1 Music as a Digital File

OLD-TIMERS

I came along around [Winamp version] 2.03 when MP3 didn’t mean anything. It was a time when if we wanted a copy of a song, we would rip WAV straight from the CD-ROM. And then a friend of mine introduced MP3 and Winamp to me and I downloaded it. I loved it ever since.
—Jstalilwyrd 2001

I’ve been using Winamp since v1.00 hit the scene. I think it was around May 1997. My first MP3s were encoded with L3ENC at 56 kbps, and I was proud. I turned on Creative WaveStudio and click[ed] Record, then I played the song I wanted to “rip.”
—Nexxus 2001

I remember the original fraunhoffer l3enc. I remember waiting 1/2 hour to encode an MP3. I remember not being able to play a 128 kbps MP3 because my computer wasn’t fast enough (I miss my 486). Those were good times.
—OneJ1Way 2001

I’ve used Winamp since around 1.x I don’t really remember. Damn that was a long time ago [...] I’m only 15, but I feel so old.
—s1138 2001

Winamp was one of the first widely used programs for playing digital recorded music files on computers. The comments above come from the user forums on the Winamp website in a discussion thread from 2001 called “Old Timers,” where users who remembered the “early days” of digital music could share their experiences. Put aside for a moment the specific technologies they mention (L3enc, WAV files, CreativeWave Studio, etc.).
You may be more or less familiar with them, and for now that matters little. Consider instead the moment these users are describing: their first memories of recorded music on the computer. At first glance their conversation hardly seems like a very musical discussion, concerned as it is with encoding software and processor speeds. Underneath this high-tech talk, however, these “old-timers” are also bonding over fond memories of early digital audio and expressing the technical and aesthetic pleasures that came with playing music on their computers. One user even half-jokingly admits to getting “tearfully nostalgic” reading through the thread (Dellis 2001).

The user discussion above offers a snapshot of a particular moment in time: a moment when sound, technology, and interface combined in a novel way to create powerful and valuable new experiences of music. This discussion thread thus provides a fitting outline for the two main themes of this chapter. First, their discussion underscores the significant convergence that has taken place in the music and computing industries; a union that has defined the production, circulation, and consumption of recorded music for the better part of the last two decades and one that continues to have implications for how users access and experience music. The fusion of music and computing has made music a “transectorial” commodity, one that is pulled by the competing demands of various industries, actors, and devices. This has long been the case for music, but the last twenty years have intensified music’s transectorial status. The resulting changes have been rapid and profound; the “old-timers” above, waxing nostalgic about what sounds like a distant past, are mostly teenagers talking about technologies that at the time of their discussion were barely five years old. The history of digital music on computers was in its opening chapters, yet here was a group of users trying to ensure that the memory of digital music’s beginnings did not fade away.

Second, the Winamp users’ collective stroll down memory lane speaks to the important role various pieces of software, hardware, and cultural practices played in readying music for its life in digital contexts. The affective relationship these users had with Winamp and other early computer audio technologies that mediated their initial experiences with music on the computer suggests this was more than just new gear for accessing music. The in-depth details about encoding files or the demands digital audio placed on their systems reinforce the devotion these users had for making music playable in a new environment. Their attachment to the work they carried out and to the technologies they used in the process are emblematic of a wider value relationship that was beginning to form between users and music in its digital form, as aesthetic object and as commodity.
Following these two general threads, this chapter begins by briefly reviewing some of the developments in the late 1980s and early 1990s that shepherded popular recorded music on to the computer. Winamp could not have existed without (at least) a decade-long effort on the part of computer manufacturers to create a multimedia machine that could handle the demands of digital audio. It represents the culmination of years of transectorial innovation (Théberge 1997, 58) and is a primary example of the kind of technical and cultural challenges that arise as industries and products converge. Winamp’s status as a poster technology for an “MP3 generation” set on disrupting the music industry, despite its creators’ ambiguous relationship with early efforts to create a market for the sale and distribution of digital music, is not just the result of technological convergence but is part of a much longer tradition of seeing computers as devices for personal transformation.

The second half of the chapter builds on this transectorial history by considering how the movement of music onto computers called into question the status and the character of the music commodity. Stripped of the physical packaging that accompanied CDs, tapes, or records, music as a digital file was initially an unmanageable commodity that was open to a virtual repackaging, a re-tuning of its interface. Winamp was a cultural interface that presented and represented sound. It filtered how users thought about, interacted with, and experienced music. Through material metaphors, it borrowed from past designs, devices, and conventions of music playback in order to transition users to newer practices (Bolter and Grusin 1999). In doing so, the media player set the context in which a digital music commodity could exist. Winamp and the migration of music onto computers represented a transitory moment that called into question the status of the recorded music product while simultaneously presenting digital music as a viable commodity. Winamp contributed to a new environment, beyond the confines of physical packaging, within which users could play, store, hear, and see music as a commodity.

**SYSTEM REQUIREMENTS**

Winamp launched in 1997 as one of the first and most popular full-featured MP3 and audio software players. It provided a unique and influential visual and sonic interface for users adopting new sets of practices and technologies associated with digital music. The program still exists today, as a property of the online radio network called Radionomy, though it was owned for many years by multinational media company AOL. Winamp is now one of
many media players through which users can play digital music (e.g., Windows Media Player, iTunes, Spotify, etc.) though its early prominence and its unique mix of features set the standard for the design of many of today’s best-known media players. Moreover, the program’s interface and the practices it encouraged and discouraged contributed to one of the first coherent visions of digital music as a commodity. It repackaged music for the computer, embedding it with new paratextual materials.

Winamp’s development from hobby project to an offshoot of a multimedia tech giant underscores the difficulties that arise during moments of transectorial innovation. Paul Théberge, in his study of the rise of microprocessors in the music instrument industry, refers to this mixing of diverse sectors as transectorial innovation; it is meant to signify the increasing interrelationship among once distinct industries (Piatier 1987/88; Théberge 1997). This process is more commonly referred to as convergence, though studies of convergence tend to focus on the ways the media products themselves converge. Transectorial innovation focuses on the organizational changes within the industries themselves as “each sector has become more and more dependent for its own development on all others” (Piatier 1987/88, 209). As computing and music entwine, they depend on each other not just for technologies and content but also for people, ideas, and practices (Théberge 1997, 63). Transectorial innovation is not just a technical process then; it manifests itself in all facets of production, distribution, and consumption. For digital music transectorial innovation has meant that the computing industry is now one of the key developers of new means of finding, playing, storing, and experiencing music, while the music industry owns swaths of content that make computers and other high-tech products more desirable.

Transectorial networks complicate the typical view of industries as distinct entities. As convenient as shorthand descriptions like “music industry” or “computer industry” may be, they are misleading representations of the push and pull of the various groups and ideas that make up such networks (Williamson and Cloonan 2007). The “music industry,” for example, is often treated synonymously with the “recording industry,” when in reality there are publishers, retailers, advertisers, concert promoters, radio broadcasters, critics, journalists, and a host of tangential services that contribute to the circulation and production of music (Williamson and Cloonan 2007, 305). Given the recent amount of transectorial innovation, descriptions of the contemporary music landscape would be inadequate without including computer companies, Internet service providers, online retailers, cell phone content providers, social networks, and an increasingly important army of
consumers, bloggers, podcasters, and other new media users who take part in
the business of music. The music industries, in other words, extend far
beyond simply recorded music to include an increasing array of technology
companies with competing or at least divergent interests.

Despite the number of businesses now involved in the business of music,
much of the music industries’ activities are still dominated by the three
main multinational companies that control approximately 70 to 80 percent
of all global recorded music sales: Warner Music, Sony Music Entertainment,
and Universal Music Group. These companies are “loosely integrated” and
“tightly diversified” with the wider entertainment industries (Burkart
and McCourt 2006, 29). Together, they own a vast amount of copyrights and
other intellectual properties, and they exert significant political influence in
matters of technology and intellectual property policy through industry
associations and lobby groups such as the Recording Industry Association of
America (RIAA) and the International Federation of the Phonographic
Institute (IFPI). Historically, the dominant players in the music industries
have shifted in light of new technologies of production and changing social
relations. Music publishing houses gave way to record companies, which
then gave way to transnational entertainment corporations (Garofalo 1999).
But for the last quarter of the twentieth century the trend moved toward a
smaller number of corporations that exerted a kind of oligarchic control over
the flow of recorded music (Burkart 2005; Burkart 2009). This is not to min-
imize the impact digitization has had on the major recording labels but
rather to situate the current shifts within the larger history of recorded
music. Once worth approximately US$45 billion in 1997 (Hodgson 2007),
recorded music has seen its value cut to less than a third of that (IFPI 2013b).
Although Winamp did not draw the same kind of music industry ire that
Napster would a few years later, it was nevertheless seen as an enabling
technology in the movement toward music as a digital file outside the con-
fines of the compact disc (Atwood 1997; Behar 1999; Greenfeld et al. 1999).

