music streaming services like Spotify, Amazon Music, Apple Music, Pandora, Slacker, and Deezer are the fastest growing revenue stream for the music industry and account for the largest track play counts, especially when compared to conventional radio and physical sales (Nielsen, 2017). Additionally, over the last five years, considerable rhetorical investment has been made by the three major record labels (Sony, Universal, and Warner) to convince the public that streaming is the future of music. In many respects, this is true, as the contractual agreements between these labels and streaming services ensures an easy, mutually beneficial relationship. However, the possibility for a wide range of artists to earn revenue, gain exposure, and form audiences is often challenged by the hegemonic force that streaming services are beginning to impose. Historically, other institutions have been in the same predicament of unintentional gatekeeping, including radio stations and record stores.

In this chapter, the current position of streaming services is explored as it relates to four characteristics: control, non-committance, convenience, and community. Historically, the economic and cultural importance of the technosocial practice of listening to music was defined by market-based gatekeepers who relied on consumer obsession with such formats as vinyl records, cassette tapes, CDs, and the MP3s. Research has connected these to discussions of materiality (Bødker 2004; Hagen, 2015; Lepa & Hoklas, 2015; Styvén 2007) and each of those formats was celebrated for its portability, its fidelity, and longevity. Additionally, they were each said to surpass their predecessors in certain ways that resonate with the current positivistic thrust of computing technology. As streaming services now dominate the digital music landscape, a slightly critical look at their social impact is considered here. Additionally, private BitTorrent trackers are considered as an alternative to mainstream markets. While the BitTorrent protocol has been around since 2001, it continues to be socially important because it offers resistance to music industry hegemony. Original research on one tracker, What.CD, demonstrates the usefulness of considering other technological realities than ones driven by the market like streaming services.

Furthermore, this chapter suggests that streaming services and legal downloads are simply the latest stage in music consumer fetishism by using an argument that borrows ideology from a critical theory of technology, which attempts to consider new ways technology can be democratizing (Feenberg, 2012). Specifically, tension exists between the increasing centralization and corporatization of internet services on one hand, and the transformative communicative possibilities that decentralization and distributed control offer. Audiences, artists, and other groups are discussed as well as the impacts on individual listeners.

Control

Control over our online musical experience is one of the key selling points of streaming services, and arguably the shift started at the advent of recorded music (Kassabian, 2013). More specifically, control over our “ubiquitous” musical experience is now at its peak. McCourt (2005) writes that “to compensate for their lack of materiality, digital music providers tout greater selectivity, personalization, and community as ‘value-added’ features” (2005, p. 1743), which indicates that streaming services have attempted to imbue listening experiences with a sense of limitless resources. While the impact this has on actual practices can be seen as liberating or cheapening a listener’s experience, a critical approach would suggest that the test of this technology’s success lies in its ability to reroute consumer logics to prioritize autonomy and community rather than reproduce traditional corporate ideology.

Previous physical format epochs had built-in control mechanisms that proved more reliable than current efforts. Namely, locking content to physical media prevented the type of slippage we see today between the two. For instance, the ability to reliably copy audio from a vinyl record, an 8-track, or cassette tape was considerably more expensive and difficult than encoding a CD to MP3 files or downloading an album through BitTorrent. Large scale piracy efforts were also noticeable and easily shut down by the RIAA in predigital times. While some communities of listeners, such as Grateful Dead fans rallied around the availability of bootlegs (Neumann & Simpson, 1997), a much stronger sense of cooperation and fellowship existed through record stores and the cartels that entitled them.

Music and the ways in which it has transgressed hegemonic control has always lived in the shadow of the mainstream narrative of digitization. From the popularization of the internet in the late 1990s, Napster created visible ire for the recording industry, and much less visible pathways were available to more motivated listeners. In *How the Music Got Free*, Stephen Witt

writes that “warez scene” servers and their accompanying IRC (internet relay chat) channels were the backbone for more serious, volume intensive piracy than Napster:

Access to this topsite “darknet” was granted exclusively on a quid pro quo basis. To get in, you had to contribute pirated material of your own ... The lure of the darknet—the promise of the digital library—was enough to corrupt ... The media on the topsite servers was available weeks before it could be found in stores, or even elsewhere on the Internet. The spread of files from these servers was carefully monitored and controlled; leaking to the Scene was rewarded, but leaking from the Scene was taboo. The files took a long time to migrate to the chat channels and the Web. Sometimes they never left the closed economy of the Scene at all. (p. 130)

Ironically, control was stringently exercised within this digital context, perhaps more strictly than current streaming services, and relied on the logics of the platform. These logics involved the combination of the new possibility of faceless, non-localized interaction, which lended an air of enigma that required tight control, both because of the risk of being caught and the need to maintain internal order. While being able to access the servers and IRC channels was a form of gatekeeping in itself, a further knowledge of individual user handles and protocol raised the barrier to all but a select few. As Witt explains, the individuals who had access to new musical content who also were interested in illegally digitizing it through the newly developed MP3 encoder were relatively few, and their digital personas were infinitely more intriguing than their “real” lives. The main protagonist in Witt’s narrative, for instance, gained access to new releases before their shelf date because he worked in a CD manufacturing plant in North Carolina and would sneak albums out at the risk of being caught and fired.

The lineage of piracy has also demonstrated that control is central to nearly all coveted digital music communities. For instance, the shift of musical activity from the warez scene to Oink, a private BitTorrent tracker, interested itself in maintaining a selected user base capable of maintaining certain up- and download ratios and adhering to rules related to on-site behavior,

the use of virtual private networks (VPNs), and upload content formatting. When Oink closed in 2007, its successor, What.CD began operation shortly thereafter, and was in near constant operation for over nine years. In turn, at least two new trackers have opened up after What.CD's halt, both of which are still in operation at the time of writing. They both have nearly identical rules and graphical appearances to What, and use the same backend software, Gazelle.

Control in digital music has also been fought over at the level of encoding and decoding of data. This layer of technology is important because all current streaming is predicated on its widespread adoption and data economy. The MP3, the formative and most well-known audio compression algorithm, was a frequent site of contestation from the moment it was completed in the late 1980s. While originally intended to be a closed technology only usable through licensing, it was quickly reverse-engineered and thereby capable of encoding any audio. As a result, filesharing became a widespread technosocial practice. Attempts to take back the MP3 have manifested through digital rights management (DRM), which locks the audio inside of an encrypted container, as well as through more complicated encoding schemas that require specific playback hardware. Modern streaming services have inherited the baggage of maintaining a closed infrastructure and must consistently fight against attempts to break encryption, access music from outside specified channels, and find other vulnerabilities.

Control is also a central theme through network development, not only for music distribution. While preaching the importance of decentralization and the emerging significance of cryptonetworks, Chris Dixon (2018) writes that

“over time, the best entrepreneurs, developers, and investors have become wary of building on top of centralized platforms. We now have decades of evidence that doing so will end in disappointment. In addition, users give up privacy, control of their data, and become vulnerable to security breaches. These problems with centralized platforms will likely become even more pronounced in the future.”

It is no coincidence that streaming services depend on a centralized network paradigm, which grants the service control over all affordances it offers — where music can be streamed, on which devices, what music is available, and so on — creating a sharp distinction from largely decentralized illicit services like private BitTorrent trackers. However, there are hints of legal services also moving toward a decentralized structure. Early examples of this are FileCoin, a file storage utility, and Upfiring, a filesharing tool. Both are incentivized through the same mechanisms as BitCoin and Ethereum, and suggest one possible future for legal music streaming services.

In addition to control being maintained by streaming services, the major suppliers of content rely on their ability to monopolize the music that consumers want to hear. It is estimated that somewhere between 66% and 80% of all music sales come from only three labels (Digital Music News, 2016) who have convoluted agreements with streaming services. On top of these sales figures, the various ways that artists are promoted on those services, such as newly released albums, artist radio stations, and popularity charts obfuscate independent artists without major label backing. While digitization has provided some of these artists the opportunity to rise up through fissures that hegemonic forces have yet to fill in, their overall rate of listenership is low because of service-imposed disadvantages.

The solution to the various modes of control this section has discussed is not simple liberation. Because control is rarely top-down or authoritarian for streaming services or even private trackers, we must consider the steps that listeners can take to give themselves agency. Here, two possible actions along such lines are discussed, including more full-bodied awareness and a continued negligence of law and policy. While all this chapter's arguments operate on the

principle that markets, as they currently stand, can and should not be avoided, reshaping them to benefit individuals rather than corporations is certainly a goal.

