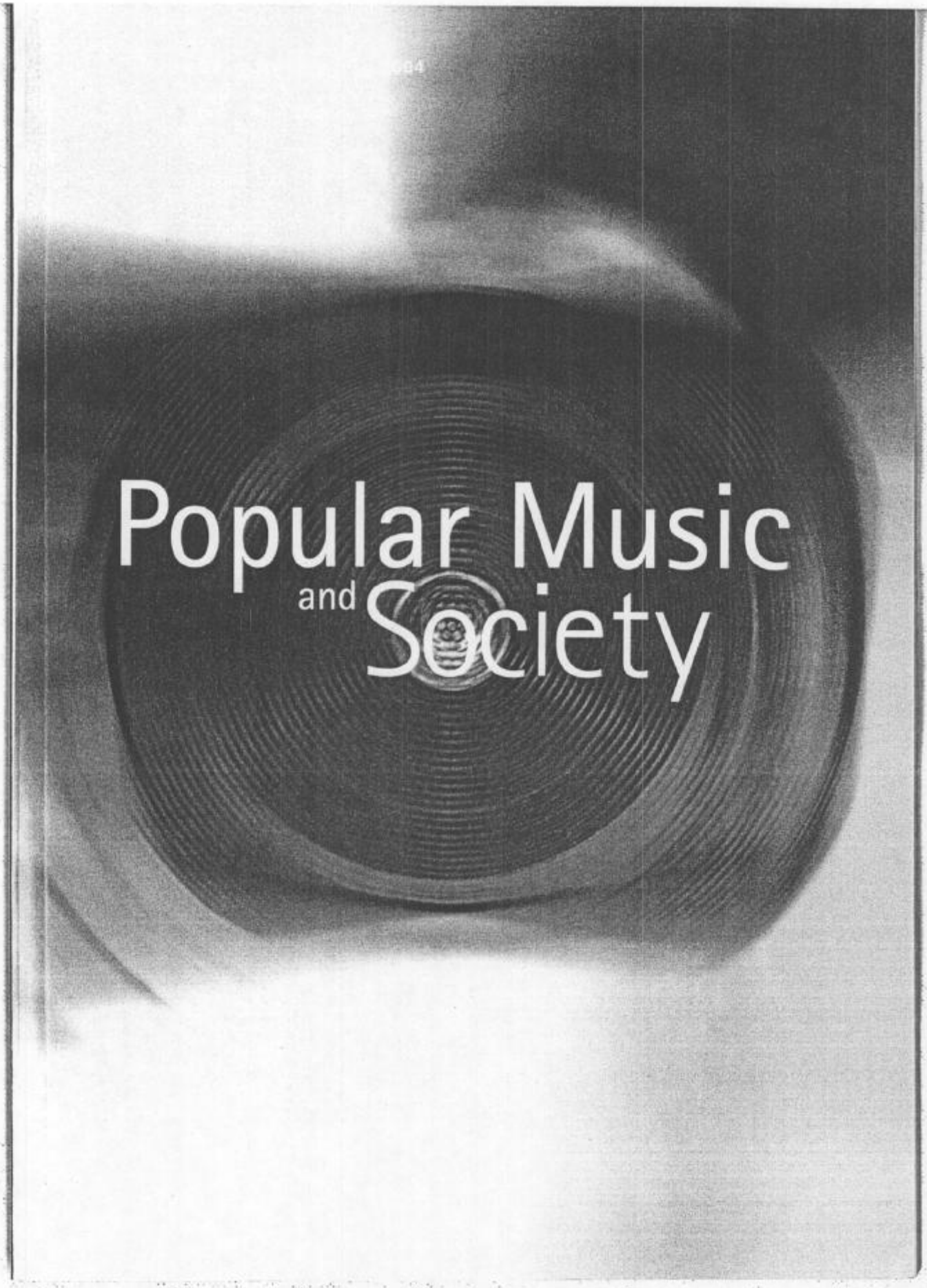
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Music Downloading and Listening: Findings from the Pew Internet and American Life Project

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Music downloading and listening

Although popular music and the Internet seem inextricably intertwined (if only because of Napster and mp3s), scholarly research on the Internet's impact on popular music has been slow to develop. Even more surprisingly, few empirical studies that examine audience behaviors and attitudes toward popular music have been published. This article will use findings from the random digit dial phone surveys fielded by the Pew Internet & American Life Project in April and July/August 2000 and February 2001 to depict the audience of music downloaders during Napster's "heyday." We begin with a brief survey of the literature related to popular music and the Internet, followed by a detailed explanation of the Pew Internet Project study's method and findings. We conclude with a discussion of the Internet's consequences for the music industry, music fans, and popular music studies, and compare the audiences for home taping and music downloading.