Winamp’s emergence in 1997, then, comes at an important historical
moment, one in which the political economy of the music industries was in
the process of shifting as a result of transectorial innovations. But the roots
of Winamp’s capabilities come from a longer history of transectorial innova-
tions in multimedia computing in the 1980s and 1990s that made a pro-
gram like Winamp, and the many that would follow it, possible.

While we take sound on computers—and the ability to play CDs in
them—for granted today, these capabilities are relatively recent and were
not immediately obvious in the 1980s and early 1990s. The computer was
not initially a device designed for the playback of popular recorded music.
The last two decades of the twentieth century, then, brought not just changes to music but also to the capabilities of both music and computers. Transectorial innovation helped translate a whole series of technologies and practices onto the computer in order to make playback of recorded music possible.

Take, for example, a piece of software called Music Box from a company named Trantor. Released in 1991 for $59, the software enabled users to play audio CDs in the CD-ROM drives of computers. Initially, CD-ROM drives played CD-ROM discs that held video games, encyclopedias, and other large database programs; they were not originally capable of reading audio CDs, with the exception of a few “audio-enabled” or “Option A” drives (Grunin 1991; Manes 1989). Music Box let users play CDs and allowed them to “choose a desired track, randomly shuffle tracks, repeat an entire disk, search forward and backward, pause a track” and more (Grunin 1991). The program also told users how much time was left in a track and on the disc. Music Box, in other words, turned the CD-ROM drive and the computer into a stereo-like device for music playback. Familiar features from CD players—like pause, search, and shuffle—were novel enough at the time to warrant special mention in Grunin’s software review, an indication of how impractical the computer had previously been as a playback device.

The very existence of Trantor’s program and others like it speaks to how foreign the concept of using computers for music playback was, even in the early 1990s. Sound on personal computers was an afterthought, and using the device for general music consumption was clearly a side interest for developers, at least initially (Petzold 1991). The first personal computers were marketed as office tools, as calculating machines to enhance productivity at work, and the earliest successful programs were spreadsheet applications like VisiCalc (Friedman 2005, 102–21). As personal computers started appearing in homes, consumers usually placed them in the study and treated them as extensions of the workplace with limited usefulness in other realms (Venkatesh 1996; Venkatesh and Vitalari 1987). The machines and their software were not initially designed or perceived as entertainment devices, and their audio capabilities were limited during the rise of the “personal” computers in the 1970s and 1980s (Friedman 2005; Venkatesh 1996, 48).

This is not to say computers had no entertainment purposes or sonic capabilities. Many electronic music composers had been experimenting for decades with computer music (Manning 2004), and early mainframe computers of the 1960s and 1970s were capable of, and in some cases designed specifically for, processing sound. Gaming had also been a focus of early
computer development at universities, and the 1980s saw a rise in platforms that called for more capable graphic and sonic hardware and software (Dyer-Witheford and de Peuter 2005). Again, the innovations were highly transsectorial: companies like Apple, Amiga, and Atari developed more elaborate soundcards for games, protocols like the Musical Instrument Digital Interface (MIDI) standard emerged in the 1980s to connect computers to instruments, and music instruments themselves became more highly computerized with the addition of processors and microchips to synthesizers (Dyer-Witheford and de Peuter 2005; Théberge 1997, 83–90; MacUser 1989).

Though these developments helped boost the computer’s basic sound capabilities, the introduction of CD-ROM discs and drives proved to be Trojan horses for getting recorded music onto the computer. Originally conceived for reference, gaming, and storage purposes—many CD-ROMs were bigger than hard drives at the time—CD-ROMs also introduced users to the possibility of playing CDs on something other than a CD player. At the functional level they made CDs playable on computers. More metaphorically, they helped recontextualize music on a new device and laid the groundwork for the existence of a digital music commodity as a distinct, saleable file.

CD-ROM drives also brought verbs like ripping and burning to the music experience to signal the ability to extract data from or store data on discs (though this was more of a lexical innovation than a functional one since making a mix tape from a CD is just a less efficient version of the same process). Initially, the computer’s ripping and burning capabilities were limited. When Sony and Yamaha introduced a CD burner for desktop computers in 1989, priced at a stunning $30,000, it is hard to imagine consumers were lining up for the devices (Feeley and Stefanac 1995). Although the cost would drop to a few hundred dollars a decade later (Somogyi 1998), burning music was still primarily for experienced users. A 1996 “How To” guide for burning CDs coaches users through a six-step process that involves preparing the data, partitioning the hard drive, connecting peripheral cables, and turning off all other computer applications (Breen 1996). Ripping music was equally challenging since there was no easy way to extract data from CD-ROM to a usable format on the computer. Innovative users, like those quoted at the start of this chapter, could plug a microphone into the input on their computer and digitize by recording the analog output, though this primitive ripping resulted in a noticeable decrease in audio quality (Gruberman and McQuillin 1991). Programs like cdda2wav and XingSound—which launched in 1993—were among the first to offer users the ability to rip audio, though their playback functions did not even include
a “pause” button (Amorim 2007; Ness 1993). As advanced as XingSound’s encoding and compression features seemed, the $100 software only let users open, play, and repeat a file (Ness 1993).

Like Trantor’s Music Box, these awkward examples of ripping, burning, and playback reinforced how ill-prepared the computer was for handling the music commodity or, at least, for handling music in ways with which consumers were familiar. There was no obvious or simple connection between how music existed in CD format and how music should exist on computers. CD-ROM drives opened the door for music on the computer, though they were still not musical devices. Digitization, compression, and decoding were separate practices that each required dedicated software and hardware. Getting digital music onto the computer also required sufficient hard drive space on which to store and archive the imported content. Although a few dozen megabytes of data seems miniscule now, it was a sizable demand at the time. Computers could not readily play music collections or convert them into digital formats. As a result there are handfuls of halfway technologies like Trantor and XingSound that exist as relics of transectorial innovation in process. Computers became musical as programmers and users started conceiving of them as machines for music.

Early technologies like XingSound and Trantor were largely under the radar of record label executives. They were almost exclusively discussed and reviewed in computer magazines like *PC Magazine, Macworld,* and *CD-ROM Professional,* and they were absent from *Billboard* and *Rolling Stone.* Most record label executives had little to no knowledge of these, and those who did were often brought in as technology consultants to the labels. As Jim Griffin of Geffen records—one of those tech consultants turned music execs—noted: “You have to remember that entertainment companies didn’t even have computers on the average person’s desk in 1993, 1994, 1995, or 1996. It’s very, very hard to understand the future unless you participate in it” (qtd. in Haring 2000, 41). Though this started to change as tech companies started showing labels the possibilities for their artists that could be mined with CD-ROMs, interviews with label executives at the time suggest there was still widespread resistance to or ignorance of the transectorial fusions taking place (Alderman 2001; Haring 2000).

CD-ROM drives were one of the central technologies of the “multimedia revolution” of the late 1980s and early 1990s, a movement that brought a number of changes to the computer’s audio and video capabilities (Friedman 2005; Venkatesh 1996, 121). Multimedia—more a cluster of technologies, applications, and hardware developments than a singular technology per se—was a “catchall phrase for the convergence of media
technologies with computing” (Angell and Heslop 1993). Hardly a unified movement, the arrival of multimedia was a disorganized transectorial collision that lurched forward in fits and starts and was fueled as much by hype as by actual innovation. Even so, the vigor with which companies of all kinds embraced and pursued multimedia made it more than a benign technical description of convergence. Multimedia splashed in on a wave of promises. Articles in news and tech magazines proclaimed: “Multimedia is Here, and it’s Amazing” (E.I. Schwartz 1991); and books like Multimedia Madness and The Desktop Multimedia Bible gave consumers tips on how to navigate this new media-rich landscape (Angell and Heslop 1993). As one technology researcher noted, it was “almost impossible to pick up a computer magazine these days without encountering something on ‘multimedia’” (Saffo 1989). And usually that “something” was about the changes multimedia would bring: “Just a decade after it revolutionized the computer industry and the businesses of most of its customers, the personal computer is set to do it again. Before, it simply crunched numbers and processed words, throwing in the occasional bar chart or digitized sketch for decoration. Now, . . . the PC may become a ‘multimedia’ tool that—once again—could change the way people work, learn, and play” (Shao et al., 1989). In other words multimedia was a particular vision of what the computer could and should be. It was a way of imagining the role computers should play in our lives. In the same way that Moore’s law is more of a collective goal than a scientific law (Friedman 2005, 88, Sterne 2007, 20; Auletta 2009, 52), the multimedia revolution was a disparate effort on the part of manufacturers, software developers, and tech journalists to expand the market for personal computers.