Increased user awareness of what is at stake in using a streaming service is an empowering possibility that can make extant control mechanisms less effective at pinning users down. More generally, as tech experts suggest a heightened concern about privacy and online safety (Bakos et al., 2014), knowing the stakes of interacting with digital corporations is the first step in breaking control. Nissenbaum (2010) suggests that an effective assessment of whether a practice takes privacy into consideration necessarily involves the context in which the new practice occurs. As a result, testing streaming services for privacy should involve an analytical model that identifies certain actors and flows of information, and then subsequently attempts to determine how appropriate those flows are given a set of norms. To reframe the discussion of privacy as neither a right to secrecy or a right to control, Nissenbaum writes “there is, indeed, great complexity and variability in the privacy constraints people expect to hold over the flow of information, but these expectations are systematically related to characteristics of the background social situation” (p. 129). By increasing awareness of what occurs through using a streaming service — certainly not just the innocuous and easy listening the services themselves advertise — users can begin to make more informed decisions.

Secondly, a continued disregard of law and policy is crucial for institutions to adapt to user needs. Users of streaming services did not begin using them because they are legal, but because they are convenient, a characteristic that is explored below. Such motivation correlates to why users of private BitTorrent trackers pursue music on that platform: its libraries are robust, the community is vibrant, and the law plays no role in user decision making (aside from the use of a password-protected account). Currently, copyright law remains overly complicated and irrelevant to any listener of online music, which is why original research by the author has

indicated that private tracker users are nearly as likely to use it in tandem with legal services. Moreover, while the U.S. Copyright Office struggles to establish its role in encouraging streaming market success and artist equitability, end users can evade outdated and clunky regimes by finding services and tools that allow them to listen how they want. Markets adjust more responsively to such action, and bypassing central rulemaking institutions allows users to provide much needed resistance to traditional efforts at control.

Non-Committance

Non-committance refers to the tendencies of consumers to be service-agnostic, and it is therefore assumed that their subsequent musical choices are equally blasé. Morris and Powers (2015) write that “The branded musical experience supplied by streaming services is ultimately about smoothing over streaming’s central paradox: getting users to accept it as their conduit to music, while also using differentiated and variable access to the stream as the primary means of extracting value from a wide range of musical practices” (p. 13-14). By framing it as a classic example of branding is in some ways, then, convincing consumers of actual differences, rather than working toward solutions that would truly differentiate services. Historically, we see consumers committing to certain record stores, labels, and artist collectives. This occurs sometimes on Bandcamp (bandcamp.com), where an “indie” ethos works to deliver more economic and cultural equity to artists, and is perhaps the best example of consumers committing to a streaming service.

There are several considerations when consumers are choosing a streaming service, such as the GAFA (Google, Apple, Facebook, Amazon) platform with which they are most associated (Deleon, 2017), which artists are available, how expensive the service is, the quality of audio it offers, and how information about live performances and other metadata is

integrated into the platform (Nielsen, 2017). Ultimately, most currently popular platforms integrate the same affordances in slightly different configurations. The way that Spotify, for instance, establishes itself as unique in the marketplace then is through advertising and price point.

Licensing agreements have paved the way for most streaming services to offer the same robust libraries as their competitors. Fortunately for the services, such negotiations are only required with the three major labels mentioned in the previous section for most popular music to be available. While non-major music is sometimes pursued by listeners, and while some of that music is available on streaming services, data on what music users are listening to exposes the overwhelming representation of major label artists (Nielsen, 2017). The awareness mentioned in the discussion of control might lead to an increased interest in artists outside of the major label sphere, which is where Bandcamp seems to be currently flourishing.

Robert Prey (2017) discusses the construction of the individual within the confines of two streaming services, Spotify and Pandora, and the effects of viewing individual users through different function-defined lenses. He calls this process “algorithmic individuation,” and frames it as an operation concerned with the ongoing activity of users rather than a static portrait: “Through myriad acts of everyday consumption – from the songs we listen to, to the products we buy – we produce our identity and modulate ourselves as individuals. The recommendation systems that power personalized media across the web are merely one enabler of individuation, albeit an increasingly central one” (p. 10). While such activity seems largely akin to traditional marketing approaches that advertising agencies have always been interested in, it does point to commitment as a characteristic by which streaming service users are difficult to define and that the services themselves may not rely on in the future.

Convenience

An oft-lauded claim of streaming music is that its convenience is unprecedented. The typical buzzwords used by services accentuate the limitless, ad-free, expert-curated, always-on nature of the new listening that parallels the rhetoric regarding other internet-based technologies. Arguably, convenience is at the heart of many other music technologies, and is therefore one of the basic tenets of the materiality of listening (Sterne, 2013). In studying various technosocial groups and their relationships to streaming services, Sinclair and Green (2015) contend that “steadfast pirates are still not convinced of the superiority of legal digital platforms over illegal forms of digital consumption, and the mixed tapes and old schoolers have reservations over its potential superiority to physical forms of music” (p. 12), which challenges services’ definitions of convenience. Further, it demonstrates that definitions for these terms should be culturally-driven, a point that is further discussed below.

It should be noted that a discussion of ethics is absent and intentionally separated from any consideration of convenience in this context. The most frequently cited criticism of discussing digital musical activity that happens in the realm of legal gray (and black) area is the fact that moral harm comes from participating. Arguably, some of that is true. Some artists might suffer in a material way because of piracy. Overall, though, numerous modes of research have proven its largely neutral and positive impact on metrics like record sales and concert attendance (Ecorys, 2015). Additionally, original research suggests that illegal downloading is nearly always used in conjunction with other forms of music consumption, like streaming and buying music. Additionally, the category of users that stream and download music “scores highest on music involvement, Internet use, and Internet expertise. The streamers-downloaders are most knowledgeable of Spotify and have the highest percentage of paying users,” (Weijters

& Goedertier, 2016, p. 6), further suggesting a connection between piracy and paying customers.

Community

Exactly what an online community looks like is one of the key questions media scholars currently wrestle with, and recent societal events in the U.S. like the 2016 Presidential elections and a rash of cyberbullying might suggest that technosocial attempts at community are better at dividing groups than unifying them. Cass Sunstein (2018) notes that two disturbing trends have risen out of social media use: “people’s growing power to filter what they see, and also providers’ growing power to filter for each of us, based on what they know about us” (p. 20). Because Facebook, Twitter, Snapchat, Instagram, and others have narrowed the horizons for many users rather than broaden them, the most immediate conclusion we can draw is that community building was never the goal of these tools in the first place. Rather, larger profit margins through methods that oppose the bolstering of community values are what drives decision making. Similarly, we must assume that streaming services operate through logics of late stage capitalism. Or, at best, these services are ambivalent to community formation, which would create a blind spot at the point where such action would benefit them.

Streaming services like Spotify, then, fit snugly into the history of markets training individuals to listen in a mode that promotes investing in popular artists, the major labels that back them, and the resulting “scenes.” This listening also encourages and actively shapes community formation around those items. While in the early 20th century such activity consisted of buying popular sheet music and listening on a gramophone, and then buying compact discs to replace vinyl records with the same music in the 1980s and 90s, streaming services today shape listening by algorithmic suggestions. On Spotify, this includes such

functions as “Made For You,” “Recommendation Stations,” and “Your Daily Mix” (see Figure 1). By sifting through millions of tracks to find the ones that *you* should really listen to, streaming services seek to connect you to music that serves competing purposes, namely music that the listener will connect with and that benefits the major labels mentioned earlier.

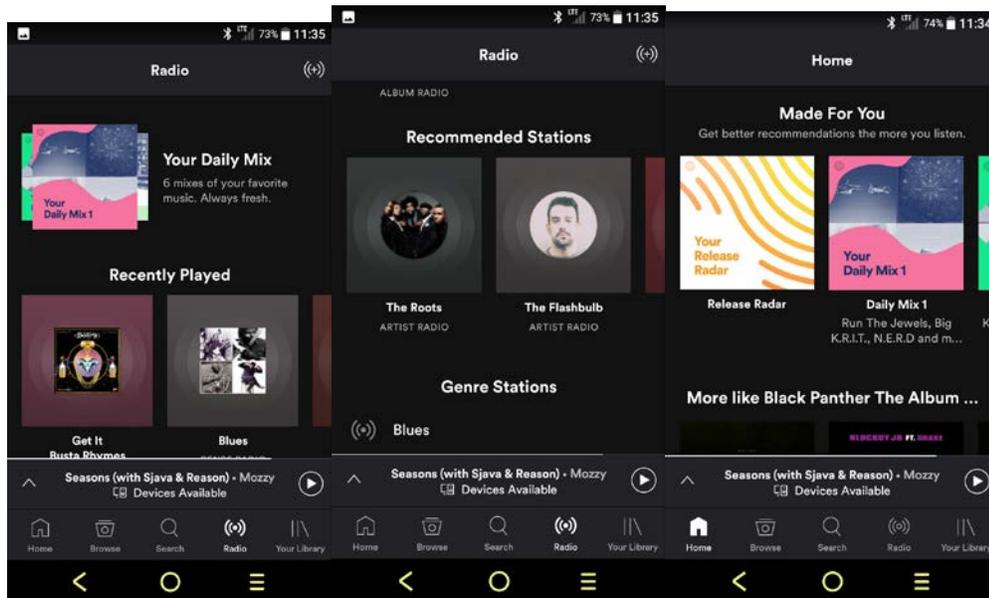


Figure 19: Spotify, Algorithmic Personalization

Streaming services not only seek to connect to listeners on a personal level, but also to build a network of users that can listen collectively in these prescribed ways. They do so by attempting to tap into extant networks that users are familiar with through Facebook or Twitter. Spotify encourages users to connect their Facebook, Last.fm, and Waze accounts to be able to monitor activity on those platforms, share listening activity, and integrate app functionality. Especially with Facebook, Spotify seeks to map new information about Friends onto the network a user has already created. In researching the motivations in using music apps in connection with social media, Krause et al. write that “the three uses and gratifications underlying using Facebook listening applications (communication, entertainment, and habitual diversion) indicate

that while some individuals derive pleasure from listening or do so as a leisure interest, there are also more communicative and personal motivations, such as using the tool to promote not only a musician or group, but also to express one's own identity" (2014, p. 75). Such a finding suggests that streaming services have succeeded in promoting a prescribed way of listening into a user's broader social sphere.