Literature review

Although some examples of empirical research on music audiences exist, remarkably little has been published to date about popular music and media use, and even less has been published about popular music and the Internet. Seminal books like Simon Frith's *Sound Effects*, Deanna Robinson's *Music at the Margins: Popular Music and Cultural Diversity*, and numerous others largely ignore matters of media technology and barely touch on matters of media use. The treatment one usually finds is best summarized in James Lull's study of the popular music audience, rooted in a uses and gratifications approach to media use. "(A) variety of communication takes place between the musician and the audience member," Lull writes, "an event that is usually technologically mediated rather than 'live'" (141). Even when technology is foregrounded in popular music studies, these studies typically address music production (Jones, *Rock*; Wallis and Malm) and not music consumption.

Perhaps the pace of scholarly publishing is to blame; several articles may be "in the pipeline." Certainly, dissertations are examining these topics. Napster, mp3, and lawsuits concerning copyright and online distribution of digital music files have been discussed at several conferences (the International Association for the Study of Popular Music, the Society for Ethnomusicology, and similar groups) attended by popular music scholars. These topics also have been discussed on

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popular music studies email lists and have been the focus of much attention in popular media. However, a survey of the existing scholarly literature revealed only a handful of articles related to the general topic of popular music and the Internet.

A common theme of existing literature involves music distribution. The issue of mediation is at the core of numerous legal and business maneuvers during 2000 and 2001 between the Recording Industry Association of America (RIAA) and online businesses (Napster, MP3.com, and others). The music industry traditionally has controlled the distribution of popular music with little effort, insofar as it has managed the physical delivery of recordings to retail outlets, consumers, radio stations, and other media. The new medium of the Internet and the growth of online distribution of physical product and digital audio have threatened that control. Yet, concerns about distribution may be exaggerated. In their analysis of European policy in relation to telecommunication, Janson and Mansell (2) noted that "disintermediation ... may never fully be realized." Yet, as major record labels like Bertelsmann and Universal have increased their presence in online distribution via mergers and acquisitions, even greater attention should be paid to music and the Internet. By examining the maneuverings of corporate entities jockeying for position in online music delivery, much can be learned about the industrial practices related to online music. However, only Hayward provided an overview of the potential impact of the Internet on music distribution, and he did so well before the invention of Napster and related technologies. Few analyses of mediation and distribution issues have been published, and what exists has focused on matters of copyright (Frith, *Music & Copyright*; Jones, "Mass").

If the Internet's impact on the music industry's distribution practices has been under-scrutinized, then research into the Internet's social consequences for popular music audiences is invisible. While a growing body of literature in communication, sociology, rhetoric, anthropology, psychology, and many other disciplines is concerned with the Internet's social and cultural implications, little such work can be found in popular music studies. Nessim Watson, in a 1997 essay, reported on observation and analysis of online discussions related to the group Phish. He noted that the Internet provided geographically dispersed fans a means to practice their fandom, and that the Internet provided a medium for fans that was impossible, or at least incredibly difficult, for the traditional music industry to penetrate. Marjorie Kibby studied a fan website and noted the Web's potential for creation of new music communities. In a key passage she wrote that such communities can go:

> a long way towards dispelling the alienation that followed the industrialisation of pop music; highlighting the consumption of music as an active, incorporative practice; and solidifying the often illusory bonds between performer and consumers. The (home page) became ... a virtual place that facilitated the belief in a local music community. (Kibby 100)

A recent essay by Jones ("Music and the Internet") also noted the Internet's potential to cause significant shifts in fan practices as well as in music industry practices.

The home-taping "crisis" of the late 1970s and early 1980s, in which the recording industry predicted income loss from consumer copying of LPs and CDs to cassettes, offers the closest analogy to the present situation. However, the technologies of cassette taping and Internet file sharing clearly differ in kind and scale. Cassette taping was a relatively self-contained process, requiring modest expense for hardware, and cassette trading was largely confined to relatively small circles

of friends. Sharing music with a virtually unlimited number of people, as is the case with peer-to-peer systems like Napster and Gnutella, was unheard of. In the cases of both taping and file sharing, the audio quality of the copied material would suffer in comparison to the original recording. However, file sharing resulted in no additional loss from one generation to the next, as was the case with tapes, and audio quality could surpass that of audiocassettes.

Then as now, the recording industry expressed concerns about loss of income and the general concept of sharing music, regardless of scale. Most importantly, assumptions about the music audience, particularly that it seeks ways to "get music for free," drove the recording industry's actions in both cases. Perhaps the most significant outcome of the home-taping crisis was the Recording Industry Association of America's (RIAA) relocation to Washington, DC, so that it could better lobby Congress (Jones, "Music"). This move paid some dividends in the 1992 passage of the Audio Home Recording Act (AHRA). The AHRA allowed private individuals to record music for noncommercial use but provided for a royalty from sales of recording devices to be distributed to record companies and mandated inclusion of serial copying management technology in digital audio recorders to prevent digital copies of recordings. The AHRA was a compromise for the recording industry insofar as the law was confined to cassette, DAT, and minidisc recording technologies and specifically did not cover computers and CD-ROMs. The RIAA did not alter its legislative agenda, however, and its move to Washington, DC, is currently paying greater dividends by providing the Association with access to legal and legislative resources during the peer-to-peer file-sharing controversies.