Multimedia, ultimately, was another step in the technical and cultural reimagining of computing that took place throughout the 1960s, 1970s, and 1980s.1 After their introduction as cold war technologies of bureaucracy and rationalization, the perception of computers slowly transitioned from abstract mainframe machines to “personal” devices during the second half of the twentieth century (Ceruzzi 1998; Friedman 2005; Turner 2006). Central to this shift, at least in Fred Turner’s argument (2005), were the countercultural values and ideals of groups like the New Communalists, who believed fervently (if conflictingly) in the power of nature, the radical possibilities of technology, and new kinds of economic and affective commodity exchange. The New Communalist ethos of autonomous personal and collective expression through technology, Turner argues, mapped onto the social construction of early computer technologies and positioned subsequent Internet-based communities as technologies for individual and col-
lective transformation (Turner 2005, 493). Multimedia, then, wasn’t simply an isolated innovation meant to enhance the computer’s technical capabilities. Rather it was part of a much longer process of domestication and personalization that sought to position computers as objects for aesthetic self-fashioning and as “small-scale technologies . . . for the transformation of consciousness and community” (Turner 2005, 489).

By the mid 1990s, users were increasingly ready for music on computers, even if computers themselves were not necessarily completely equipped for music. Early online music sites like the Internet Underground Music Archive (IUMA), launched in 1993, along with other music-based newsgroups and BBSs emerged, connecting music enthusiasts who were converting and uploading bootleg versions of concerts, creating fan sites for their favorite artists and posting MIDI files, long before most mainstream users had the computing skills or abilities to fully make use of these (Alderman 2001, 12–14; Haring 2000, 36–38). Hard-drive storage space, soundcard hardware, bandwidth, and the speed/stability of average Internet connections were still far too limited to make the transfer and use of audio files a regular practice for many, but this did not stop some users from establishing early networks of exchange based around music (sharing lyrics, files, or just discourse about music). Like other early online virtual communities (Rheingold 1994; Turkle 1995; Turner 2006; Wellman 1999), these user communities were often the earliest adopters of new technologies and were active members on the discussion forums for many new audio software products.

The development of music on computers also benefited from transectorial innovations in compression and digitization. Compression, broadly put, decreases the size of a digital file by removing excess or unneeded data, making it quicker to upload, download, or send and easier to store in larger quantities. While a number of companies spent the early and mid-1990s creating new music formats intentionally designed to make sound more suitable for computers and the web, other formats emerged from developments taking place in sectors such as radio, film, and television (Sterne 2012). The MP3 format (a.k.a. MPEG-1 or 2 Audio Layer 3), for example, was the result of a transectorial consortium of radio and television broadcasters and the film industries known as the Motion Picture Experts Group. Although it’s now hard to think of MP3 beyond its role as a music format, the Fraunhofer Institute—the German engineering company that began working on the MP3 format in 1987—was originally trying to design a format for compressing, transmitting, and storing the large amounts of digital video and audio data that develop during the production of broadcast content (Dowd 2006, 219; Katz 2004, 160; Sterne 2012).
Although the MP3 is widely considered the de facto standard for digital music files, there were a host of other compression and transmission formats in competition for that title in the mid-1990s. In 1995 a company called Progressive Networks (RealNetworks) introduced Real Audio, a technology that relied on a “streaming” process that broke audio files down into smaller parts and then reassembled them on the user’s machine (Haring 2000, 65–66; Rothenberg 1999). Whereas downloading songs with an average residential modem then took users up to fourteen hours to access a three-minute song, streaming allowed users to listen to a file in real time (though anyone who used to stream over a slow connection knows the qualifier “real” came with a grain of salt). Other companies introduced formats of their own, like Liquid Audio, a2b, Windows Media Audio, and Advanced Audio Coding. Some of these were developed by prominent players (Microsoft, AT&T, Sony, Dolby, etc.); others came from start-ups looking to fill a new niche in the music industries (e.g., Liquid Audio), and still others, like the predecessors of what would become Ogg Vorbis were open-source community-based efforts (Haring 2000, 64–68; Xiph 2009).

Digital music’s competing formats offered slightly different features and functionality. Like formats more generally, they represented a set of rules that merged technology and cultural expectations, ultimately affecting the way media content was mediated. As Sterne argues, format “denotes a whole range of decisions that affect the look, feel, experience and workings of a medium. It also names a set of rules according to which a technology can operate” (2012, 7). Usually, these codes or rules are not particularly visible—the MP3’s compression algorithm, for example, is based on a century’s worth of research on human hearing and perception—so they often seem like they’re part of the essence of the object. Formats are part of the wider protocols that govern technology (Galloway 2004; Gitelman 2006). Protocols, like formats, encompass both the specific technical details of how technology and media work, as well as the conventions of how people use new devices, how they access them, and a whole series of economic and social infrastructure elements (Gitelman 2006). Taking the phone as an example, Lisa Gitelman considers the social protocols that surround the device: the convention of answering with “Hello,” the economics of billing and rate plans, the type of access (home phones, public pay phones, etc.), the type of call (conference calls, long-distance calls, etc.), and other aspects of phone use (2006, 7). Since these protocols affect the uses and ends to which media and technologies can be put, they are, at their core, about control. They are a way to ensure certain outcomes or at least limit the possible number of uses to which a device or technology can be put.
Protocols are especially effective in an age driven by digital technology, where protocols are often embedded in the software. For Alexander Galloway these protocols play out in code: “Code is a set of procedures, actions, and practices, designed in particular ways to achieve particular ends in particular contexts. Code = Praxis” (Galloway 2004, xii). Format decisions, then, are as technical as they are social; they affect how files work but also the kinds of uses and meanings that develop around certain technologies and media. Music as code meant that the experience of music as a digital file would be a different one from digital music on CDs. Although each format (Real, MP3, Liquid, etc.) had distinct technical attributes and features (higher versus lower audio fidelity, better versus worse security, etc.), the real differences between the files were in their protocols: what users could and could not do with the files and the software that accompanied them. Some formats, like Liquid Audio, were proprietary and came with restrictions on how they could be used or played (see chapter 4 for further discussion). Others, like Ogg, were available for use by anyone. The MP3 was a hybrid of the two models. Although users could get and play MP3s on a variety of players and devices without any kind of payment, developers of MP3 playback software had to pay royalties to the format’s “proprietary” creators, after a certain level of commercial activity (Borland 2000; Hansen and Van Buskirk 2007a; Sterne 2012; Xiph 2009). Open or proprietary, the protocols of each format offered their own version of the digital music experience. The differences between streaming and downloading, or the rest of digital music’s various formats, were each expressions of what digital music should and could be.

I dwell on this microhistory of multimedia, formats, and protocols to underscore how Winamp emerged from a particular moment in both the music and computing industries. Far from a preplanned industry-sanctioned format change, like the move to compact discs, recorded music on computers was a messy by-product of transectorial innovation in the 1980s and 1990s. Winamp arrived at a time when the hype around multimedia was starting to congeal in audio and video technologies that made personal computers more personal. Through their growing capacity to play, share, and distribute music, personal computers were being marketed as devices that could, through multimedia, unlock creative and expressive potentials (Streeter 2010). Despite the promises of these marketing campaigns though, and the possibilities hinted at by CD-ROM drives, soundcards, and ripping/burning software and hardware, digital music playback was still hindered by the complexity and variety of these transectorial technologies. Music availability on the computer was by no means haphazard, but it was also not a cohesive or coherent shift driven by one industrial sector at the expense of
another. Rather, the recorded music commodity made its way onto the computer because of disparate innovations in CD-ROM technology and other hardware/software, the growth of online communities like the IUMA and other hobbyist services and devices, and a host of music- and technology-based businesses with an interest in developing new formats of accessibility for music. It was only thanks to this series of interrelated but incohesive transectorial developments that users were able to enjoy audio on their computers. The parameters for the commodity form for music’s new digital format were still very much in question.

BUILDING WINAMP

Credit for Winamp generally belongs to Justin Frankel, a self-schooled computer whiz who designed Winamp as a means to play MP3s and other digital files he was finding online (Greenfeld et al. 1999; Kushner 2004). He released the first version of Winamp in April 1997 as freeware. As the program’s user base increased, Frankel and others developing the software solicited donations from interested users, which brought in enough revenue to pay for the bandwidth and hosting fees for Winamp’s heavily trafficked website and for a used car for Frankel (Bronson 1998; Haring 2000, 99). Known more formally as “shareware,” this release strategy is relatively common for upstart software programs. Sometimes the software’s functionality is limited unless users donate, but in the early stages of Winamp, the $10 contribution was just that, a contribution, since the free version of the program was fully functional.