An important axis for community building in music communities is between artists and audiences, which neither legal streaming services nor private trackers are very good at. While Spotify does display upcoming performances that artists will be giving, there are no other attempts within the app to connect users with artists. As mentioned during the discussion of non-committance, some other platforms, including Bandcamp, have allowed for these connections to form between artists and their audiences. Unfortunately, no other sites currently offer similarly open possibilities, where fans can pay-what-they-want, or pay a flat fee for music that will primarily go directly to the artist.

Furthermore, notions of community are necessarily tied to the economic survival of artists, a prospect which is precarious at best. Damon Krukowski (2018) writes that a more intentional community can form around digital services if subtle shifts are made by both consumers and musicians. He also points out how deeply current musical communities are slighted by decisions that streaming services make:

Look now at how badly their applications [streaming services] already serve entire genres of less popular music. Spotify lists recordings by song title, album title, or featured artist name. But that information is so limited it leaves out even the other performers on a recording, a crucial aspect to classical and jazz. For that matter, performers are kind of important to rock, too!

As an action of resistance against the anti-community forces employed by streaming services, Krukowski suggests that musicians counterintuitively give music away. By focusing on other possible revenue streams, artists need not worry about the specter of not earning any income from their streaming content. If the ways in which artists seek to monetize begins to resonate with the audiences they attempt to connect with, then forming communities does not need to be opposed to market forces. Rather, this move should be seen as an intervention that reclaims the power of digital distribution for the artists that are creating content.

Conclusion

This chapter has sought to contribute to a growing body of work on streaming musical services, a sector whose importance is as undeniable as it is simultaneously tricky to culturally and economically situate. As many scholars have explored materiality and listening, the four key terms of control, non-committance, convenience, and community have been used to explore connections to past formats, the present status of the streaming listener as a subject, and the possibilities that alternative listening environments like private trackers offer. Bennett and Rogers (2012) write that “since the widespread uptake of online digital technologies, music listeners can now make accounts of materiality that span decades and numerous physical manifestations of playback” (p. 12). The hope of listeners is that such possibilities remain open as streaming services gain dominant footing in the market. Future research on the interplay of past and present format conventions will serve to exact the nature of this materiality.

In a possibly heartening turn of events, Spotify is beginning to mature as a platform beyond needing to be subservient to the three major record labels. By producing its own video and audio content and curating its own playlists, its business model might drift toward that of Netflix, which has consistently cut back on the number of movies it licenses from major studios

in favor of creating its own original content (Constine, 2017). The risk is that the vast library that Spotify currently offers will be replaced by Spotify-owned content. While not that many Netflix subscribers are interested in watching the 1969 film *Easy Rider* (which they currently cannot), the technological constraints do not limit them from doing so. Unfortunately, antiquated licensing schemes hold content back. If Spotify, the biggest streaming service, follows this model, music “spanning decades” might be made off limits, making it more challenging to listen to music like James Brown’s 1969 release *Soul Pride (The Instrumentals, 1960-69)*, an album which is currently available. In the future, the “celestial jukebox” might just be Spotify’s version of Top 40 radio.

Does this free musicians and listeners? Being able to listen widely is beneficial to both groups of people, and it seems clear that if we consider the broadest categories of artists rather than those whose voices show up in the media, making content available would most readily benefit them. Private trackers offer a possibility for what such availability might look like if we can temporarily suspend the importance of outmoded IP governance and both traditional and new power brokers like the three major record labels and Spotify. Furthermore, appropriate legal and technological conventions can be mapped onto practices that musicians and listeners find most useful, such as being able to find any music in history of the recording industry and related artwork and metadata. For artists, finding revenue streams outside of streaming services like Spotify, while still a precarious prospect, holds the possibility of expanding on what services like Bandcamp have proven to be successful.

This topic ties back into this issue of private trackers as the two represent different approaches to listening. On the one hand, private trackers represent a lineage of practice that is at least 15 years old and is rooted in even older methods of file distribution. On the other, streaming services utilize a nascent technology that has only accrued major listenership in the

last 5 years. Private trackers, while closed to the general public, are “internally open” systems in that their content is exhaustive and available to any valid user. Streaming services, alternately, while open to the general public, are closed in various ways to several publics: new releases are not available to free customers, certain releases are only available users in specific geographic locales due to licensing restrictions, and the system is just not generally “hackable” like private trackers are⁹. Moving forward, private tracker users should be cautiously optimistic about the paradigms of the two approaches to be bridged in ways that are socially useful.

⁹ That is, private trackers are able to be modified at will by staff programmers and other tinkerers. Only Spotify programmers can modify the streaming experience, and only at the behest of their superiors.

Conclusion

This dissertation has scrutinized the phenomenon of What.CD, a private BitTorrent tracker, namely in its novel communicative practices. In Chapter 1, a theoretical framework and literature review set the stage for investigating What.CD. In Chapter 2, What.CD's users and tools were evaluated for communicative dynamics within a particular digital context. Then in Chapter 3, What.CD's torrent data was mined for social significance, an exercise that revealed the great lengths to which volunteers spent countless hours documenting and archiving a massive volume of information, arguably a singular collection. In Chapter 4, the results of a survey administered to about 120 former What.CD members evaluated user sentiment about the site, finding that amid a strictly enforced governance regime, nearly all respondents remember the site positively. Interestingly, nearly half the respondents also use legal services like Spotify or Pandora. In Chapter 5, the legal standing of music online was inspected in relation to how listening practices are shaped and affected. Chapter 6 considered these legal services and four characteristics they and their customer base exhibit: control, non-committance, convenience, and community. Altogether, these various components hopefully paint a picture of What.CD as a vibrant, unique technosocial space shaped by a variety of external and internal forces.

The remainder of this conclusion works through concepts related to future research and implications of the previous chapters. These concepts include: how cultural factors interact with the law; gatekeepers; how illegal listening can inform legal policy; the role of interaction in revenue generation; unregulated archives; digital nativism; and the future of digital listening. All of these topics gravitate around the themes excavated in the previous pages, namely digitization, democratically-oriented data exchange, and power structures.

Cultural Factors and the Law

It has been established that legal frameworks, as they stand in several places like the U.S and the E.U., are linguistically rigid. Perhaps this is the nature of legal frameworks; providing flexibility might also mean creating room for legal interpretations that would interfere with the goals of policymakers. However, this dissertation has operated on the assumption that this rigidity is also to blame for some of the massive problems that content industries have had in the last decades, rather than piracy. Therefore, a few different terms are offered here to stimulate collective thinking about a cultural approach to digital media policy design and legality.

Literature that seeks to explore the intersection of culture and the law is already robust. Perhaps most well-known is Rosemary Coombe's influential work, *The Cultural Life of Intellectual Properties: Authorship, Appropriation, and the Law* (1998). The author notes that little attention "is paid to the political economies that enable cultural forms to circulate through the mass media--economies with legal infrastructures. The legal dimensions of cultural production, circulation, and reception have been shamefully neglected" (p. 30). Although Coombe was not referring specifically to digital contexts this dissertation has been concerned with, she aptly describes the aversion that cultural scholars have to legality. The terms below represent culturally-situated themes that could influence the legal contexts that govern digital media.

Unfortunately, these cultural factors are not easy to measure. They do not comport with quantitative analysis, or even traditional legal analysis found in law journals and case briefs. It is through the sort of discursive analysis below that cultural studies of digital contexts might contribute to current legal understanding.

Gatekeepers

Traditionally, intellectual property law has focused on the individual as the unit of analysis (Heller, 1998). The author, the songwriter, the rights holder -- these are all identity constructions in which originality is bestowed. As such, they also operate as gatekeepers to content that listeners cannot access without their permission or someone they assign as a proxy. It is difficult, then, to create openings for legal change when policies that benefit individuals more than groups stand so monolithically opposed to the behaviors and desires of digital music consumers.

