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An Exploration of Internet Radio and Its Dominant Players

Sound. From oral histories to political debates to rock concerts, sound is arguably the oldest and most recognized form of human communication. As ancient as the concept may be, however, communicating with sound from a single powerful sender to a massive, diverse audience was not possible until the advent and implementation of radio broadcasting in the early 1900s. What disputably began with Reginald Fessenden's rumored Christmas Eve broadcast in 1906 to listeners up to 500 miles away has transformed time and time again over the course of a century (O'Neal). In its latest form, Internet radio (though technically a misnomer, since this form of communication is not transmitted using radio waves) from solitary computers reaches people around the globe with crystal clarity, delivering sound in the form of the latest top-40 hits, small-town garage bands, political pundits, and weather forecast warnings.

But how did radio broadcasting (a term derived from agricultural jargon, meaning "scattering or throwing at large from the hand: as to sow" or "to disseminate widely" (*The Century Dictionary* 44)) develop from a lone man's winter laboratory into a worldwide communication tool? Further, how has its 100-plus-year development impacted humanity (particularly American culture, in the case of this work), and in what ways has society shaped the evolution of the various iterations of this extended family of technology?

Throughout this essay, we will argue three main points: 1) Internet radio has been made a reality due primarily to social forces that have driven the necessary technological and cultural advancements and secondarily to the technological developments themselves. 2) Much like Ford's Model T did in regards to automobiles in the 1920s, Pandora Media Inc.'s Pandora

Internet Radio has emerged as the dominant construction of Internet radio through a successful “interaction of heterogeneous elements...shaped and assimilated into a network” (Law 112; Wells). Moreover, Pandora continues to adapt and redefine itself with relative finesse through the heterogeneous engineering of emerging social forces, economic pressures, and technical enhancements. 3) Internet radio—accessed from either music-streaming portals like Pandora, traditional stations that are delivered online, or some other development not yet seen—will continue to thrive and reach even more consumers as it influences and is influenced by social groups.

The Product of 100 Years

The story of mass messages sent through sound is complex and lengthy, so for the sake of conciseness we will focus only on the major players that shaped the technology of radio broadcasting from the early 1920s to the phenomenon of Internet radio today.

In those early days of broadcasting, when it was no longer strictly luxurious for Americans to own radios (often assembled at the home, rather than purchased as pre-built, functioning units), it was not uncommon to find individuals and families huddled around the receivers to hear “a blend of talk, music, and static as their heads became filled with the voices and sounds of nearby and far-off places” (Douglas, S 55). However, as broadcast stations became more and more centralized and advertising over the airwaves became the means to support those stations, people began to look for alternative uses of radio, so as to avoid the consumerism that threatened to invade their “private lives” (Douglas, S 56). One particular social group that sprung out of this desire for aural freedom was the DXers, a new community of radio users who sought the farthest-reaching, most unexpected signals. As crystal sets made way for

tube sets and headphones became prevalent (before widespread use of improved loudspeakers), DXers took pleasure in “trying to tune in as many faraway stations as possible” (Douglas, S 57). For these listeners, it was all about distance (from which the shorthand DX is derived)—all about trying to discover something new and exciting. That DX mentality eventually spread through the population as the decades rolled by, and as recorded music grew in popularity, people were constantly looking for the newest and best artists and songs, along with the newest and best technologies by which to “listen in” (Douglas, S 60).

Fast-forward to the 1980s. Digital audio production had become somewhat more prevalent a format than it was when initially used by Nippon Columbia/Denon to release the world’s first commercial digital recording in January 1971 (the song was “Something” by Steve Marcus) (Fine 3). But in the 1980s many groups, commercial and artistic, were still aiming to develop a technology that could contain higher quality sound in even smaller storage space. The technology that was used in the 1970s, digital-pulse code modulation (originally invented in the 1930s by Bell Labs as a telephone technology (Fine 2)) failed to take off with mainstream music producers because of the smaller size of competing analog audio tapes. Thus, the music industry was essentially limited to analog productions until Royal Philips Electronics manufactured the first commercial compact disc, or CD, at a factory in Langenhagen, Germany on 17 August 1982 (Geekzone Technology Community). With this leap forward, music producers and music lovers across the globe embraced digital audio as their listening format of choice, and, as of 2007, Philips estimates that over 200 billion CDs have been produced and sold worldwide (Geekzone Technology Community).