Winamp’s rapid growth also brought more traditional revenue sources like advertising, ranging from partnerships with music sites such as Artist Direct; high-tech entities like IBM, Compaq, Hotmail, and ZDNet; and more traditional companies like Toyota and Eddie Bauer (Alderman 2001, 56; Winamp 1998). The business model of giving the primary product away for free in an attempt to gain awareness and an audience for advertisers was very much in keeping with other tech start-ups during the dot-com boom (Ankerson 2010), and it allowed Frankel to incorporate a company called Nullsoft—a nerdy jab at the dominance of software giant Microsoft. After a year and a half online Winamp.com was bringing in $8,000 a month in advertising and the software had more than fifteen million users (Greenfeld et al. 1999; Kushner 2004). Although the ultimate business plan for the company was still relatively unclear, the program’s early success pointed to the potential market that might exist around digital music. More important, given that the program was one of the earliest available software
media players, as more users started playing music on computers, Winamp’s features and functionalities established conventions for how music was made visible and audible on computers.

Despite Nullsoft’s reliance on commercial tactics like advertising, the company still saw itself and its software as an underdog and anti-industrial in nature. Part of the reason for this image was because of Winamp’s affiliation with MP3 files. Nullsoft marketed the software as the player for MP3 files. The format leaked from Fraunhofer to wider web users in the mid-1990s and quickly drew criticism from record labels and the RIAA because it offered little means for tracking copyright infringement. Although some labels were curious about the possibilities of digital music and worked with the likes of IUMA or Liquid Audio on digital strategies to promote lesser-known artists, the majority drew the line when it came to MP3s (Alderman 2001, 15, 40; Haring 2000, 40). Labels and the RIAA ordered sites hosting MP3s to shut down and waged a public relations campaign against the format and any company supporting it (Alderman 2001, 30; Haring 2000, 41). The popularity of MP3s and the perceived threat the format posed to traditional distribution and consumption channels for popular music meant that, as Billboard writer Brett Atwood (1997) noted, “The music industry should be afraid—very afraid.” As such, most of the major record labels looked skeptically on technologies like Winamp that depended on the widespread availability of MP3s (Behar 1999; Greenfeld et al. 1999).

Nullsoft turned this anti-industrial image into one of its key messages to users. From the irreverent news updates on the Winamp website to the program’s quirky slogan—“Winamp, it really whips the llama’s ass”—the company actively positioned itself as a subversive upstart that hoped to upend music consumption. The company used the open nature of MP3 files to position its player as a source for limitless listening. It also stressed how use of Winamp could turn everyday users into producers through features such as SHOUTcast—a cross-platform streaming technology that allowed for the recording and broadcasting of MP3 audio streams. Foreshadowing features that would emerge half a decade later in the form of podcasting, social playlisting, and other forms of user-generated content, SHOUTcast foregrounded the ease with which anyone could become a broadcaster or radio DJ, share songs and build an audience, as well as increase the diversity of audio options available on the Internet (Frankel et al. 1999, 239). It was rhetoric that was repeated by users of the technology. As one prominent early SHOUTcaster noted: “You want an example of my nightmare . . . ? Turn on your FM radio and spin around the dial. Welcome to my hell. You want an example of my heart’s desire? Tune in to SHOUTcast streams, turn
on to creativity and individualism and drop out of the bland regulated waves that pass for most broadcasts” (Frankel et al. 1999, 284).

Winamp’s anti-industrial marketing stance is most explicit in the three-hundred-plus-page book *MP3 Power! With Winamp* (Frankel et al. 1999). Ostensibly a how-to guide for using Winamp and other digital music technologies, the book pits millions of technology users and music lovers against a slow and out-of-touch music industry: “Call it an audio or musical renaissance of sorts, we will see a revival of artistic progress and achievement. The power to join this renaissance is right here” (Frankel et al. 1999, 15). From the book’s cover—lightning bolts striking through previous generations of audio technology like an old radio, a tabletop jukebox, and a gramophone—to its lengthy descriptions of different digital music services for the computer, the authors argue that digital music is not just a format but a movement: “In fact, what was once the moniker and file extension of just another file format has grown to a technology used by millions of people and is on the verge of revolutionizing the entire music and audio industry. . . . MP3 is a format, but to think of it as strictly just a format is truly missing the point of what it has actually become” (Frankel et al. 1999, 31). The book’s charged graphics and language were a call-to-arms to use Winamp and join the MP3 revolution. Users of Winamp or MP3s were not just exploring the possibilities of a new musical format; they were leading-edge adopters taking a stand against the unequal distribution of power in the traditional music industry.

This revolutionary rhetoric is not entirely surprising. Like the hype that accompanied the drive toward multimedia more generally, *MP3 Power!* suggests that through Winamp users could hold the balance of power over the corporations that had traditionally controlled the flow of music. While entrepreneurs often seek out means of infusing particular objects or practices with radical disruptive capabilities in order to bolster their appeal (T. Frank 1997; Heath 2005; Klein 2000), this logic is also where the transectorial ideas and values surrounding the personal computer map onto the industrial and popular discourse around the music commodity. This anticommercial and disruptive discourse was particularly common during the high-tech boom of the 1990s and dates back to historical discourses about computing, personal liberation, and social transformation through technology (Barbrook 1996; Streeter 2010; Turner 2006). It is part of what Thomas Streeter refers to as the “romantic framing of computer use,” a framing from decades of marketing and cultural discourses that have marked the computer as “playful, expressive, even rebellious” and have created a kind of “rebel-hero identity” not just for software and tech industry workers but also for users (Streeter 2010, 68). Despite revolutionary claims, the charged
language surrounding Winamp was entirely consistent with more general discourse about the personal computer over several decades.

Winamp’s rhetoric is problematically misleading though. While Winamp was a disruptive technology on some level, Nullsoft’s anti-industrial messaging diverted attention away from the ways in which Winamp, through its interface, 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. Winamp’s anti-industrial image first came into question in June 1999, when Internet media giant AOL purchased the start-up for $100 million as part of a $400 million deal involving other online music entities (Kushner 2004; Tedesco 1999). Even though Shawn Fanning had just released Napster that same month, digital music on computers, at the time, was still primarily a fringe activity. AOL saw the Nullsoft acquisition as an opportunity to bring digital music to mainstream users and to bring some industrial legitimacy to these new technologies for media consumption (Kushner 2004; Tedesco 1999).

Many Winamp enthusiasts who were drawn to the anti-industrial aspects of the software and digital music were unhappy about the AOL sale and equated it with selling out (Kushner 2004), but Nullsoft’s relationship with its new mass media owners was marked by tension. Working styles at the start-up clashed with AOL’s overly corporate approach (Alderman 2001, 146–47). Take, for example, the March 2000 launch of Gnutella, a Napsteresque application Nullsoft designed and released. Gnutella was a program/protocol that let users share files through a largely decentralized system of peers (similar to Napster, though without relying on a central server to house and index files). Gnutella seemed both a competitive response to Napster and a public relations retort to critics of the AOL acquisition; when Frankel and his colleague uploaded the program, they included a note saying, “Justin and Tom work for Nullsoft, makers of Winamp and SHOUTcast. See? AOL CAN bring you good things!” (Kushner 2004). AOL was pulled in opposing directions. On the one hand the company was aggressively acquiring new technologies and software programmers to develop its online presence. On the other hand it was also looking to expand its ties to the content industries, making deals with major record labels and considering a proposed merger with Time Warner. To be fit to merge, AOL had to present itself as a good corporate citizen, one that respected the content and copyrights of its potential partner(s). Ultimately, AOL distanced itself from Gnutella, claiming it was an “unauthorized freelance project” on Nullsoft’s part. A day after Gnutella was uploaded, AOL shut down the site (Kushner 2004; C. Jones 2000).
The troubled relationship between Nullsoft and AOL is not just a story of different working styles. It speaks to the difficulties that arise when companies with interests in multiple industries collide. Winamp was not necessarily the first program to allow music playback on the computer, but its popularity and the ways in which it promoted the use of digital music made it a threatening piece of software for record labels and even for its mass media owners, AOL. Had Nullsoft been working on an isolated program that was limited to a specific practice or industry, little fuss would have been made. Instead, as part of AOL, the programs Nullsoft developed affected the field of computing, as well as the entertainment and cultural industries. Frankel and his colleagues had envisioned digital music as an alternative form of music consumption and Winamp as a small player in a wider attack against the traditional music industries. These ideas were sometimes in step with, and other times at odds with, the goals of its corporate owners. Perhaps unsurprisingly, then, by 2004 almost all of the Winamp team’s original members had left (Kushner 2004).