Another striking similarity between the debates over home taping and file sharing is that popular music studies showed little interest in studying the audience's behavior concerning home taping. Although industry stakeholders undertook surveys in the 1970s and 1980s to gauge the impact of home taping on the music industry, only one, a survey commissioned by Warner Communications, Inc. (WCI), provides some insight into audience behavior (Fishbein, Middlestadt, and Kapp). The U.S. Congress commissioned its Office of Technology Assessment (OTA) to conduct its own survey of home taping, and its results closely match those of the WCI report. Our goal is to provide a portrait of the audience for music downloading and file sharing in the U.S. during Napster's most publicized period (2000–2001) and to discuss our results in comparison to ones from the WCI and OTA surveys.

Napster and Gnutella

Napster software (and that of comparable systems like iMesh) works through a shared server, which lists "addresses" that tell an individual user's computer how to find music files on the hard drives of other users. Napster connects users to other users, but does not store any music, pass any music through its servers, or connect users on one server to those on another server. Gnutella operates on another technological model. Instead of working through a central server, Gnutella creates a network of users over the Internet and transmits the search request from user to user until the file is found. Gnutella has no company behind it and no central servers, so it is very difficult to "shut off" or regulate. Gnutella (as well as iMesh, Morpheus, and KaZaa) differs from Napster in that it can also carry any

kind of file, not just WMA or mp3 music files. Gnutella is also open source software; consequently, many different versions of Gnutella-style interface exist on the Web, with names like Gnotella, Gnut, Limewire, and Bearshare. As of press time, Napster was still unavailable as it attempted to create a for-pay model that would charge user fees for downloading and hammer out copyright agreements with the major music labels that would compensate artists for the downloading of their music. Even though Napster currently lies dormant, other centralized and decentralized peer-to-peer file-sharing entities like Music Cities Morpheus, Audio Galaxy, and KaZaa have risen in traffic and profile to take its place.

The Pew Internet Project

The Pew Internet & American Life Project's mission is to examine the Internet's role in everyday life in the U.S., with particular attention paid to under-examined aspects of Internet use and the Internet's social impact. Its primary research method is the tracking survey. This daily poll, which ran continually from March 2000 to February 2001, surveyed U.S. Internet users regarding their online activities. An important feature of the tracking survey is that it asks respondents about their recent and long-term online activities. Consequently, it is able to garner information that is still fresh in a respondent's mind.

Questions about music downloading and related activities were added to the survey at three different points between April 2000 and March 2001. During the period April 1–30, 2000, 2,503 adults (18 years of age or older) in the continental U.S. were telephoned using a random digit dial sample of telephone numbers selected from telephone exchanges in the continental U.S. The random digit aspect of the sample is used to avoid "listing" bias and provides representation of both listed and unlisted numbers (including not-yet-listed numbers). The design of the sample achieves this representation by random generation of the last two digits of telephone numbers selected on the basis of their area code, telephone exchange, and bank number.

A new sample was released daily and was kept in the field for at least five days. This practice ensured that the complete call procedures were followed for the entire sample. Additionally, the sample was released in replicates to ensure that the telephone numbers called were distributed appropriately across regions of the country. At least ten attempts were made to complete an interview at every household in the sample. The calls were staggered over times of day and days of the week to maximize the chances of making contact with a potential respondent. Interview refusals were recontacted at least once in order to try to complete an interview. All interviews completed on any given day were considered to be the final sample for that day.

Nonresponse in telephone interviews produces some known biases in survey-derived estimates because participation tends to vary for different subgroups of the population, and these subgroups are also likely to vary on questions of substantive interest. To compensate for these known biases, the sample data are weighted in analysis.[2] The demographic weighting parameters are derived from a special analysis of the most recently available Census Bureau's Current Population Survey (March 1999). This analysis produced population parameters for the demographic characteristics of adults aged 18 years or older, living in households that contain a telephone. These parameters are then compared with the sample characteristics to

construct sample weights. The weights are derived using an iterative technique that simultaneously balances the distribution of all weighting parameters.

For results based on the April 2000 survey, one can say with 95 percent confidence that the error attributable to sampling and other random effects is ±3 percent. Additionally, as is the case with surveys, question wording and practical difficulties in conducting a survey can introduce error or bias into the findings. An additional set of questions was asked of those who reported they had listened to or downloaded music from the Internet. For this subset, the $n = 288$ and the margin of error is ±7 percent.

Additional questions were asked between July 24 and August 20, 2000. At that time 2,109 adults in the U.S. were surveyed (1,101 were Internet users) and error calculated at ±2.5 percent overall, ±3 percent for Internet users. An extra set of questions was asked of people who reported that they had downloaded music files onto their computers. This survey of 238 Internet users has a margin of error of ±7 percent.

A third survey was conducted between February 1 and March 1, 2001 of 2,096 adults. The sample included 1,198 Internet users, and confidence and error were calculated to be the same as in the summer 2000 survey.