It soon became apparent, however, that CDs were still not enough. With analog audio cassettes, consumers could record and re-record samples, songs, or entire albums to their hearts’

content. Sharing music from day-to-day had become a staple activity for audiophiles, and CDs had yet to offer them that option, at least in the case of making copies of the music they already owned. To cover this new need, Digital Audio Tape was developed by Sony and introduced to the market in 1987 (Garofalo 345). Not only could consumers now make digital copies of music, but the copies made with DAT were also perfect and lossless, unlike other digital audio technologies, including Matsushita and Philips's forthcoming Digital Compact Cassette. However, due to the Athens-Agreement-required Serial Copy Management System that was equipped on all digital recording devices (a decision driven by frightened recording industry lobbyists), "only one digital copy of a digital recording" was permitted (Garofalo 346). This choice-removing limitation (like it or not, breaking the law is still typically a matter of choice), essentially killed DAT's popularity, and it "never caught on as a consumer medium in Europe or the United States" (Garofalo 346).

Outside the realm of music, another relatively unfamiliar technology was quietly beginning to rear its head among the public. Initially connecting only four computers at Stanford, UCLA, UC-Santa Barbara, and the University of Utah in 1969, the ARPANET began slowly but stood ready to expand to become the global network known as the Internet that it would be less than 30 years later. Based originally on the standard protocol of RFC 1 (Request for Comments 1), a relatively simple memorandum format used to share or review information about methods, research, and concepts that relate to the working of inter-connected networks (in this case, the ARPANET), the network was then tailored closely to the needs of academic and military groups. However, at the ARPANET's transition to the use of the more open TCP/IP (Transmission Control Protocol / Internet Protocol) in 1982, "the foundational footings had fully settled and the way was open for broader public involvement" (Federal Communications Commission). Five

years later, the National Science Foundation took the responsibility of managing civilian access to the ARPANET, and then built a T1 infrastructure (much faster than the ARPANET's) for its own supercomputer network, known at first as the NSFnet. Though private enterprises quickly realized the potential benefits of having a presence on such a network, the NSF maintained restrictions on commercial use of the NSFnet, increasingly known as the Internet, for the next few years. However, “[b]y the time ARPANET was formally decommissioned in 1990, the NSFnet/Internet was poised for explosive growth. [The ARPANET was thereafter assimilated into the NSFnet.] When the NSF lifted all restrictions on commercial use of its network backbone in 1991, today's Internet was begun” (Federal Communications Commission). With the Internet open to commercial use, the public had the opportunity to freely share and transfer information of all types over the network, including scientific data, business plans, money, and, of course, digital audio files (once an optimal format was developed).

Through the same period as the NSFnet's absorption of the ARPANET, CDs gained significant momentum in the digital music realm and eventually became the music-delivery technology of choice for the general population, even though traditional radio stations continued steadily behind the scenes of digital audio advancements, and analog cassette tapes still remained the consumer choice for copies of recordings. However, as it was and is with most technologies, it was only a matter of time before a new audio storage format was developed that could successfully unite the abilities to discover, listen to, copy, and share recordings.

Here enters Karlheinz Brandenburg and his work at the University of Erlangen-Nuremberg in Germany and at the Fraunhofer Institute for Integrated Circuits. Having years earlier been charged with researching a method for transmitting music over a digital ISDN (Integrated Services Digital Network) phone line, Brandenburg and his colleagues were at the

forefront of “figuring out a way to send high-fidelity sound over telecommunications lines...though few suspected how immense the impact would be” (Ewing 1). After refining the technology to the point where the files were small enough while still maintaining high audio quality, Brandenburg’s work was submitted to the International Standards Organization for approval, where the organization’s Motion Picture Experts Group (MPEG) would decide if the format would be accepted as an industry norm (Ewing 2). After some debate, MPEG consolidated and chose several standards for adoption in 1993. Thus, “based largely on the work of Fraunhofer [Brandenburg] and private partners including French electronics maker Thomson,” MPEG 1 (now 2) Audio Layer III was born (Ewing 2). MP3, as the format is now known, quickly rose to popularity, due largely to the fact that it was both high quality and small enough to stream over the increasingly popular Internet. Suddenly, sharing and broadcasting audio over the expanding network became a reality to more people than ever before.

Around the same time in 1993, American technologist and author Carl Malamud began the first Internet broadcast, a talk radio show called “Geek of the Week” (Internet Talk Radio). Malamud’s nearly weekly show featured interviews with other techies and discussions on the best practices of information sharing over the Internet. Though Malamud is credited in many circles with inventing the first Internet radio station (The Invention and History of Internet Radio), installments of his talk show originally had to be downloaded and played from users’ hard drives rather than streamed directly from remote servers (Malamud). Once MP3 became more widespread, however, traditional radio stations (now known as terrestrial stations) began to recognize the potential for expanded listenership across the Internet. In 1994 the University of North Carolina’s student radio station WXYC took advantage of the MP3 audio standard and became “the first radio station in the world to stream its on-air signal live over the Internet”

(WXYC | History).