Winamp’s rapid growth owes a debt to the fact that it operated in a kind of industrial and economic liminal space: between sectors in a marketplace where legal and commercial boundaries had yet to form. Nullsoft was allowed, perhaps even encouraged, to work on projects like Gnutella because the conventions of this new market and product were still being worked out. Winamp was an exemplary case of transectorial innovation and of the wider economic and technical developments taking place during the dot-com boom and bust. But while Nullsoft may have presented itself, through Winamp and Gnutella, as an industrial threat and a reimagining of the way users consume and experience music, it was also looking to create and capitalize on digital music’s emerging market. Although this somewhat contradictory image is evident from the above sketch of Winamp’s evolution from hobby project to AOL property, it is even clearer from an analysis of the original software’s interface and key features. Winamp’s look and feel seemed like a radical reconfiguration of music consumption practices. On closer examination, though, Winamp’s design provided a new kind of packaging for music in its digital form, making it a unique and distinct experience that opened up the possibility for the commodification of music as a digital file.

**RE-TUNING THE INTERFACE**

The transectorial movement of music onto computers called into question music’s sonic and visual materials. Over the last century, recorded music
has taken on several different forms (records, tapes, CDs, etc.), and each one has presented challenges for the various actors seeking to profit from it (Garofalo 1999; Eisenberg 2005). Despite the widely different designs, interfaces, and abilities of these technologies, the recorded music commodity has maintained several enduring characteristics. The media, usually fragile, is typically wrapped in some kind of packaging that is at once protective and descriptive. It bears functional features like the spine or barcode that help consumers order their collections or retailers track their sales. But the music commodity is much more than this. It includes paratexts—like images, artwork, liner notes, song names, lyrics, production details, etc.—that play a role in shaping how users find, sort, and receive value from the music (Gray 2010; Straw 2009, 86). The packaging, in other words, is not simply a neutral container for the end product. It is the stuff that gives the music commodity its exchange value and provides the materials and symbols through which listeners make sense of the sounds and songs within.

On computers, digital music files transcode music from a defined product in a relatively contained format to one among many other data documents that populate a user’s computer. This leaves digital files of recordings drifting in a transitory state: not fully commodities yet not wholly detached from the broader forces, materials, and symbols that make popular music a commodity in the first place. To be sure, this digital drift began in the mid-1990s as mixed CDs and the general circulation of CDs (in cars, portable CD players, etc.) separated discs from their packaging (Straw 2009, 85). We might even consider as far back as the jukebox and the way it presented single songs as detached from the album recording. The difference with digital files, however, is that they migrated not only away from their packaging but toward the computer, toward a new environment through which to see, hear, use, and understand the product. Mixed CDs may have come with a user’s handcrafted packaging, and jukebox songs may have encouraged single-song consumption, but neither offered the wholly different combination of packaging and consumption that digital files represent. The jukebox, for example, still relied on foregrounding the song name, the artist name, and the packaging from the album from which the song came. The micromaterials that eventually made up digital music’s packaging, however, were much more embedded and integral, affecting both the presentation and use of the song files in question. As Taylor rightfully asserts, recorded music is not always a commodity, or not always consistently the same form of commodity; instead, it undergoes “constant periods of commodification and decommodification” (2007, 282). The ripping of music from CDs and their subsequent expression through software like Winamp
meant that temporarily and partially, the aesthetic and economic aspects of the commodity form were in flux, from both industrial and consumer points of view. What should digital music look and sound like? How should it function? What should users be able to do with music on computers? The answers to many of these questions were, for a time, mutable and not necessarily given.

In this light the advent of Winamp can be read as an attempt to fill in some of the gaps between music's previous commodity form and its future shape created by digitization. In the simplest terms Winamp is a computing solution. The problem was a desire to play MP3s and other digital music files on personal computers. The program, however, also addressed a cultural issue: to play music on a new device in a way that was as usable and understandable as it had been on previous playback devices. Winamp was neither the first software media player of its kind nor even the most capable (Fraunhofer’s WinPlay3 in 1995 or a versatile program called MuseArc probably deserve those honors). But Winamp was perhaps the first to understand, or at least internalize, the cultural dimensions of technological innovation and incorporate them into the design process. In doing so, Winamp’s interface familiarized users with music playback on computers.

A journalist interviewing Frankel explains the motives behind Winamp’s look: “[Frankel] wanted to build [a software player] that would look as familiar as a home stereo, with the sound quality jacked up with effects like 3-D surround sound and reverb. He also wanted a playlist feature that allowed you to sort MP3 tracks or play them randomly like a jukebox” (Greenfeld et al. 1999). The result was software that resembled a cross between a car radio and a CD player (Frankel et al. 1999, 48). It had the functionality of a CD player and the look and style of a high-end stereo’s front panel. In many ways Winamp’s transectorial roots became visible through its interface; the design hinted at conventions from computing, recording technology, and stereo playback devices.

Like media more generally, interfaces are hardly neutral conveyors of messages. They are designed with specific goals in mind, with certain affordances and prescriptions. Manovich notes that “the interface shapes how the computer user conceives of the computer itself. It also determines how users think of any media object accessed via a computer. Stripping different media of their original distinctions, the interface imposes its own logic on them” (Manovich 2001, 65). Decisions at the level of the interface promote or encourage some behaviors or modes of interaction and make others “unthinkable” (Manovich 2001, 64). Manovich notes that while interfaces have traditionally been associated with the Graphical User
Interface (GUI), media interfaces increasingly include sonic and tactile feedback that incorporate other senses (Manovich 2013, 29). Hardly just a visual affair, media interfaces are multisensory meeting points between humans, computers, and cultural content. They condition users’ relationships with the computer and with the media objects with which they interact on the computer; they are a sociocultural mode of representing and experiencing information. This is not to suggest the design of an interface determines an object’s use but that an object’s features and attributes come embedded with expectations about use, and these expectations reveal something about the object, the people who made it, and those who use it (Latour 1988, 306).

Winamp’s interface includes provided basic controls like play, pause, skip tracks, and the like, but it was how the software presented these features aesthetically that made Winamp novel. Just as Bolter and Grusin argue that what’s new about new media is the way they refashion or remediate older media (Bolter and Grusin 1999), Winamp took ideas from previous audio playback devices and other genres of software and reconfigured them into a digital music player. Its main reference points were standard CD or tape players, car stereo panels, and hi-fi stereo systems, but it combined these features with the modular aspects of digital software to create novel audio experiences.

Put more theoretically, Winamp is a collection of skeuomorphs: “a design feature that is no longer functional in itself but that refers back to a feature that was functional at an earlier time” (Hayles 1999, 17). Originally a term from archaeology and architecture, skeuomorph points us to the design leftovers that persist through various iterations of objects, programs, and devices. For example, plastic tables that have a wood-grain pattern on their surface, the copper color of zinc pennies, or the recorded “click” you hear when the “shutter” on a digital camera takes a picture are all skeuomorphic in nature. Skeuomorphs extend the concept of remediation by helping explain the appearance of the old within the new. They are particularly prevalent in software, since designers regularly borrow cues and signals from the noncomputer applications they are trying to emulate. Though graphical representations of trash cans or the “files” and “folders” that resemble those in our office drawers don’t necessarily originate with application software, these icons are certainly an integral part of the graphical user interfaces of everyday computing. The presence of these features on our “desktops” no longer attests to their original functions, yet the ideas they represent remain embedded in the design.

Skeuomorphs are more than just a design concept, though; they are templates for thought and experience: “Skeuomorphs are material metaphors.
They are informational attributes of artifacts which help us find a path through unfamiliar territory. They help us map the new onto an existing cognitive structure, and in so doing, give us a starting point from which we may evolve additional alternative solutions. They provide us with ‘a path’ instead of ‘no path’ at all” (Gessler 1998, 230). Skeuomorphs, then, are crucial for innovation. The incorporation and remediation of past appearances and design ideas smooth the process of adoption and makes new technologies feel more familiar. Skeuomorphs borrow from the past to make the future possible in the present. New interfaces and technologies are always a careful balance between the new and the known. As N. Katherine Hayles suggests, new innovations put in play “a psychodynamic that finds the new more acceptable when it recalls the old that it is in the process of displacing and finds the traditional more comfortable when it is presented in a context that reminds us we can escape from it into the new” (Hayles 1999, 17). Skeuomorphs are vestiges that represent the material weight of the past on the present (and the future).

Winamp’s early design remediates previous audiovisual conventions and presents them in new ways to provide a novel music-listening experience. The very idea of playing music on the computer was still so new that Winamp’s design had to account for the fact that, for many users, Winamp was their first experience with digital music. Winamp mimicked practices users knew in order to make the process of adapting to new behaviors less daunting. It included enough associations to older media devices (CD players, videocassette players, etc.) to feel familiar while also introducing enough new features (visualizations, customizable playlists, skins, etc., which I describe below) to make it a distinct musical experience. Winamp also used the modular quality of the digital platform to give users added control and customization options over how the player appeared and how the music sounded. As a program that introduced millions of users to music on the computer, Winamp had the twin task of acclimatizing users to a new technology for music consumption and, more broadly, teaching them to treat computers as multimedia devices that could be part of a home sound system. Nullsoft had to promote Winamp, the program, but it also had to sell users on the idea of digital music as a possible new format for music consumption.