To a greater extent, though, record labels aggregate the rights of individuals and therefore can create legal policies that suit their interests. Specifically, the length of time a copyright is valid, the ways in which a song can be digitally shared, and the penalties for infringement are all policies shaped by these gatekeepers.

An effort to shift laws to benefit listeners would begin with the distribution of power to listeners, both at the individual and organizational level. Some initial steps toward this redistribution would involve drafting new copyright policies, rather than amending old ones. Especially in the U.S., it has become evident that copyright law does not work for anyone except content corporations (Patry, 2011). Additionally, the interests of pirate parties, tech companies, artists' rights organizations, record labels, and all other entities with a vested interest in the music industry should have equal footing in this process.

How Illegal Listening Can Inform Legal Policy

Since 2001, the BitTorrent protocol has been the de facto method for pirating audio, and has been demonized as a result (Danaher & Waldfoegel, 2012). As was mentioned in the discussion of France's sociolegal context in Chapter 5, a piece of software can be found at fault

for piracy as equally as the individuals committing the alleged theft. Similarly, such accusations of guilt have been leveled at other software platforms U.S. legal contexts also like Napster, Kazaa and Grokster.

Private trackers like What.CD center around a closed community that usually communicates through a website and an internet relay chat (IRC) channel. The website requires a username and password, and entry into the site is only granted through an invitation or a strenuous interview. For music, the current most popular private trackers (at the time of this writing) are RED and Apollo, both of which are direct descendants of What.CD (see Image 1). This website was famous for its longevity and extremely deep, meticulously-kept catalog. In turn, though, What.CD was built after the closure of one of the original private trackers, Oink.

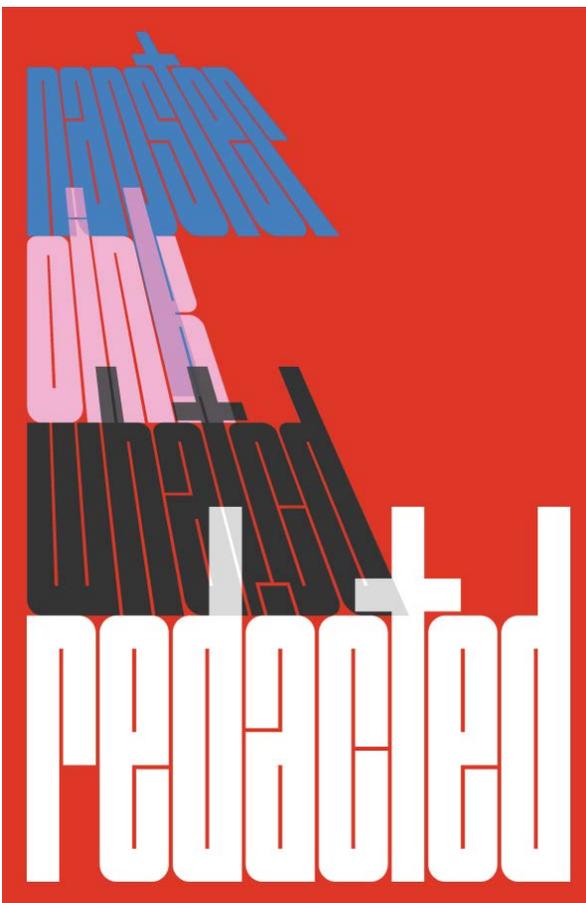


Figure 20: A RED user's graphic interpretation of the lineage of piracy.

Private trackers pose an interesting problem because, on the one hand, most of the exchanges there are illegal and would certainly be considered copyright infringement. On the other, because they are largely left alone by authorities, they offer a unique example of digital music exchange that happens just out of the direct influence of the marketplace. Simultaneously, though, they do not pose a direct threat to that marketplace; participation on What.CD did not replace paid subscriptions to legitimate streaming services, and if anything, activity on What.CD bolstered and encouraged participation in legal markets. Interview data has proven this by demonstrating that What.CD users often simultaneously subscribe to paid services like Spotify, and their musical interests inform their participation in each. Users would often have uses for What.CD, such as home listening, and other uses for paid streaming services, such as listening in the car.

In the survey and some interviews with former What.CD members explored in Chapter 4, motivations and logics that drove such an avid community of collectors, archivists, and devoted listeners were exposed. The following insights were gleaned from that data, and they are relevant here because they offer some insight into how cultural information can be integrated into legal systems that might govern a wider swath of digital activity. It is understood that this thought exercise requires imagining how communities like What.CD might exist in the light of public scrutiny (or at least the observation of governmental authority), and as such, may require some temporary suspension of the understanding of our current legal regimes.

Interaction = Profit

The Ecorys study mentioned at the beginning of this conclusion found that piracy does harm some markets, namely video games and newly released movies. Generally, though, the study noted that "the results do not show robust statistical evidence of displacement of sales by

online copyright infringements" (p. 7). Specifically, music was found to be relatively free of risk of displacement (piracy does not displace sales):

For books, music and games prices are at a level broadly corresponding to the willingness to pay of illegal downloaders and streamers. This suggests that a decrease in the price level would not change piracy rates for books, music and games (p. 8).

While such a finding confirms the suspicions of many copyright scholars and activists, such a glaring lack of economic evidence for the "war on piracy" that the recording industry has waged makes about as much sense as the U.S. war on drugs and may have a similar effect: not only does it prove ineffective, but it might have damaging repercussions that are more costly than the original problem.

On What.CD, many users that were interviewed would participate and simultaneously subscribe to legal services like Apple Music and Spotify because they are more portable than the BitTorrent protocol, which requires a stable broadband connection and static files that are not easily available through any cloud platform. It can be deduced then, that if piracy on What.CD had no decidedly negative effect on sales, it is entirely possible that finding new artists through What.CD could lead to purchases and streaming royalties through legal streaming services.

Furthermore, many users expressed their use of What.CD revolved around finding releases that were no longer commercially available, either because certain titles were out of print or because certain albums were never available in particular markets (a Japan-only release, for instance). This behavior indicates that deeper bonds from a listener to an artist are forming beyond what the legal digital market could offer, which ultimately results in the listener spending more money in those markets when a new album comes out.

Also, live performances, a category of revenue other media do not have, account for a notable share of profits that the Ecorys study finds:

In the music industry, live concerts generate more revenues than recorded music – physical carriers, digital streams and downloads combined...Considering the different measurement units, illegal downloads and streams are estimated to have positive effects on legal downloads and streams at a rate between 16 per cent to 30 per cent... illegal downloads or streams significantly induce more visits of live concerts, at a rate of 0.7 extra visits per 100 illegally downloaded tracks and 13 extra visits per 100 hours of illegal streaming. (p. 9 and 134)

So, from an economic perspective, it is clear to see that private trackers can incubate communities that do spend money on music.

Unregulated Archives Are Better

Towards the end of What.CD's existence, it was estimated that the number of albums available were in the millions, thousands of which were not available through services like Spotify or even for sale anymore. Additionally, one of the most noticeable requirements of the site was a strict adherence to many sets of rules. Because of these two factors, not only was the available music quantitatively robust, but also well documented and categorized. While abiding by rules was held at an authoritarian pitch (and arbitrarily harsh at times), all of this was organized without any monetary incentive or with the promise of legal protection. Quite the contrary, in fact--when What.CD was taken down, its servers basically self-destructed, resulting in the decimation of all stored data.

Another characteristic of What.CD and other private trackers is the availability of a single work in a variety of file formats, often at higher bitrates than are commercially available. This demonstrates that unregulated archives are also better at curating than many legal ones, even though no one is being paid to watch over it.

A "Nativist" Solution

Digital Nativism is a term that has been met with scholarly caution at best (Palfrey & Gasser, 2013), and journalistic scorn at worst (Economist, 2010). It refers to the cultural birthright associated with growing up with digital devices, paradigms, and infrastructure, as well as the resulting impact they have on an individual's behavior, development, and prospects for the future. While not entering this debate, it is posited here that private trackers take advantage of networked technology in ways that "make more sense" than legal services, since they take advantage of the internal logic of digital communication. Specifically, private trackers rely on decentralized access to content, and they facilitate user bases for which geographic borders are not relevant. Both factors have the potential to influence legal paradigms for digital media consumption.

Firstly, private trackers that use the BitTorrent protocol, which is a decentralized model whose architecture consists of a "seed/leech" structure, in which a user downloads a file from multiple nodes at once. Such a schema bears an uncoincidental resemblance to TCP/IP, the protocol most web services are built on. Because of this similarity, BitTorrent has become wildly popular and easy to use, with a lower barrier to entry than some legal music services.

Secondly, the private tracker user base is not confined to a specific set of countries, unlike services like Spotify who must negotiate in each new territory in which it seeks to operate. This is not to suggest that national borders are erased, surely some remnants of the digital divide exist in the representative percentages of specific users. Plus, some countries have a harder time gaining entry to some private trackers because their Internet Service Providers (ISPs) are less reliable. However, geographic location plays less of an overt role in membership, which reflects the ways in which internet use transgresses national boundaries in other

domains, such as political influence (Allcott & Gentzkow, 2017) and retail markets like Amazon and Alibaba.