Results

Demographic characteristics

The April 2000 survey showed that 21 percent of respondents who used the Internet had downloaded music (see Fig. 1). That number held steady in the August 2000 survey at 22 percent, but in the February 2001 survey it grew to 29 percent. Given the increased news coverage of the Napster controversy during that time, the increase is not surprising.

The demographic characteristics (shown in Table 1) of those who said they downloaded music did not vary greatly between the three survey periods.

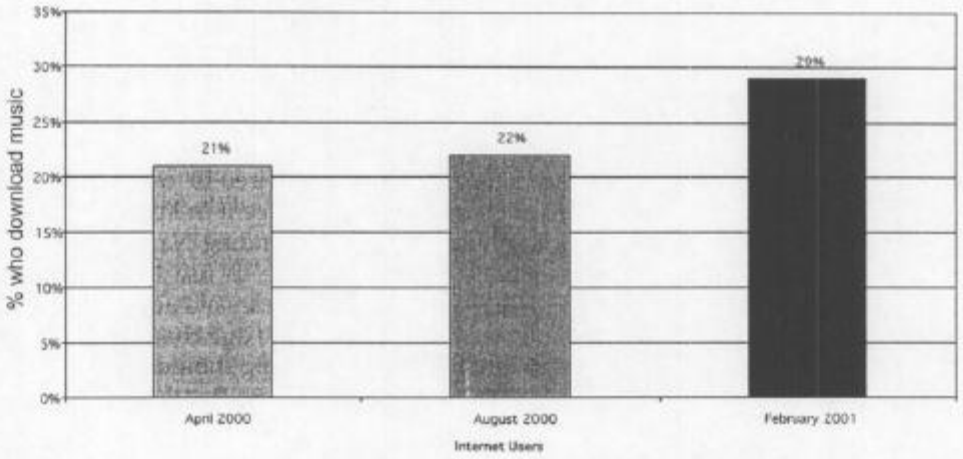

Figure 1. Percentage of Internet users who download music.

Table 1. More music downloaders.

	% Internet users who download music	
	July–Aug. 2000	Feb. 2001
All adults	22	29
Men	24	36
Women	20	23
Whites	21	26
Blacks	29	30
Hispanics	35	46
Age cohorts		
18–29	37	51
30–49	19	23
50 +	9	15
Household income		
Under $30,000	28	36
$30,000–$50,000	24	31
$50,000–$75,000	20	29
$75,000+	15	24
Educational attainment		
Less than high school	38	55
High school graduate	25	31
Some college	25	32
College degree or more	15	21
Internet user experience		
Less than 6 months	20	27
6 months to 1 year	20	25
2 to 3 years	24	28
3 or more years	22	33

Source: Pew Internet & American Life Project Surveys, July–August 2000 and February 2001. Margin of error is ±3 percent (from PIP's Music Downloading Deluge report, released April 2001).

Downloaders were disproportionately male (roughly 2 males to 1 female). They are also relatively experienced Internet users. The April 2000 survey found that 79 percent of those who had downloaded music had had Internet access for two or more years, although the February 2001 survey found that newcomers to the Internet had increasingly downloaded music. The increase was actually greater percentagewise for very experienced users (those with three or more years of experience online), from 22 percent in April 2000 to 33 percent in February 2001. (One may make the case that the growing publicity surrounding Napster, and an interest in getting free music, essentially "drove" people to use the Internet.) Approximately half of music downloaders were under 30 years old across all three surveys. While appealing to common sense both in terms of age characteristics of the popular music audience and of Internet users, this finding should not cause us to overlook that few Internet users over 50 downloaded music. But the 30–49-year-old cohort accounts for almost as much downloading as the one for the under 30s. By February 2001, 51 percent of those under 30 downloaded versus 32 percent of those over—and 50 percent of all downloading adults were under 30, while the

percentage who were 30–49 years old drops to 39 percent. In other words, the younger group of downloaders grew much more than the older group. Much of Napster's early media coverage focused on college students' music-downloading habits. The April 2000 survey found that 37 percent of those downloading music for free were students. The same survey found that most downloaders had a college education and above-average incomes. The later surveys, however, found that greater percentages of the lower income population downloaded music and that they made up a greater percentage of the music-downloading population as a whole. In the February 2001 survey, 23 percent of all downloaders were earning less than $30,000 as opposed to the 18 percent of downloaders who were earning $75,000 or more. And 36 percent of all those earning under $30,000 downloaded music compared with 24 percent of those earning $75,000 or more.

It is important to note that not all online music use is illegal or free. The April 2000 survey found that 16 percent of Internet users listened to music online using streaming audio software, or they listened to Internet radio stations. In such cases it is difficult, if not impossible, to save and trade music files. The demographic characteristics of these users are slightly different from those of the downloaders. They are slightly older, and consist of slightly more women and are somewhat less experienced Internet users. It was found that 17 percent of this group were students.