Winamp’s main window (see fig. 2) was a small console that contained the essential song data and the playback controls (Frankel et al. 1999, 48). Users could add songs to the “playlist” window, which allowed for reconfigurable lists of songs to be played back in sequence or “shuffled” into a random order. This allowed for new kinds of musical organization—
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Playlists for certain moods (e.g., relaxing music), times of day (e.g., dinner tunes), occasions (e.g., party mix), or more personal/eclectic choices (e.g., songs my dog likes). Playlists could range from a few songs to thousands, providing hours or days of continuous music. Winamp was not the first media player to make use of this feature, nor was this practice simply the result of a shift to digital music software (Drew 2005; Razlagova 2013). Digital playlists draw from practices established by radio DJs as early as the 1930s and 1940s (Razlagova 2013, 64–65). Radio playlists, though they varied from station to station and DJ to DJ, presented a multiplicity of connections that could be made across individual songs, either for artistic, commercial, or other goals. Although the role of the radio, and radio DJs by extension, is in the midst of its own set of shifts brought on by digital technologies and automated playlists, the radio playlist remains a powerful frame for users’ understanding of music discovery and continues to inform much of the way users make sense of current digital music playback software (Razlagova 2013, 65).

I discuss playlists and their similarity to pre-Winamp practices such as mixed tapes and CDs further in chapter 4, but it is important to highlight here that what distinguishes Winamp from these earlier forms was that it was one of the first players to put the potential of playlists on display by making them a central part of the program’s interface. Winamp’s playlist window transferred the ability to design a radio-like playlist to the user and made the mixed-disc-making process visible and immediate. Winamp was one of the first players to realize that the disaggregation of music from its album actually opened the music commodity up for new forms of aggregation.
Winamp’s main window also housed the Spectrum Analyzer: a series of bars that rise and fall based on the frequencies of the song that is playing and an equalizer (EQ) feature (Frankel et al. 1999, 49). Similar in concept to some of the high-end stereo systems or portable audio devices available at the time, the EQ window let users affect and customize the sound by moving volume sliders (see fig. 3). The spectrum analyzer and the EQ sliders placed Winamp in a long line of high fidelity technologies that came with their own class, gender, and taste assumptions. Keir Keightley’s excellent analysis of the rise of high-fidelity audio culture in the 1950s and 1960s notes how hi-fi technologies like stereos, receivers, and amplifiers were often positioned as highbrow and masculine, especially compared to low-brow feminine technologies like the television or radio (Keightley 2003). The marketing and social discourses around hi-fi technologies seemed to encourage active manipulation and fine tuning while television and radio were seen as merely passive technologies for consumption. Despite the significant investment required for hi-fi gear, hi-fi was made to seem less commercial, more intellectual, and mostly removed from commodification (Keightley 2003, 241). Hi-fi also offered an opportunity for men to carve out a uniquely male leisure space within the home, often at odds with the domestic space as it had previously existed—an “apartness” within the “togetherness” of the home (Keightley 2003, 247).

Winamp’s user forums offer some evidence that the hi-fi features of the program appealed to male users’ desires to manipulate and affect the sound in a more active way than simply consuming it. Several threads on the
Winamp forums are dedicated to debates about sound quality and tips around how to enhance sound quality through various plugins:

My fave DSP plug-in is Audistocker. Dee and Enhancer are popular also (do a search on the plug-ins page), but I find they distort the sound too much for me. . . . Winamp is pretty basic with the initial download, and certainly needs some tweaking when you first get it, but it allows for so much more variety than other players because there are so many plug-ins, etc. It allows you to get the sound that is right for your ears and your hardware. There is a forum for plug-ins you may want to browse for info. There is no one “right” configuration. Stick around and learn a few things about the player and I think you’ll really like it. (Sandman2012, 2002)

Users also debated the virtues of CD quality sound versus digital audio files and generated countless threads about the best quality soundcards (e.g., Soundblaster live platinum 5.1, X-Gamer 5.1, Diamond MX-300), speakers (Altec-Lansing, JBL, Bose, Boston, etc.), headphones (Sennheiser HD 280 Pro, Sony MDR-V600, etc.), and other audio hardware and software for sound playback.

Considering the perceived lack of sound quality MP3s provide compared to other audio formats, the inclusion of the visual equalizer thus served as a response to a broader criticism against digital music. MP3s have frequently been “singled out as particularly ‘diminished’ forms of recording” (Sterne 2006a, 339). Because the sound is compressed, and sonic data is removed in favor of making smaller and more transmissible files, MP3s are often seen as degraded when compared to compact discs or vinyl records: “the success of reduced fidelity media has been at the cultural expense of attention to quality, aesthetics and the ideals of accuracy and truth” (Rothenbuhler 2012, 39). For audiophiles and critics of compressed formats, fidelity, the truthfulness of the reproduction to the original, is what is at stake here. Compression and other artifacts from the encoding process create a greater distance between the original recording and its digitized reproduction. The result is that the power of the sound itself is somehow diminished (McCourt 2005; Rothenbuhler 2012; Rothenbuhler and Peters 1997). Set aside for a moment the criticism that all recordings are already copies of a highly constructed “event” (i.e., studio sessions with multi-track recordings and other production interventions) whose own claims to truth are questionable. Instead, the issue over fidelity and devaluation is likely more a question of competing notions of value. Rather than promising the highest audio quality, the MP3 follows a trend in the history of recording technologies that focuses more on portability, easy storage, and exchange
rather than higher fidelity (Sterne 2012; Rothenbuhler 2012). Digital music is part of a historical mode of listening—what Daniel Guberman (2011) calls the era of “post-fidelity”—where audio quality is only one among many factors that determine a user’s attachment to a format (and no longer the primary one, as was the case with most formats leading up to the CD).

Winamp’s media interface, with its visual and sonic features, can thus be seen as an attempt to persuade (largely male) audiophiles of the benefits of digitally compressed audio files. The discourse of the loss of fidelity was, at least at the time of Winamp’s launch, a hurdle digital music had to overcome among some audiences. By giving users the ability to manipulate a visual representation of the sound spectrum, Nullsoft was trying to engage listeners with the sonic aspects of the music and to provide them the opportunity to improve and personalize the sound. MP3s may not have offered the highest quality sound around, but with Winamp it was at least sound that could be bettered. Though it’s hard to say with any certainty whether the male users in the forums used Winamp in similar ways as early hi-fi users, and the discourse in Nullsoft’s marketing is less explicitly gendered than the hi-fi advertisements Keightley examines, the design of its features suggests it is attempting to appeal to the same culture of audiophiles. The spectrum analyzer and the EQ sliders were skeuomorphs that generated a visual illusion of high fidelity; they position Winamp as a multisensory media player, one that might be just interactive enough to convince skeptical audiophiles the computer could be an acceptable device for music playback.

Along with the Spectrum Analyzer and the EQ Sliders, early versions of Winamp extended digital music’s visual interface by including “visualizations” (see fig. 4). Abstract, computer-generated graphics that played along in real-time with the music, visualizations have their roots in the “demo-scene,” a computer art subculture that combined programming skills, art, and eventually music (Carlsson 2009; Green 1995; Maher 2012). In the mid-1980s, as home computers gained prominence, hobbyists and hackers started experimenting with the computer’s capabilities by “cracking” software—removing its copy protections to share it more widely or simply for the technical challenge (Carlsson 2009, 16). To call attention to their cracks, users started attaching short audiovisual animations or “signatures” called demos to the cracked software (Carlsson 2009; Green 1995). Gradually, demos evolved into an art form of their own. They were disarticulated from the practice of cracking but still required artistic and technical skill. The community that formed around these demos—largely white middle-class teenage males from northern Europe and the United States (Carlsson 2009,
produced thousands of demos and even held rave-like “demoparties” and psychedelic coding competitions.

Many demoscene participants went on to work in videogame and software industries. Jeff Minter, who also designed some of the visualizations for the Xbox 360, had developed what he called a “virtual light machine” (VLM) in 1990 through the demoscene (Minter 2005). Minter used it primarily to project visuals at parties, raves, and even a few concerts, but he worked over the following decade to develop commercial uses for his software (e.g., Atari). Although Minter didn’t go on to work for Nullsoft, Winamp’s visualizations owe a large aesthetic debt to work like Minter’s and that of other demoscene participants. In Minter’s own account of the history of visualizations, he describes a run-in with a Nullsoft employee who “apologized for ‘borrowing’ the techniques I’d used on the [Atari] Jaguar VLM for their own visualizations” (Minter 2005).