Legal, Illegal, and Market-Adjacent Listening

Digital listening is reductively categorized because of current epistemological regimes, and that illegal and legal listening play an equally important role in the understanding of digital media consumption. The case of What.CD is designed to bolster this claim, although it does require nontraditional thinking about copyright. Furthermore, if legal scholars can distance themselves from statuses of “legal” and “illegal” in relation to digital listening, at least temporarily, we can begin to judge technological solutions based on their merits and popularity rather than arcane systems held in place by entrenched power brokers.

While the music traded on What.CD was not strictly legal, a majority of the music was made popular through legal markets like radio, streaming services, and digital music stores like iTunes. Therefore, the term “market-adjacent” is used to denote the complex relationship between What.CD and legitimated channels of consumption, especially in how they influence each other. Even while What.CD was being used as a music discovery engine by its users, this activity was presumed to generally resemble the discovery taking place on legal platforms.

The BitTorrent protocol is discussed at length within technical fields like computer science (Cuevas et al., 2013; Qiu & Srikant, 2004; Zhang et al., 2011) and mathematics (Li et al., 2013; Wang & Kangasharju, 2013). However, from a media studies perspective, its impacts seem to be limited to discussions regarding general piracy (Beyer & McKelvey, 2015; Smith & Telang, 2016). BitTorrent, however, also represents an important ideological value system based on egalitarianism that opened a cultural moment in the early 2000s, in which unregulated digital communication seemed possible. A collection of global events indicates the importance of

BitTorrent to this moment, including the digital-populist occurrences of Occupy and the Arab Spring, the rash of pirate party activity in the early 2010s, the Snowden revelations of 2013, and the passage of Net Neutrality in the U.S. in 2015. This cluster, if nothing else, highlights the power at stake in digitization, and BitTorrent represents a moment in which a technological protocol became a hidden driver for meaningful social interaction.

All users on What.CD had an explicit desire to participate, a shared understanding of the cultural importance of certain musical values, and an interest in the site's infrastructure, a space that Christopher Kelty (2005) calls a "recursive public." He writes that "techniques and design principles that are used to create software or to implement networking protocols cannot be distinguished from ideas or principles of social and moral order" (p. 186), suggesting that users are equally enthused about the tools as they are about their use. Such a phenomenon is not abnormal, and arguably happens all over the web in the form of digital rights activism (Baack, 2015), open source software movements (Dabbish et al., 2012), within big tech companies (Goggin, 2012), and especially on legal music platforms of all kinds, such as SoundCloud, Bandcamp, and Spotify. Effectively, free speech arguments concerning discourse online deal with the platforms and networks as they do with content and censorship. All these factors contribute to What.CD being a unique example of a networked public that acts as a model for the expansion of legal modes of consumption.

To become a member of What.CD, users had to undergo a strenuous interview, and the site claimed 25,000 people became members through this method, though some members were invited. The interview process is discussed at greater length in the introduction. In a similar fashion, legal services like Spotify erect barriers to entry based on criteria like monthly subscription fees, device ownership, signing a lengthy end-user license agreement, and allowing personal data to be used for a variety of purposes. While not as time consuming as What.CD's

obligations, these qualifications for membership in legal streaming services are still costly, and seem to be naturalized by the markets that assume that a user's privacy is of minimal importance, that expensive smartphones are ubiquitous even in the face of a digital divide, and that users are happy to be divided into classes such as paid and free.

Because a username and password were required, What.CD could not be viewed by the public. Therefore, it could not be searched or mined for data from external services, and its content was only of use to its users. On the other hand, users of modern legal services are subject to multiple invasions of privacy. Current literature that discusses data exploitation rarely considers invasive environments like these except for Facebook (Andrejevic, 2015), and it also downplays the number of internet users that may belong to services like What.CD. Therefore, one of the core logics of What.CD, which centers on privacy, was that data should not leave the site's premises. When the site was shut down, it was deleted entirely (or at least, according to What.CD's Twitter account). Although administrators deleted this content to protect themselves and the site's users after it was shut down, it was also done based on the assumption that the data was more valuable and unique than what could typically be found on the open web.

Two bodies of data were discussed in dedicated chapters, user data and torrent data. Concerning both, Siva Vaidhyanathan (2012) writes that the value of data on the internet is tied up in its retrievability, especially for companies like Spotify and Apple Music, and that the data storage that is residual from online communication is automatically political in nature because of the potential for exploitation. Furthermore, he argues that the internet faces serious challenges to becoming the digital public sphere that many hoped it would be in the early 90s: "The struggle to speak freely on the global network of networks illustrates the daunting challenges of forging a 'global civil society' or a media environment in which citizens around the

world can organize, communicate, and participate openly and equally” (p. 134-135). Such an indictment has equally negative predictions for illicit and legal music services.

As there are many barriers to entry for individuals to participate in legal and market-adjacent services like What.CD, such as access to broadband and digital literacy skills, there are simultaneously challenges that hinder the ability of data storage and retrieval systems to promote a healthy civil society. As a result of being aware of these challenges, What.CD’s data had to remain limited in its accessibility even though it would have proved useful for discourse to enrich musical understanding online. Such a throttling of data shaped the site to, in some ways, resemble to the broader web, and in others, to feel the need to rigorously defend from its threats.

The control of data is also central to how legal services like Spotify operate, and is perhaps the most valuable commodity. Knowing where, when, and how a user listens to music is information that can be used to sell products or to sell to companies looking for specific demographic data. Therefore, Spotify protects its data in much the same way that What.CD did, for similar reasons related to leverage.

How Listening Can Inform Future Market Development

There are a few factors that should be considered when thinking about how to apply this dissertation’s findings about listening to new digital contexts. Some key issues are how the music sounds, how communities form, and who gets access.

How the Music Sounds

To What.CD members, the fidelity of audio files was more important than to the average listener. According to the rules of What.CD as well as the general sentiments in its

forums, lossless audio files, which do not have any less audio data than much larger uncompressed files, were preferred. When the site shut down, the deletion of these lossless files was also seen as the most egregious disappearance, and the obsessive nature with which such audio needed to be documented attests to its cultural importance. For future listening platforms, we should also consider the importance of fidelity. iTunes currently does allow for the purchase of lossless audio, but the most popular streaming services offer no quality options.

How Community Forms

Like many other cultural discussions of digital spaces (Wagner, 2016), describing What.CD is a task best suited for a hybridized vocabulary that takes the political, on one hand, and the technical, on the other, and seeks to find their interdependencies. Consequently, What.CD members had an identity co-constructed between social forces and technological paradigms. Understanding the group dynamics of listeners is also dependent on a critical approach to technosocial value systems, but as Brian Epstein (2015) notes, there is often a mistaken connection between the activity of individuals and the activity of groups. He asks: “What more can there be to group action, apart from the actions of the members?” He answers his own question by suggesting that “facts about group actions and intentions are anchored to have more heterogeneous grounding conditions. Facts about group members are just part of the grounds” (p. 217). For What.CD, ambivalence was rooted in some of these grounding conditions, such as the site’s organization, the nature of its digital accountability (in terms of ratio maintenance), and the often-illicit nature of its music sharing.

Compared to What.CD, community exists in streaming services like Spotify through connecting to a listener’s social media network, thereby allowing them to discover what their friends are listening to, what playlists they have created, and which artists they prefer. However,

in the same way that social networks have been criticized for taking advantage of the flexibility of a precarious workforce (Hardt and Negri, 2009), it is also possible to frame the convenience value as one that both compels listeners to “bend their ears” and listen in the way that services desire, and constructs community in an idiosyncratic manner that serves to promote the service itself. For instance, allowing listeners to operate outside the bounds of current affordances would necessitate rearranging coding resources to clear space for flexibility, a premise that seems to stand diametrically opposed to those services’ core logics (what if Spotify users want to share musical tablature of their favorite songs within the service? The absurdity of that possibility confirms the limits of community).

Who Gets Access

Because of the strenuous interview process required to join What.CD and the limitation on maximum user count, only a small group of people had access to What.CD. Because of this exclusionary mechanism, a certain distance is perceived between the “real” world of market-driven music sales and the circulation of goods on the site. A challenge lies, then, in closing that distance in future digital markets by incorporating some of the characteristics of sites like What.CD, especially community-driven listening. While streaming services like Spotify are beginning to do this at a basic level by connecting social media to the act of listening, that paradigm could be pushed further by encompassing other parts of an individual’s social sphere, such as political ideology or communities of faith.