In the April 2000 survey, the majority of Internet users reported that they had never downloaded a music file or listened to music online. Of that group, roughly half were men and half women, almost half (48 percent) were between the ages of 30 and 49 (only 24 percent were 18–29 years old), and most were newcomers to the Internet. One could expect to have found, as we did, that with increased experience of Internet users the number of people who had not used the Internet for music listening or downloading would decrease.

The demographics of music downloaders bear a striking similarity to those of home tapers from more than twenty years ago. According to the 1980 survey by Fishbein, Middlestadt, and Kapp (25), "the vast majority of taping is done by those between 20 and 34 years of age, with at least a high school education, and above average family incomes," and home tapers were found to be predominantly male. The 1989 OTA report noted that there was "a higher rate of taping among those with incomes of over $50,000" (U.S. Congress 154), and that most taping was done by those under 30 years of age.

Attitudes, habits, and opinions

The July/August 2000 tracking survey contained a battery of questions focused on eliciting the attitudes and opinions of Internet users and nonusers about music downloading. The debates surrounding Napster and other file-sharing technologies have largely focused on whether copyright is being infringed, music is being "stolen," and sales of prerecorded music are being adversely affected. Most news coverage focused on those issues, and one could project that the audience for music might, if only due to the coverage, also be focused on these issues. Our July/August 2000 survey found that 78 percent of music downloaders said they believed their music file-sharing activities were not stealing (Table 2). Only 31 percent reported that copyright was a concern for them, and 61 percent said they did not care if the music they downloaded was copyrighted. Among all Internet

Table 2. Is downloading music from the Internet stealing?

	Response to question*	
	Stealing (%)	Not stealing (%)
Downloaders	13	78
Internet users	30	53
All Americans	35	40

* Respondents were asked: "Which statement comes closer to your views—People who download music from the Internet are: stealing/not stealing?

Source: Pew Internet & American Life Project July/August 2000 Survey. Margin of error is ±7 percent for downloaders, ±3 percent for Internet users and ±2.5 percent for All Americans.

users (ones who downloaded music and ones who did not) 53 percent said downloading music was not stealing.

An advantage of the tracking survey is that questions are asked of Internet users and nonusers. Aggregating these two groups showed that 40 percent believed downloading music is not stealing, while 35 per cent of all users believed it is stealing. Twenty-five percent did not take a position. The August 2000 survey also found that a lenient attitude toward downloading music is correlated with the young, affluent, and highly educated. The OTA report found that, "In general, both tapers and nontapers believed that it was acceptable to copy a prerecorded item for one's own use or to give to a friend" (U.S. Congress 147).

The Pew Internet Project survey also asked about music-buying habits. Seventy-nine percent of downloaders got their music for free, while 15 percent reported that they paid for a file at the time of access. However, 69 percent of downloaders said that at least on occasion they purchased CDs of music they have downloaded, albeit not frequently. Twenty-one percent said that "most of the time" they bought music they got online, while 29 percent said they bought the music "some of the time" and 19 percent bought it "only a few times." Some 26 percent said they never bought the music they downloaded.

The 1980 Fishbein, Middlestadt, and Kapp WCI study showed that 82 percent of home tapers bought prerecorded music, compared with only 44 percent of

Table 3. Downloaders' buying habits.

	% respondents*
Most of the time	21
Some of the time	29
Only a few times	19
Never	26

* Respondents were asked: "How often have you purchased music after downloading?"

Source: Pew Internet & American Life Project July–August 2000 Survey. Margin of error is ±7 percent.

nontapers. It also showed that "tapers spend more money on prerecorded music than do nontapers" (32) but "the most frequent reason (given) for taping is 'so I don't have to buy it'" (42). Unfortunately, the 1980 report does not go into much greater detail about buying behavior and it is not possible to compare further those results to our own. Likewise, the OTA report, though conducted nearly ten years after the WCI one, does not provide much detail about buying behavior. It does point out, however, that home taping had increased in prevalence since the late 1970s, and "found that a large majority of people who copied from a prerecorded format in their last taping session were copying their own record, tape, or CD for their own use" (U.S. Congress 146).

An interesting comparison, however, arises from Fishbein, Middlestadt, and Kapp's (42) assertion that "taping parallels buying in that consumers tend to tape the same types of music that they buy." Our July/August 2000 survey found that 86 percent of downloaders sought music they had heard before by artists they were already familiar with. One difference between 1980 and the present is that 28 percent of downloaders reported getting music that they already owned in another form (CD, tape, LP). This finding in the August 2000 survey was also strikingly different from the one of April 2000, in which 13 percent of downloaders reported doing so. This change likely represents downloaders' interest in having digital copies of music already owned in analog form. Of course, it may also be that, by August 2000, cognizant of the controversy surrounding Napster, downloaders were savvy enough to try to protect themselves against claims of copyright infringement by asserting that they downloaded music they had already purchased. Further evidence of their awareness of the controversy comes from downloading behavior. Our surveys found that the number of files on the average Napster user's hard drive had steadily increased since June 2000. At that time, there were approximately 100 songs in a typical user's library. In the hours prior to and just after the July 28, 2000 legal showdown, our observation of the per-user number of songs rose to 110. In the weeks just after July 28, the number averaged 140 songs per user library. It did appear that, as threats of Napster's closing became imminent, downloading and saving of music files increased.[1] And, even though Napster users were most likely aware of the potential copyright infringements, users reported that it didn't make a difference to them whether what they downloaded was copyrighted or not. In August 2000, the Pew Project asked music downloaders if copyright was a concern and 61 percent said, "it isn't something that I care much about." Thirty-one percent reported concern over copyright and 8 percent said they didn't know, or refused to respond.