Visualizations added to the “pleasurable” aspects of music listening by triggering both visual and aural interaction. As Michel Chion (1994) has argued about sound and film, imagery and music have a particular way of

Figure 4. Winamp visualizer. Winamp’s visualizer added abstract visuals that changed according to the characteristics of the music.
working together that results in a different experience than if both were taken in independently. Since visualizations are tied to the musical attributes of the song, visualizations promote the act of watching while listening to music. Like music videos, laser light shows, and other visual paratexts, visualizations act as meta-artworks that use sound as the basis for an additional artistic statement. The visuals refract and reflect the sound and enhance the audiovisual experience. Again, Winamp may not have been the first program to use visualizations, but it helped popularize a stylized way of seeing sound on the computer, a stylistic interpretation of sonic characteristics rooted in demoscene aesthetics that asked users to consider what there was to see in what they were hearing. Visualizations offered another way to “listen” to music, one that entailed watching a cascade of colors, lines, and shapes moving in time with the beat and in tune with the pitch. They ushered music into computing environments in a visually particular way.

Winamp’s various windows came wrapped in a graphical casing called a “skin.” Users could choose from several different skins, each of which gave the player a unique look (see fig. 5). Nullsoft designed several standard skins, but there was also a subcommunity of Winamp users who designed their own visual faceplates for the music player. Unlike a home stereo, Winamp came with hundreds of skins to which users had access to customize the look of the program. Along with Winamp’s other key features (visualizations, EQ controls, playlists), skins can be seen as part of a larger move toward mass customization in consumer marketing (Andrejevic 2002, 253–58). More important, although Nullsoft didn’t sell these “skins,” the user-generated designs were an early instance of what will become a more comprehensive integration of user labor into future music services (as is the case over the following chapters). The transectorial mix of software and music opened up new opportunities for hobbyist software developers to work and rework music’s paratexts through their programming skills.

Although we should be skeptical of claims promising greater interactivity, especially when the actual amount of power and control afforded to users is still relatively limited and when that interactivity was tied to gendered and classed conceptions of hi-fi audio manipulation (Andrejevic 2007), Winamp’s modular interface encouraged a high level of interaction with the music. Even though the interface was another layer of data between users and their information, the ability to directly manipulate these features made it seem as though users, not the computer, were responsible for affecting the music’s look and sound (S. Johnson 1997, 21). Instead of putting a CD in the stereo and walking away, users could now play with
Figure 5. Winamp skin. An example of one of the hundreds of "skins" users designed for the program that mimics the front panel of a traditional stereo system.
the look of the device through which they played music (via skins), the sound of the music (via the EQ and spectrum analyzer), and the look of the sound (via visualizations). This modularity helped “sell” the digital dimensions of digital music; Winamp’s flexible and customizable design was further support that computers were not just abstract machines but tools for personal expression and self-fashioning through music.

Taken together, these features were some of the first components of the re-tuning of music’s interface. Though “skins” were the most visible and direct manifestation of this process, features of Winamp’s like the equalizer window, visualizations, and playlist capabilities played a crucial role in re-establishing the music commodity’s paratexts in digital form. Users were constantly tweaking and altering the interface and experiencing music’s sonic and visual micromaterials in the process. Through Winamp’s interface, music as a digital file became visible, audible, and realizable as a distinct musical experience. Winamp’s interface was one of the first to show users what music looked like on the computer and what they could do with it and to it. It gave digital music digital packaging.

Despite some of the new practices Winamp encouraged, the program was also weighed down by the design of previous audio technologies and previous music playback conventions. Winamp’s volume sliders, for example, could have been blank boxes to which users could assign a numerical value that would dictate the volume. The play and rewind buttons could have been a scroll wheel, with the ability to set the direction and playback speed of a song. All these options are possible within the digital realm (and can be found in alternative software) but they are not options Winamp espouses. Instead, the software is designed to mimic the interfaces users had experience with via existing sound playback devices.

These skeuomorphic choices are, like the “files” and “folders” on the “desktop” of our computers, only one possible system of expression among many (Manovich 2001, 70). Culturally, however, there is a certain weight to this particular organization, one that depends on familiarity, habit, and practice. Such is the influence of skeuomorphic interfaces (Bolter and Grusin, 1999; Hayles, 1999); they integrate not only past design features but also past practices and previous ways of thinking: “We tend to fashion objects skeuomorphically. Once thought is given material substance, it is not always clear what is a skeuomorph and what is not” (Gessler 1998, 231). Skeuomorphic design is, in these respects, conservative as a design strategy. By depending on a logic that uses familiarity with previous ways of thinking, previous ways of seeing as a way to make the new seem less new, skeuomorphs perpetuate old patterns, practices, and conceptual frame-
works, even if the technology itself has progressed beyond it. While Nullsoft’s marketing stance positioned Winamp as an upstart technology set to reconfigure listening practices, the program wouldn’t have been as successful had it tried to completely reinvent some of the more fundamental elements of music playback and consumption.

Winamp’s features evidenced a tension between newer and older ways of handling music. Take, for example, the kinds of formats Winamp was able to play back. Even though Winamp played a range of file formats, the program was primarily designed for MP3s that users found on the Internet (Frankel et al. 1999; Winamp 1997–99). Winamp could play audio from CDs, for example, but this was initially an arduous task. For the first few years of the software’s existence, playing CD audio required the use of an obscure plug-in called Nullsoft CD/Line Input Player v0.100 (see “Advanced Winamp Configurations Guide” in Frankel et al. 1999). This would likely not have stopped knowledgeable computer users, but the fact that CD compatibility was a plug-in, a technical afterthought, suggests that activities like managing and playing CD audio were not motivating forces in Winamp’s initial design. Early versions of Winamp also omitted many of the CD handling tools now common in media players. Users, for example, could not “rip” or “burn” CDs solely through Winamp until the launch of Winamp 5, in 2003 (five years after its initial release). Even then, the extent to which users could take advantage of these features depended on which version of the software (free, full, or pro) they had signed up for.

Winamp’s features and skeuomorphic interface suggested that its designers saw the program originally as a stereo system: it was a playback device, not one for encoding or converting. It was an audio operating system but one that was read-only. They optimized Winamp’s features to enhance the playback of audio via computer-based sound files. They did not, at least initially, expect that a large use of digital music jukeboxes would involve importing audio from CDs or older recording formats. Despite all its other features, Winamp’s basic offering to consumers was not designed for managing and maintaining CD audio. Pulling audio from, or storing songs on, CDs was by default “unthinkable” through its interface. Even as Winamp’s designers transitioned users toward new modes of consuming music, they treated digital music on computers as a separate trend from CD audio. The result was an interface that, at least initially, allowed for limited traffic between the two formats. Winamp’s privileging of the playback of already-existing digital files over conversion reflected its ambivalent position between more traditional music commodities and music’s future formats.
Features like playlists, spectrum analyzers, and other tools for manipulating music playback on the computer succeeded because they solved technical problems through cultural means: they made new technology feel familiar and less alien through aesthetic and design-oriented solutions. They brought a new materiality and vocabulary to music (e.g., playlists, visualizations, skins, spectrum analyzers), though these echoed audio technologies, features, and designs with which users were already familiar. They also brought a whole series of computer-related practices to music; collecting and playing now involved clicking, scrolling, dragging, dropping, cutting, and pasting. They made the digital nature of music on computers seem more material. Winamp was a specific application for the playback of music, but it was also a cultural interface that mediated users’ early relationship with digital music. Winamp’s media interface—its playlist windows, spectrum analyzers, and alternate modes of visualizing, hearing, and manipulating music—sold Winamp as a useful media player and “sold” the digital dimension of music on computers. In doing so, Winamp’s features ultimately acted as some of the earliest building blocks for the commodification of digital music.

RE-TUNING THE COMMODITY

Contrary, then, to claims that digital goods are intangible or immaterial, the digital music commodity has many micromaterials to explore. The software interfaces that package digital music, like Winamp, are particularly important parts of this materiality. 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.

After all, Winamp took advantage of the fact that music, as a digital file, existed as individual units to be moved, played, and used separately. The software, which was largely free, dispensed with the traditional packaging of the music commodity and added new kinds of visual and paratextual information that seemed to have little to do with selling songs or with traditional industrial concerns (copyright, royalties, etc.). Winamp’s conception of music represented a splintering of the music commodity and a reconfiguration of the traditional affordances associated with music. Although Winamp had technical limitations to the kinds of music it could accommodate, it made no distinction as to the source of the files. It was a free piece of software that let users play an assortment of files, regardless of
whether they had paid for them. Copyright-infringing files were just as welcome as any other type. In this light Winamp seemed to operate on a model wholly removed from music as a commodity. This is what drove Frankel’s belief that Winamp—and the MP3 movement it supported—might potentially disrupt the traditional music industry.