The Future of Digital Listening

Part of the work involved in figuring out what future digital listening looks like is to thoroughly analyze the digital spaces where most listening takes place: streaming services, YouTube, and digital storefronts like Bandcamp. Existing research on these spaces has served to

lay important groundwork in demonstrating their unique position as cultural sites of meaningful musical activity (Aguiar & Waldfogel, 2015; Bannister, 2014). Furthermore, other studies of online musical communities validate many of the theoretical claims made in this chapter, such as the unique position of What.CD and the centrality of technocultural assemblages like protocols and data. However, these concepts need to be pushed into new directions in order to generate new knowledge.

One force that researchers must constantly resist, however, is technocultural solutionism, an ethos that celebrates the shift in music consumption as a challenge to hit a moving target. Eric Sheinkop (2016) sums up the assumptions of such an approach by saying that “the relationship is clear: consumers want music, but aren’t paying as much for it anymore; brands want more consumers, but can’t build an audience on their own; and artists want to make music, but need a meaningful revenue stream to do so” (p. 24). However, there are two gaps in the logics of this solutionism that put “consumers” and “artists” at peril: the possibility of brands aligning with artists’ ideological stances, and the subsequent “meaningful” revenue stream that results from that fruitful relationship. While tech startups and the music industry seek to envelop resources like artist talent and capital back into their systems of productivity, this moment of fissure may be an opportunity to reconsider the relationship between music and the markets it serves (Sinnreich 2013, Burkhart 2010).

A further challenge associated with assessing new online musical communities is that they are generally unprecedented in their structure and cultural development. As a result, the research of these sites must be constantly updated to reflect the current scholarly paradigms for online research. Richard Rogers (2013) writes that “the internet is employed as a site of research for far more than just online culture. The issue no longer is how much of society and culture is online, but rather how to diagnose cultural change and societal conditions by means of the

Internet. The conceptual point of departure is the recognition that the Internet is not only an object of study but also a source” (p. 21). His methodological suggestion would cause a researcher’s analytical lens to refocus on aspects of social activity outside of the small purview of what happens within a browser tab or BitTorrent client, and possibly outside the physical network also. For streaming services like Spotify and Apple Music (and whichever new players may enter the market), extracting core logics will rely on building theoretical structures that can accommodate the historically-situated act of listening that has been described in this chapter as well as the shifts that take place as a result of technological reconfiguration.

There are currently a few descendants of What.CD that use the same site layout and procedures that must be explored. These sites are generally difficult to gain access to and therefore difficult to research in a timely manner. They are, nonetheless, important continuities that connect the defunct What.CD to contemporary online activity that is constantly evolving within listening publics. Interviewing members of these sites will provide important information on the social conditions that are either reproduced from What.CD or emerging from new practices and procedures.

The Future of Music

Musical practices, surprisingly, have not fundamentally changed because of digitization. Performers still rely on audiences, and recordings, more or less, serve the same purpose they always have: to reproduce performative gestures in a medium that listeners can take with them. Moreover, most musicians are not materially suffering or benefiting from piracy. While occasional artists break through to mass appeal because of social media or streaming platforms, and while all musicians certainly would not mind that happening to them, most pursue their craft in the best way they know how — playing out, getting feedback, and listening to their

hearts. In this way, digitization can be thought of as a water line that rises and everyone must react. I would not, though, characterize it as a force that inherently makes winners out of some artists and losers out of others.

In the future, well, we don't know. The internet is still emergent. While some digital practices seem to be entrenched within western culture, others are novel and experimental. Power is distributed unevenly, as it is over any social construction, which causes some ideas to flourish, and others, like What.CD, to unfortunately wither. Hope lies in the persistence of good ideas to find merit among a large constituency, which What.CD also enjoyed, which has led to its survival through the private trackers that were born out of its shutdown.

Bibliography

- Adermon, A., & Liang, C.-Y. (2014). Piracy and music sales: The effects of an anti-piracy law. *Journal of Economic Behavior & Organization*, 105, 90–106. <https://doi.org/10.1016/j.jebo.2014.04.026>
- Adorno, T., & Horkheimer, M. (2007). The culture industry: Enlightenment as mass deception. In *Stardom and Celebrity: A Reader* (pp. 34–43). London: Sage Publishers.
- Aguiar, L., & Waldfoegel, J. (2015). *Streaming Reaches Flood Stage: Does Spotify Stimulate or Depress Music Sales?* (No. w21653). National Bureau of Economic Research. <http://www.nber.org/papers/w21653>
- Aitken, P. A. (2012). *The ambivalences of piracy: BitTorrent media piracy and anti-capitalism* (Master's Thesis, University of Leeds).
- Allcott, Hunt, and Matthew Gentzkow. (2017). Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*, 31(2): 211-36.
- Andrejevic, M. (2017). Digital citizenship and surveillance | To pre-empt a thief. *International Journal of Communication*, 11, 18.
- Aufderheide, P., & Jaszi, P. (2011). Reclaiming fair use: How to put balance back in copyright. Chicago: University of Chicago Press.
- Bakardjieva, M. (2009). Subactivism: Lifeworld and Politics in the Age of the Internet. *The Information Society*, 25(2), 91-104.
- Bakos, Y., Marotta-Wurgler, F., & Trossen, D. R. (2014). Does anyone read the fine print? Consumer attention to standard-form contracts. *The Journal of Legal Studies*, 43(1), 1-35.
- Bannister, M. (2014). Under the covers: copyright, cover versions and the internet. In *Communities, Places, Ecologies: Proceedings of the 2013 IASPM-ANZ Conference* (p. 147). International Association for the Study of Popular Music.
- Benjamin, W. (1978). The Author as Producer. In Arato, A. and Gebhardt, E. (eds.), *The Essential Frankfurt School Reader*. London: Bloomsbury Academic.

Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. New Haven: Yale University Press.

Bennett, A., & Rogers, I. (2016). Popular Music and Materiality: Memorabilia and Memory Traces. *Popular Music and Society*, 39(1), 28-42.

Beyer, J. L., & McKelvey, F. (2015). Piracy & Social Change | You Are Not Welcome Among Us: Pirates and the State. *International Journal of Communication*, 9, 19.

BMG Music v. Gonzalez, 430 F.3d 888 (7th Cir. 2005).

Bødker, H. (2004). *The changing materiality of music*. Aarhus: The Centre for Internet Research.

Bollier, D. (2013). *Silent theft: The private plunder of our common wealth*. New York: Routledge..

Bollier, D., & Pavlovich, R. (2008). *Viral spiral: how the commoners built a digital republic of their own* (p. 156). New York: New Press.

Bonini, T., & Monclús, B. (2014). *Radio audiences and participation in the age of network society* (Vol. 6). Routledge.

Boon, M. (2010). *In praise of copying*. Cambridge: Harvard University Press.

boyd, danah. (2010). Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications. In Papacharissi, Z (ed.), *Networked Self: Identity, Community, and Culture on Social Network Sites*, pp. 39-58. New York: New York: Routledge..

Brown, J. 2017. The EU Suppressed a 300-Page Study That Found Piracy Doesn't Harm Sales. Accessed on 10/23/17 at <https://gizmodo.com/the-eu-suppressed-a-300-page-study-that-found-piracy-do-1818629537>

Bruns, A. (2008). *Blogs, Wikipedia, Second Life, and beyond: From production to produsage*. New York: Peter Lang.

Bull, M., Back, L., & Howes, D. (2015). *The auditory culture reader*. London: Bloomsbury Publishing.

Burkart, P. (2010). *Music and cyberliberties*. Middletown: Wesleyan University Press.

Burkart, P. (2014). *Pirate politics: The new information policy contests*. Middletown: Wesleyan University Press.

Burkart, P., & Andersson Schwarz, J. (2015). Editorial Introduction: Piracy and Social Change—Revisiting Piracy Cultures. *International Journal of Communication*, 9, 792-797.

Calboli, I., & Ragavan, S. (Eds.). (2015). *Diversity in Intellectual Property: Identities, Interests, and Intersections*. Cambridge: Cambridge University Press.

Caraway, B. R. (2012). Survey of File-Sharing Culture. *International Journal of Communication*, 6.

Chen, X., Chu, X., & Li, Z. Improving Sustainability of Private P2P Communities. *2011 Proceedings of 20th International Conference on Computer Communications and Networks (ICCCN)*, Maui, HI, 2011, pp. 1-6. doi: 10.1109/ICCCN.2011.6005944.

Chion, M. (2012). The three listening modes. *The Sound Studies Reader*, 48-53. New York: Routledge.

Cohen, S. (1985). Visions of social control: Crime, punishment and classification (pp. 127-143). Cambridge: Polity Press.

Constine, J. (2017, March 18). How Spotify is finally gaining leverage over record labels. Retrieved February 23, 2018, from <https://techcrunch.com/2017/03/18/dictate-top-40/>

Coombe, R. J. (1998). *The cultural life of intellectual properties: Authorship, appropriation, and the law*. Durham: Duke University Press.