Another comparison can be made between file sharing and home taping by examining the type of activity in which the audience engaged. The Fishbein,

Table 4. Home taping habits.

	% of respondents*
Taped only complete albums	22
Taped only individual songs	43
Taped both songs and albums	35

* Respondents were asked what they taped at home.
Source: Fishbein, Middlestadt and Kapp. "A Consumer Survey: Home Taping". Warner Communications, Inc., 1980.

Middlestadt, and Kapp report makes much of the distinction between those who tape complete albums and those who tape individual selections (songs). The report's authors went so far as to essentially ignore those who taped live performances, radio programs, etc., and focused primarily on those who taped music directly from a prerecorded album or cassette. That focus was likely due to the report being authored for Warner Communications, Inc., and a concern with taping having consequences for sales of prerecorded music. Fishbein, Middlestadt, and Kapp reported that 22 percent of their sample taped only complete albums, 43 percent taped only individual songs, and 35 percent taped both albums and songs. However, the OTA report concluded from its survey that 56 percent taped individual songs and only 8 percent taped complete albums. The possibility of bias based on the concern, not inappropriate for Warner and other record companies, that people will tape albums and no longer buy them, must be considered. It is also a concern currently in regard to music downloading. One person wrote in a posting to the Pew Internet Project Web site: "I didn't catch on to it until right before Napster went under. But, now that I have, music will never be the same to me (no longer will I have to buy a highly over-priced CD)" (Lorie).

Since 1980, of course, the notion of what constitutes an "album" and a "single" has undergone some change, making direct comparison between our survey and the 1980 report impossible. New formats, from "cassingles" to 12-inch singles and CD singles (some with more tracks and playing time than vinyl LPs), and multiple remixes of songs (as well as full-length CDs of remixes) have blurred the traditional distinctions between albums and singles. However, a comparison can be made concerning the amount of music taped and shared. Fishbein, Middlestadt, and Kapp reported that "20.7 million complete album tapers copied a total of 251.2 million (2.51 billion) albums. In addition, the 28.2 million selection tapers copied 2044.2 million (2.04 billion) selections" (20). Using their calculation that the average album has ten selections, "complete album tapers" copied 2.5 billion songs, which, when added to the "selection tapers" total, results in 4.5 billion songs copied in a year. The OTA report states that "600 million tapings from prerecorded sources per year" (U.S. Congress 153) is an appropriate estimate of annual taping in the United States but does not note whether that number represents albums or songs or both.

Owing to its interface, Napster in particular seemed to encourage downloading of individual songs, and our survey did not ask whether Napster users downloaded individual songs or complete albums. Extrapolating from our results, we can claim that, in summer 2000, approximately 11 million Napster users were sharing approximately 1.5 billion songs. Of course, many songs may be duplicated among users, but the same may be said of the songs and albums in the Fishbein, Middlestadt, and Kapp WCI home-taping report.

Discussion

The key difference between home taping and file sharing, of course, is not to be found in the number of songs copied, but in the *availability* of songs for copying. Hence, our survey figure of 1.5 billion songs shared represents not an estimate of songs copied but an estimate of the number of songs that were available for copying via Napster, whereas the Fishbein, Middlestadt, and Kapp WCI figures, as

well as the OTA figures, are estimates of actual taping. The analogous activities with mp3s are difficult to discern—are they downloaded onto hard drives, burned onto CDs (of downloaded music or from other CDs), etc.? These distinctions matter, and they are not simply distinctions of numbers and behavior but of *scale*, insofar as the processes of tape copying and file sharing, downloading and burning are greatly different in terms of time, storage, and expense, as well as availability. What Napster facilitated was a home taper's dream, and a different practice than borrowing LPs or tapes from friends or a library, or taping from radio. Napster connected users to a free and vastly diversified source of music at a time when Internet connectivity and computers became faster and easier to use. Napster also developed at a time when music itself had greatly diversified, and format radio was unable, as a mass medium, to cater to very many audience niches (particularly in rural areas).