But Nullsoft’s faith in the power of its own software and the digital music movement surrounding it celebrates the power of change new technologies offer at the expense of critically considering how the logic of commodification was already at work in Winamp. Software like Winamp, and digital files more generally, only really disrupted a particular form of the music commodity (viz., the CD) and a particular way of playing it (viz., on CD players). 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. They were still songs that had value in relation to other forms and formats. The sound, as well as the artist and production team that created that song, still held residual cues to the commodity realm in which that song circulated. Winamp was part of re-tuning music’s interface, but this did not necessarily threaten music’s status as a commodity. Just as an instrument can be tuned in a variety of tunings, each offering its own interesting and unique tonal character, so, too, can the music commodity be disaggregated and repackaged in differently saleable forms. In other words Winamp provided a vision for music’s new format and new ways of playing it, extending the music commodity into the digital realm. Ostensibly a technology for playing music on the computer, Winamp’s interface and the features it promoted were an important representation of digital music at a time when the form and format of music were in question.

The re-tuning of music’s interface represents a temporary and transitory point in time where the music commodity faces a moment of uncertainty, though this uncertainty is only conditional. Periods of technological change and innovation present opportunities for some actors as they present challenges for others. With music adrift and circulating relatively free of paratexts on the Internet and on computers, there were contesting views on the status and character of the digital music commodity. These conflicting views (e.g., regarding different formats, different software, different services and business models) were just as likely to further the interests of the dominant players in the music industries as they were to challenge them. Winamp, as I’ll argue for the case of Napster as well, served a dual function in this respect. Its role was not solely to liberate music from
the confines of its commodity status. It should also be understood as a starting point for the commodification of digital music. Despite Nullsoft’s anti-corporate and anti-industrial marketing rhetoric before, and during, its time at AOL, Nullsoft provided a coherent vision for how digital music should look, sound, and feel on computers and how these qualities might make music sellable in its digital form.

Winamp’s interface rebuilt music’s materiality for its digital context. These micromaterials wrapped music files on computers in a package that made them seem as usable, functionally and aesthetically, as other versions of the music commodity. Beyond its interface Nullsoft helped commodify digital music in less subtle ways as well. The program generated more than fifteen million users in less than two years and many more in the years following. Winamp helped ignite an interest in digital music by selling users on its vision of computers as advanced and interactive stereo systems. Even though the program was primarily offered for free, it still hinted at the lucrative possibilities of an emerging digital music market. Many users “donated” money to Nullsoft—enough to fund server costs and other frills for Frankel until he sold the company to AOL—and even those who did not had spent money on related commodities like computers, Internet connectivity, soundcards, and speakers. Nullsoft further catered to this market as the software evolved.

In addition to charging for different “lite” and “pro” versions of the software, Winamp also started linking its software back to familiar outlets for the music commodity. Version 2.10, for example, included a mini-browser window (see fig. 6) that provided “information and web links relevant to the various MP3 files” a user was playing (Frankel et al. 1999, 57). The default browser page was Amazon.com, where users could buy a CD of the very file they were listening to (the irony of being sent to buy something users already owned in another format was obviously lost on the browser technology). The minibrowser also linked to other established music resources (rollingstones.com, MP3.com, etc.). Although such an innovation could be expected of Winamp after its merger with media giant AOL, the release date for version 2.10 was several months before the acquisition. As such, the minibrowser suggests the software and the music files it facilitated were already linked to a wider market place of commodities.

Even a feature as basic as playlists uncovers roots of digital music’s commodification. Playlists represent a way of regrouping music that has become unhinged from its original context. If Winamp’s ability to mix and match digital music files across a wide selection of artists, genres, and albums called the very concept of the “album” into question, then playlists
emerged as a new form of ordering the music commodity. Playlists capitalize on songs as individual units, confined by no preset order or classification. Playlists support the idea of songs as individual units (commercial and aesthetic) while simultaneously recognizing that they take on other meanings when part of a larger whole. By regrouping and ordering music, playlists recontextualize the individual songs that make them up. Originally a technical solution for cueing up digital music files, playlists have become the primary way to package the digital music commodity that is widely used in digital music stores like iTunes or services like Spotify (Drew 2005).

The ways listeners experience music depends on what they can do with it. Winamp drew on familiar practices and designs, and in doing so, it engaged in recontextualizing the music commodity for the digital realm. Winamp’s interface and features made possible the playing and ordering of digital music in such a way that it could be repackaged as a new version of the same old commodity. Winamp’s approach to music playback was a statement about how music should look, sound, and behave in its digital contexts. The features Winamp put forward as central to handling digital music, then, were simultaneously claims to reconsider practices of music consumption. Even though the program’s designers did not intentionally set out to create a market for the sale of digital music files, Winamp’s re-tuning of music’s interface created an environment in which the commodification of digital

![Figure 6. Winamp’s integrated browser. Winamp version 2.10 included a browser that linked users to Amazon.com.](image)
music could take place. By creating a distinct experience for music on the computer that was different enough from previous formats to feel novel yet similar enough to ease users through the transition, Winamp hinted that music as a digital file was ready for commodification.

There is little doubt that the splintering of the music commodity into individual data files has presented challenges for players heavily invested in the sale of recorded music and for notions of musical value more generally. The album has been the dominant form of music consumption since the rise of the 33 1/3 rpm vinyl LP in the 1950s (Keightley 2004, 378–90). Although a long line of technologies, such as jukeboxes, 45-rpm singles, recordable cassettes, and radio, has challenged the “age of the long play,” these technologies often supported, rather than opposed, the more economically and symbolically dominant album format (Keightley 2004; Powers 2014). But the modularity of digital music, through playlists and other forms of recombination, has sparked another round of the “death of the album” debate. As Gerald Marzorati, a critic for the New York Times, notes, the “big album” (i.e., albums that were conceived of and understood as albums in their entirety, such as some of those by the Beatles or Bob Dylan) does not travel well to new technologies like digital files and the Internet. An album is, Marzorati goes on, “ultimately a matter of giving yourself over to somebody else’s choices—this song, then this one, because it was conceived to be heard that way. The digital revolution promises precisely the opposite: you get to pick and choose, quickly, effortlessly, endlessly. What do you want, want right now? It’s the ability to gauge and provide just that that’s killing the Big Album” (Marzorati 1998). Rather than fear over visual or sonic inferiority, the death of the album suggests that the disaggregation of albums into individual files disrupts not only the economic strategies of the music industries (Banerjee 2004) but also patterns of listening that have long been fundamental to the music commodity.

Even if we accept the premise that the album is dying, however, the death of one iteration of the music commodity does not necessarily mean the death of the music commodity more broadly. Winamp’s disaggregation of the album format, while it partakes in the same logic that drove mix tapes and mixed CDs in the decades preceding it (Drew 2005; Drew 2013), did so in a way that presented new avenues for the repackaging and repurposing of the music commodity. Winamp’s interface allowed a disaggregation of music but also provided a way to reaggregate it in other ways. Without the explicit intention of commodifying music into playlists, Winamp nevertheless created features that later became central to the digital music commodity.
The music industries have faced several similar transitory moments since the introduction of sheet music, and the antagonism and disorder that gets created in such moments is, as is clear from past experience, not inherently disruptive. In most cases each new threatening technology is ultimately tamed or co-opted while the structure of the recording industry and its major players remains relatively unchanged (Chanan 1995; Garofalo 1999; McCourt and Burkart 2003). Software like Winamp, whose technical design encourages users to reorganize music into playlists, manipulate it with equalizers, and visualize it through abstract graphics, may have added to the chaos of this particular transitory moment. However, it also signaled the potential of a variety of new services surrounding the digital music commodity. Winamp was not the only technology involved in this process, and subsequent chapters examine other key developments along the road to commodification. Because of its early popularity, however, Winamp played a particularly crucial role in transitioning users from playing CDs on their stereos to playing digital music files on their computers. It freed the recorded music commodity from some of its confines and at the same time laid the groundwork for the commodification of digital music.

Neither Winamp nor the moment surrounding it, however, fundamentally changed the idea that recorded music was still a commodity. The question facing those interested in profiting from recorded music in its digital form—and here I include not only record labels but also artists and a host of other actors—was not whether digital music could be a commodity but how to proceed with its commodification. The answer to this question was not one that would come exclusively from the music industries. Instead, it would take a tense mix of industrial desires and the everyday labor of users and hobbyists working to shape digital music into a usable and valuable form. I turn now to explore this part of digital music’s history by looking at a key feature on which Winamp relied for handling, sorting, and seeing digital music: metadata.