Copyright Office. 2015. *Copyright and the Music Marketplace: a report of the register of copyrights*. Accessed on 10/26/17 at <https://www.copyright.gov/policy/musiclicensingstudy/executive-summary.pdf>

Crawford, K. (2012). Following you: disciplines of listening in social media. *The Sound Studies Reader*, 79-90. New York: Routledge.

Cuevas, R., Kryczka, M., Cuevas, A., Kaune, S., Guerrero, C., & Rejaie, R. (2013). Unveiling the Incentives for Content Publishing in Popular BitTorrent Portals. *IEEE/ACM Transactions on Networking*, 21(5), 1421–1435. <https://doi.org/10.1109/TNET.2012.2228224>

Danaher, B., & Waldfogel, J. (2012). Reel Piracy: The Effect of Online Film Piracy on International Box Office Sales. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1986299>

Deleon, N. (2017, December 11). Best Music Streaming Services Consumer Reports helps you evaluate the options, from Apple Music to Tidal. Retrieved February 22, 2018, from <https://www.consumerreports.org/audio-video/best-music-streaming-service-for-you/>

Dixon, C. (2018, February 18). Why Decentralization Matters. Retrieved February 23, 2018, from <https://medium.com/@cdixon/why-decentralization-matters-5e3f79f7638e>

Durham, B. 2013. "Are You Ready to Join?": Free culture and the dynamics of permissibility in private music BitTorrent trackers. Retrieved at http://web.mit.edu/comm-forum/mit8/papers/Durham_MIT8Submission.pdf

Economist. 2010. Technology and society: Is it really helpful to talk about a new generation of "digital natives" who have grown up with the internet?. Retrieved 10/31/17 at http://www.economist.com/node/15582279?story_id=15582279

Ecorys. 2015. Estimating displacement rates of copyrighted content in the EU. Accessed on 10/23/17 at https://juliareda.eu/wp-content/uploads/2017/09/displacement_study.pdf

Erlmann, V. (2010). Reason and resonance: A history of modern aurality. Brooklyn: Zone Books.

Erlmann, V. (2016). The Invention of the Listener: An (other) History. *Sound as Popular Culture: A Research Companion*, 163.

European Commission. 2017. Digital Single Market: Better access for consumers and business to online goods. Accessed on 10/23/17 at <https://ec.europa.eu/digital-single-market/en/better-access-consumers-and-business-online-goods>.

Feenberg, A. (2002). *Transforming technology: A critical theory revisited*. Oxford: Oxford University Press.

Feenberg, A. (2009). Critical theory of communication technology: Introduction to the special section. *The Information Society*, 25(2), 77-83.

Feenberg, A. (2012). *Questioning technology*. London: Routledge.

Feenberg, A. (2017). Encountering Technology. Retrieved February 28, 2018, from <http://www.sfu.ca/~andrewf/encountering.pdf/>

Feenberg, Andrew. (1991). *Critical Theory of Technology*. New York: Oxford University Press.

- Fiesler, C., & Bruckman, A. S. (2014, February). Remixers' understandings of fair use online. In Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing (pp. 1023-1032). ACM. Retrieved from [/https://dl.acm.org/citation.cfm?id=2531695](https://dl.acm.org/citation.cfm?id=2531695)
- Fleischer, R. (2015). Towards a postdigital sensibility: How to get moved by too much music. *Culture Unbound: Journal of Current Cultural Research*, 7(2), 255-269.
- Galloway, A. R., & Thacker, E. (2007). *The exploit: A theory of networks* (Vol. 21). Minneapolis: U of Minnesota Press.
- Geigner, T. 2016. Despite Massive Streaming Revenue Gains, RIAA Still Lying & Crying. Accessed on 10/24/17 at <https://www.techdirt.com/articles/20160323/10074433993/despite-massive-streaming-revenue-gains-riaa-still-lying-crying.shtml>.
- Gibson, J. J. (1979). The theory of affordances. In Gieseeking, J. J., Mangold, W., Katz, C., Low, S., & Saegert, S. (Eds.), *The people, place, and space reader* (pp. 56-60). New York: Routledge.
- Gillespie, T. (2007). *Wired shut: Copyright and the shape of digital culture*. Cambridge: The MIT Press.
- Github. (2016, November 8). WhatCD/Gazelle. Retrieved February 28, 2018, from <https://github.com/WhatCD/Gazelle>
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Cambridge: Harvard University Press.
- Goldsmith, J., & Wu, T. (2006). *Who controls the Internet?: illusions of a borderless world*. Oxford: Oxford university press.
- Hagen, A. N. (2015). The playlist experience: Personal playlists in music streaming services. *Popular Music and Society*, 38(5), 625-645.
- Hardt, M., & Negri, A. (2005). *Multitude: War and democracy in the age of empire*. New York: Penguin.
- Harley, R. (2010). *The complete guide to high-end audio*. Tijeras: Acapella.
- Heller, M. A. (1998). The tragedy of the anticommons: property in the transition from Marx to markets. *Harvard law review*, 621-688.

Herz, B., & Kiljański, K., Movie Piracy and Displaced Sales in Europe: Evidence from Six Countries (September 22, 2016). Available at SSRN: <https://ssrn.com/abstract=2844167>

Hinduja, S. (2007). Neutralization theory and online software piracy: An empirical analysis. *Ethics and Information Technology*, 9(3), 187-204.

IFPI. 2017. Global Music Report. Retrieved on 10/24/17 at <http://www.ifpi.org/downloads/GMR2017.pdf>

Jenkins, H. (2012). *Textual poachers: Television fans and participatory culture*. New York: Routledge.

Kane, B. (2015). Sound studies without auditory culture: a critique of the ontological turn. *Sound Studies*, 1(1), 2-21.

Kassabian, A. (2013). *Ubiquitous listening: affect, attention, and distributed subjectivity*. Berkeley: U. of California Press.

Kavada, A. (2015). Creating the collective: social media, the Occupy Movement and its constitution as a collective actor. *Information, Communication & Society*, 18(8), 872-886.

Kellner, D. (2003). *Media culture: Cultural studies, identity and politics between the modern and the post-modern*. New York: Routledge.

Kleinhans, M. M., & Macdonald, R. A. (1997). What is a critical legal pluralism?. *Canadian Journal of Law & Society/La Revue Canadienne Droit et Société*, 12(02), 25-46.

Krause, A. E., North, A. C., & Heritage, B. (2014). The uses and gratifications of using Facebook music listening applications. *Computers in Human Behavior*, 39, 71-77.

Krukowski, D. (2017, January 30). How to Be a Responsible Music Fan in the Age of Streaming. Retrieved February 23, 2018, from <https://pitchfork.com/features/oped/how-to-be-a-responsible-music-fan-in-the-age-of-streaming/>

Latour, B. (1987). *Science in action: How to follow scientists and engineers through society*. Cambridge: Harvard university press.

Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford: Oxford university press.

Latzko-Toth, G. (2014). Users as co-designers of software-based media: The co-construction of internet relay chat. *Canadian Journal of Communication, 39*(4).

Lemert, E. M. (1972). *Human deviance, social problems, and social control* (2nd Ed). National Criminal Justice Reference Service.

Lenz v. Universal Music Corp., 801 F.3d 1126 (2015)

Lepa, S., & Hoklas, A. K. (2015). How do people really listen to music today? Conventionalities and major turnovers in German audio repertoires. *Information, Communication & Society, 18*(10), 1253-1268.

Lessig, L. (2006). *Code: And other laws of cyberspace*. New York: Basic Books

Levine, R. (2011). *Free ride: How digital parasites are destroying the culture business, and how the culture business can fight back*. New York: Doubleday.

Li, Q., Qin, T., Guan, X., Zheng, Q., & Huang, Q. (2013). An in-depth measurement and analysis of popular private tracker systems in China. In 2013 IEEE International Conference on Communications (ICC) (pp. 2272–2276). IEEE. <https://doi.org/10.1109/ICC.2013.6654867>

Liu, Z., Dhungel, P., Wu, D., Zhang, C., & Ross, K. W. (2010). Understanding and Improving Ratio Incentives in Private Communities. In 2010 IEEE 30th International Conference on Distributed Computing Systems (pp. 610–621). IEEE. <https://doi.org/10.1109/ICDCS.2010.90>

Lysonski, S., & Durvasula, S. (2008). Digital piracy of MP3s: consumer and ethical predispositions. *Journal of Consumer Marketing, 25*(3), 167-178.

Marcuse, H. (2013). *One-dimensional man: Studies in the ideology of advanced industrial society*. New York: Routledge.

Martin, M. (2012). Gender and early telephone culture. *The Sound Studies Reader*. 336-350. New York: Routledge.