From the Pew Internet Project surveys, we can estimate that as of early 2001 about 21 million Americans had downloaded music files onto their computers. In 1980, Fishbein, Middlestadt, and Kapp (6) estimated that 42.8 million people "had access to tape recording equipment and had taped music at least once in their lifetime." In 1989, the OTA estimated that 40 percent of the U.S. population, or more than 90 million people, had engaged in home taping. Of course, as already mentioned, there are numerous differences between home taping and file sharing, not the least of which is access to the equipment needed to undertake these activities as well as the knowledge needed to perform them. Even within the realm of file sharing, significant differences exist between software applications. As the surveys found, most music downloaders (69 percent) had used Napster and/or the MP3.com website. Only 7 percent had used Gnutella, likely because of its interface complexity relative to Napster and MP3.com. Most interestingly, attitudes toward copying have not changed significantly. All surveys mentioned in this study showed that the great majority of respondents believed that making a copy of prerecorded music for one's personal use, whether the original was obtained through purchase or by other means, was considered acceptable. None of the surveys specifically asked subjects about the fair use provisions of copyright law. Still, it can be reported at least from anecdotal evidence that most subjects seem to confuse fair use with the personal exception in copyright law that allows one to make copies for private, noncommercial use of copyrighted materials one has legitimately obtained.

Since Spring 2001, when Napster lost its rounds in court with the RIAA, its future has been unclear. However, in that time, use of other peer-to-peer file-sharing software and websites (Aimster, Gnutella, Limewire, Bearshare, KaZaa, MP3.com, Morpheus, etc.) has, according to press reports, increased among former Napster users. It remains to be seen, however, whether other software will simply attract former Napster users or introduce people to Internet file sharing. It might be claimed that a similar evolution occurred from the reel-to-reel tape recorder to the cassette deck, and then within the cassette deck's development as features like one-touch recording, timed recording, dual-cassette dubbing decks, and self-adjusting controls for volume, tape bias, etc. were added. It is not our intent, however, to draw parallels between these technologies. What parallels exist are found in the realm of human behavior. As Fishbein, Middlestadt, and Kapp noted in their 1980 report:

> These findings imply that, although related, taping and buying may best be seen as independent ways of expressing a more general, underlying commitment to music. In fact, the data clearly indicate that the stronger this commitment, the more likely one is to both tape and buy prerecorded music and to engage in a variety of other behaviors that also express this commitment to and interest in music. These findings imply that, were home taping not possible, tapers, and in particular, those tapers who are already buyers, would spend additional amounts of money on records and prerecorded tapes. (40)

The OTA report, however, noted that there is a "stimulative" aspect to taping: It may encourage sales of prerecorded music, and taping is most prevalent among those who are buyers of prerecorded music. In other words, limits on the ability to record and share music may most directly affect the industry's most valuable audience members.

It is clear from the passionate responses among music fans and musicians to Napster that a "commitment to music" is very much in play throughout the debate, as it was during the home-taping controversy. That so many music downloaders in the surveys are not concerned with matters of copyright does not mean that they are criminals, or even scofflaws, or that they do not understand copyright law. Instead, as seems to have been the case with home taping, music downloaders believe music occupies a special place in their lives and in the world, a place that they believe is not subject to the same rules and regulations found in the world of commerce. In general, the Internet appears to have given these consumers an opportunity to experience music in ways not as connected to income and commerce as music buying. It remains to be seen whether the music industry will be able to convince music downloaders that they should again part with their money and engage with commercial interests for nearly all of their future music experiences.

Inklings of this debate's expansion beyond the music industry are already beginning to register in Hollywood. The Motion Picture Association of America (MPAA) has already begun its campaign of litigation, most notably in its suit against the hacker 'zine *2600* over their publication of the DeCSS code, which allows savvy users to unencrypt DVDs, allowing users to play them in any DVD player and also share them via the Internet. Trading of videos and movie files online is also expanding as mp4s and DivX files are embraced by users, making it possible to share large video files in a matter of hours. Additionally, the increased access to broadband connections and the ability to trade files of any kind across newer peer-to-peer networks are setting the stage for further conflict between the MPAA (like the RIAA before it) protecting the interests of the movie studios and consumer demand for free access to media content.

Acknowledgments

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Notes

1. Interestingly, Fishbein, Middlestadt, and Kapp (20) reported that "selection tapers [those who do not tape complete albums] copy 72 selections or the equivalent of about 7 albums (at 10 selections per album) a year."

2. Weighting is generally used in survey analysis to compensate for patterns of nonresponse that might bias results. The interviewed sample of all adults was weighted to match national parameters for sex, age, education, race, Hispanic origin and region (U.S. Census definitions). These parameters came from a special analysis of the Census Bureau's March 2000 Current Population Survey (CPS) that included all households in the continental United States that had a telephone. Weighting was accomplished using Sample Balancing, a special iterative sample weighting program that simultaneously balances the distributions of all variables using a statistical technique called the *Deming Algorithm*. Weights were trimmed to prevent individual interviews from having too much influence on the final results. The use of these weights in statistical analysis ensures that the demographic characteristics of the sample closely approximate the demographic characteristics of the national population. Table 5 compares weighted and unweighted sample distributions to population parameters.

   Post-data collection statistical adjustments require analysis procedures that reflect departures from simple random sampling. Princeton Survey Research Associates International (PSRAI, a professional survey research firm who consulted on survey design and collected and weighted the data for the July–August 2000 data set used here) calculates the effects of these design features so that an appropriate adjustment can be incorporated into tests of statistical significance when using these data. The so-called

Table 5. Sample demographics.