Marx, K. (1909). *Capital: A Critique of Political Economy*. Retrieved March 15, 2018, from <http://oll.libertyfund.org/titles/marx-capital-a-critique-of-political-economy-volume-i-the-process-of-capitalist-production>

- Mazzei, M. (2015). BitTorrent. Salem Press Encyclopedia of Science. GEN, Salem Press. Retrieved from <https://login.proxy.libraries.rutgers.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ers&AN=87324104&site=eds-live>
- McCourt, T. (2005). Collecting music in the digital realm. *Popular Music and Society*, 28(2), 249-252.
- McLeod, K., & DiCola, P. (2011). *Creative license: the law and culture of digital sampling*. Durham: Duke University Press.
- Mitchell, D. M., Scott, C. P., & Brown, K. H. (2018). Did the RIAA's Prosecution of Music Piracy Impact Music Sales?. *Atlantic Economic Journal*, 1-13.
- Moody, G. China's Home-Grown Version Of Spotify Shows How To Make Money In A World Of Digital Abundance. Accessed on 10/24/17 at <https://www.techdirt.com/articles/20160801/08513035129/chinas-home-grown-version-spotify-shows-how-to-make-money-world-digital-abundance.shtml>
- Morozov, E. (2012). *The net delusion: The dark side of Internet freedom*. New York: Public Affairs.
- Morris, J. W. (2015). Anti-Market Research: Piracy, New Media Metrics, and Commodity Communities. *Popular Communication*, 13(1), 32-44. <https://doi.org/10.1080/15405702.2014.977998>
- Morris, J. W. (2015). *Selling digital music, formatting culture*. Berkeley: Univ of California Press.
- Morris, J. W., & Powers, D. (2015). Control, curation and musical experience in streaming music services. *Creative Industries Journal*, 8(2), 106-122.
- Mueller, M. L., & Asghari, H. (2012). Deep packet inspection and bandwidth management: Battles over BitTorrent in Canada and the United States. *Telecommunications Policy*, 36(6), 462-475. <https://doi.org/10.1016/j.telpol.2012.04.003>
- Negri, A., & Hardt, M. (2000). *Empire*. Cambridge: Harvard University Press.
- Neumann, M., & Simpson, T. A. (1997). Smuggled sound: Bootleg recording and the pursuit of popular memory. *Symbolic Interaction*, 20(4), 319-341.

- Nielsen. (2017). 2017 YEAR-END MUSIC REPORT. Nielsen. Retrieved from <http://www.nielsen.com/content/dam/corporate/us/en/reports-downloads/2018-reports/2017-year-end-music-report-us.pdf>
- Nissenbaum, H. (2010). *Privacy in context: Technology, policy, and the integrity of social life*. Palo Alto: Stanford University Press.
- Palfrey, J. & Gasser, U. (2013). *Born digital: Understanding the first generation of digital natives*. New York: Basic Books.
- Palmås, K., Andersson Schwarz, J., & Larsson, S. (2014). The liability of politicalness: legitimacy and legality in piracy-proximate entrepreneurship. *International Journal of Entrepreneurship and Small Business*, 22(4), 408-425.
- Papacharissi, Z. (2004). Democracy online: Civility, politeness, and the democratic potential of online political discussion groups. *New Media & Society*, 6, 259-283.
- Patry, W. (2009). *Moral panics and the copyright wars*. New York: Oxford University Press.
- Patry, W. (2011). *How to fix copyright*. New York: Oxford University Press.
- Prey, R. (2017). Nothing personal: algorithmic individuation on music streaming platforms. *Media, Culture & Society*, 1, 15.
- Reda, J. 2017. What the Commission found out about copyright infringement but 'forgot' to tell us. Accessed on 10/23/17 at <https://juliareda.eu/2017/09/secret-copyright-infringement-study/>
- Resnikoff, P. (2016, August 3). Two-Thirds of All Music Sold Comes from Just 3 Companies. Retrieved February 23, 2018, from <https://www.digitalmusicnews.com/2016/08/03/two-thirds-music-sales-come-three-major-labels/>
- Richardson, L. J., & Lindgren, S. (2017). Online Tribes and Digital Authority: What Can Social Theory Bring to Digital Archaeology?. *Open Archaeology*, 3(1), 139-148.
- Robinson, D. 2016. EU digital chief calls on YouTube to pay music artists more. Accessed on 10/26/17 at <https://www-ft-com.proxy.library.cornell.edu/content/d692aaf4-0320-11e6-99cb-83242733f755>

- Roca, C.P., & Helbing, D. (2011). Emergence of social cohesion in a model society of greedy, mobile individuals. *Proceedings of the National Academy of Sciences* 108(28): 11370-11374.
- Rodgers, T. (2012). Toward a Feminist Historiography of Electronic Music. *The Sound Studies Reader*, 475-489. New York: Routledge.
- Rogers, R. (2013). *Digital methods*. Cambridge: MIT press.
- Samuelson, P. (2016). The Relative Virtues of Bottom-Up and Top-Down Theories of Fair Use. *U. Chi. L. Rev. Online*, 83, 206.
- Sharma, S. (2013). Black Twitter? Racial hashtags, networks and contagion. *New Formations*, 78(78), 46-64.
- Sheinkop, E. (2016). *Return of the Hustle: The Art of Marketing with Music*. New York: Springer.
- Sherman, C. (2015). State Of The Music Business: What The Numbers Tell Us. Accessed on 10/31/17 at <https://medium.com/@RIAA/state-of-the-music-business-what-the-numbers-tell-us-63ce1524b30>
- Sinclair, G., & Green, T. (2016). Download or stream? Steal or buy? Developing a typology of today's music consumer. *Journal of Consumer Behaviour*, 15(1), 3-14.
- Sinnreich, A. (2010). *Mashed up: Music, technology, and the rise of configurable culture*. Univ of Massachusetts Press.
- Sinnreich, A. (2013). *The piracy crusade: How the music industry's war on sharing destroys markets and erodes civil liberties*. Amherst: University of Massachusetts Press.
- Smith, M.D. and Telang, R. (2012). Assessing the Academic Literature Regarding the Impact of Media Piracy on Sales. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2132153>.
- Sockanathan, A. (2011). *Digital desire and recorded music: OiNK, mnemotechnics and the private BitTorrent architecture* (Doctoral dissertation, Goldsmiths College (University of London)).
- Sterne, J. (2003). *The audible past: Cultural origins of sound reproduction*. Durham: Duke University Press.
- Sterne, J. (2012). *MP3: The meaning of a format*. Durham: Duke University Press.

- Styvén, M. (2007). The intangibility of music in the internet age. *Popular Music and Society*, 30(1), 53-74.
- Sunstein, C. R. (2018). *# Republic: Divided democracy in the age of social media*. Princeton: Princeton University Press.
- Treré, E., & Barassi, V. (2015). Net-authoritarianism? How web ideologies reinforce political hierarchies in the Italian 5 Star Movement. *Journal of Italian Cinema & Media Studies*, 3(3), 287-304.
- Vaidhyanathan, S. (2003). *Copyrights and copywrongs: The rise of intellectual property and how it threatens creativity*. NYU Press.
- Vaidhyanathan, S. (2012). *The Googlization of everything:(and why we should worry)*. Berkeley: Univ of California Press.
- Van der Sar, E. (2010). "The Pirate Bay Really Sucks," Says Co-Founder. Accessed on 10/23/17 at <https://torrentfreak.com/the-pirate-bay-really-sucks-says-co-founder-100815/>
- Van der Sar, E. (2017). Streaming Service iflix Buys Shows Based on Piracy Data. Accessed on 10/23/17 at <https://torrentfreak.com/streaming-service-iflix-buys-shows-based-on-piracy-data-170819/>.
- Veal, M. (2012). Starship Africa. *The Sound Studies Reader*, 454-467. New York: Routledge.
- Vinkó, T., & Hales, D. (2015). Towards the Coevolution of Incentives in BitTorrent. *Acta Polytechnica Hungarica*, 12(6), 181–199. JOUR.
- Wagner, B. (2016). *Global Free Expression-Governing the Boundaries of Internet Content*. New York: Springer International Publishing.
- Waldfoegel, J. (2010). Music file sharing and sales displacement in the iTunes era. *Information economics and policy*, 22(4), 306-314.
- Wang, L., & Kangasharju, J. (2013, September). Measuring large-scale distributed systems: case of bittorrent mainline dht. In *Peer-to-Peer Computing (P2P), 2013 IEEE Thirteenth International Conference on* (pp. 1-10). IEEE.
- Weheliye, A. (2012). Desiring Machines in Black Popular Music. *The Sound Studies Reader*, 511-519. New York: Routledge.

Weijters, B., & Goedertier, F. (2016). Understanding today's music acquisition mix: a latent class analysis of consumers' combined use of music platforms. *Marketing Letters*, 27(3), 603-610.

Whatinterviewprep. (2016, November 17). What.CD Interview Preparation. Retrieved February 28, 2018, from <https://web.archive.org/web/20160617030115/https://www.whatinterviewprep.com/>

Wiatrowski, M. D., Griswold, D. B., & Roberts, M. K. (1981). Social control theory and delinquency. *American sociological review*, 525-541.

Witt, S. (2015). *How music got free: A story of obsession and invention*. New York: Penguin.