	Parameter	Unweighted	Weighted
Gender			
Male	47.9	44.0	47.4
Female	52.1	56.0	52.6
Age			
18–24	12.8	12.5	12.2
25–34	18.5	18.1	18.0
35–44	22.1	19.9	22.1
45–54	18.3	19.1	17.6
55–64	11.8	10.6	11.3
65+	16.4	17.0	16.2
Education			
Less than high school	16.1	8.8	14.7
High school graduate	36.5	34.6	36.9
Some college	23.6	25.7	23.6
College graduate	23.9	30.3	24.3
Region			
Northeast	19.7	17.3	19.5
Midwest	23.2	24.0	23.9
South	35.2	40.4	35.6
West	21.9	18.3	20.9
Race/Ethnicity			
White/not Hispanic	74.6	74.4	77.6
Black/not Hispanic	11.1	11.6	10.2
Hispanic	10.1	7.1	7.2
Other/not Hispanic	4.3	5.5	3.5

"design effect" or *deff* represents the loss in statistical efficiency that results from systematic non-response. The total sample design effect for this survey is 1.13.

PSRAI calculates the composite design effect for a sample of size n, with each case having a weight, w_i as:

$$deff = \frac{n\sum_{i=1}^{n} w_i^2}{\left(\sum_{i=1}^{n} w_i\right)^2} \qquad \textit{formula 1}$$

In a wide range of situations, the adjusted *standard error* of a statistic should be calculated by multiplying the usual formula by the square root of the design effect ($\sqrt{deff}$). Thus, the formula for computing the 95 percent confidence interval around a percentage is:

$$\hat{p} \pm \left(\sqrt{deff} \times 1.96 \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \right) \qquad \textit{formula 2}$$

where $\hat{p}$ is the sample estimate and n is the unweighted number of sample cases in the group being considered.

The survey's *margin of error* is the largest 95 percent confidence interval for any estimated proportion based on the total sample—the one around 50 percent. For example, the margin of error for the entire sample is ±2.3 percent. This means that in 95 out every 100 samples drawn using the same methodology, estimated proportions based on the entire sample will be no more than 2.3 percentage points away from their true values in the population. The margin of error for Internet users [n = 1,101] is ±3.1 percent. It is important to remember that sampling fluctuations are only one possible source of error in a survey estimate. Other sources, such as respondent selection bias, questionnaire wording and reporting inaccuracy, may contribute additional error of greater or lesser magnitude.

Works cited

Fishbein, Martin, Susan Middlestadt, and Michael Kapp. *A Consumer Survey: Home Taping*. New York: Warner Communications, 1980.

Frith, Simon. *Sound Effects*. New York: Pantheon, 1981.

——. *Music and Copyright*. Edinburgh: Edinburgh UP, 1995.

Hayward, Philip. "Enterprise on the New Frontier: Music, Industry and the Internet." *Convergfigence* 1.2 (1995): 29–44.

Janson, Emma, and Robin Mansell. *A Case of Electronic Commerce: The Online Music Industry—Content, Regulation and Barriers to Development*. ACTS/FAIR Working Paper No. 40. Brighton: Science Policy Research Unit (SPRU), 1998.

Jones, Steve. "Music and the Internet." *Popular Music* 19 (2000): 217–30.

——. "Mass Communication, Intellectual Property Rights, International Trade and the Popular Music Industry." *Mass Media and Free Trade*. Ed. E. G. McAnany, and K. T. Wilkinson. Austin, TX: U of Texas P, 1996. 331–50.

——. "Music and Copyright in the USA." *Music and Copyright*. Ed. S. Frith. Edinburgh: Edinburgh UP, 1995. 67–85.

——. *Rock Formation: Music, Technology and Mass Communication*. Newbury Park, CA: Sage Publications, 1992.

Kibby, Marjorie D. "Home on the Page." *Popular Music* 19 (2000): 91–100.

Lorie. Website posting. Pew Internet & American Life Project. 9 Aug. 2000. <www.pewinternet.org>.

Lull, James. "Listeners' Communicative Uses of Popular Music." *Popular Music and Communication*. Ed. James Lull. Newbury Park, CA: Sage Publications, 1991. 140–74.

Robinson, Deanna Campbell. *Music at the Margins: Popular Music and Cultural Diversity*. Newbury Park, CA: Sage Publications, 1991.

U.S. Congress. *Office of Technology Assessment. Copyright and Home Copying: Technology Challenges the Law*. OTA-CIT-422. Washington, DC: U.S. Government Printing Office, 1989.

Wallis, Roger, and Krister Malm. *Big Sounds from Small Peoples*. London: Constable, 1984.

Watson, Nessim. "Why We Argue About Virtual Community: A Case Study of the Phish.net Fan Community." *Virtual Culture*. Ed. Steven G. Jones. Newbury Park, CA: Sage Publications, 1997. 102–32.

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