The concept of Internet radio did not stop with terrestrial stations supplementing their local broadcasts with online streaming, however. Through the mid-to-late-'90s, hundreds of Internet-only radio stations (also known as web radio) also began springing up across the world. Suddenly, the DXer mentality of the 1920s resurged, and people began again to seek out the newest, most obscure sounds they could find via the distance-eliminating Internet. Despite the similarities between the early '20s and the late '90s, however, key differences gave rise to one of the most significant developments in listening history. Those key differences were MP3 technology and public Internet use, and the resulting development was the phenomenon known as Napster.

Launched in 1999 by Northeastern University student Shawn Fanning, Napster was built to facilitate online MP3 sharing. Different from radio stations (terrestrial or web-based), Napster allowed for the seeking out of specific songs and albums that could then be obtained at will. No longer were users required to wait until a playlist cue to hear their favorite songs. No longer did they have to wearily sit through advertisements to listen to a newly released single from a previously obscure band. Napster allowed instant (minus the one-time cost of download time) access to the audio libraries of any other connected user. Digitally coded in MP3 format, the songs could be downloaded and permanently stored to any user's hard drive. Obviously a thorn in the music recording industry's side, Napster eventually underwent a series of lengthy and costly legal battles, and its peer-to-peer (P2P) service was legally shut down in July 2001 (Douglas, G). Despite its fate, Napster's effect on the public's perception of music access remained. The traditional concept of radio was no longer good enough for everyone. People wanted to hear what they wanted to hear—when they wanted to hear it. And they still wanted it

all for free.

With all these previous developments in listening culture and audio technology alike, the stage had been set for someone to somehow tie it all together—for someone to find a compromised degree of happy-medium between music lovers and music mongers by taking the available technologies and constructing them into something new. The next section of this essay will explore how Pandora Radio, founded in the early 2000s and based on Will Glaser and Tim Westergren's Music Genome Project, has engineered these heterogeneous elements into a successful association that now dominates the Internet radio space.

Pandora Unleashed

Almost half a decade after investors poured millions into the concept, the dot-com bubble burst in March of 2000. As stocks plummeted and NASDAQ threatened to collapse, those involved with the exciting beginnings of the Internet scrambled to salvage and perhaps recreate the dot-com phenomenon (Chiang). Sites like Rhapsody and Yahoo's LaunchCAST attempted to provide sources that would stream songs directly onto your computer. In the wake of the dot-com crisis, investors were not interested and the sites soon became eerie remnants in the background while the Western world fought to keep the concept of Internet alive. At the end of 2000, a young musician by the name of Tim Westergren had just launched a site called Pandora Radio. Despite a lack of funds, Westergren managed to successfully convince a venture capitalist to lead a \$9 million dollar investment (Miller).

At the height of Internet radio nearly ten years later, Pandora reigns as the dominant sovereign of music streaming. To understand what made consumers engrossed, it is important to examine the heart of Pandora Radio—the Music Genome project, which Westergren had started

in collaboration with several of his friends. The concept was first conceived in 2000 but did not see hopeful prospects until funds were poured in four years later. At this time, 50 “musician analysts” were recruited to listen to a single song at a time for 20-30 minutes while collecting minute details such as rhythm, vocalization, melody, harmony, instrumentals, and lyrics. Nearly 400 such traits were examined to create a database of what were only initially 10,000 songs. Still utilizing this same foundation today, these 400 traits are funneled into a complex mathematical algorithm to help map out songs that are similar to each other in multiple ways. Nine years later Pandora claims a database of 700,000 songs.

The interactive shell that harbors these songs and details is a seemingly simple setup. New users can sample the site for a handful of songs before being prompted to set up a free account. Users are then presented with a lean blue Adobe Flash interface that allows them to type in a song or artist. This entry becomes a radio station, and then pulls songs out of Pandora’s database based on the created algorithm and directly streams them in MP3 format using a broadband connection. Because Internet radio relies on the quality of its sound, Pandora and other net radio sites use true streaming, which transfers and buffers small amounts of a file at a time but allows users to jump to different locations of the file with few or no delays (Mason & Wiercinsk). Users may also easily pause and skip—two features that initially separated Pandora from other Internet radio projects. Each created radio station gives the option to “add variety,” or to add a song or artist at will. Users may also share, rename, edit, find other fans, or delete stations. The songs are laid out to the right of the name of the station. Each song displays the song title, artist, album name, album cover, a small bubble that shows a section of the lyrics, and a link to the full lyrics. Features that are personalized to Pandora include “thumbs up” and “thumbs down” buttons that further help the application predict songs that the user will enjoy.

Choose a “thumbs down,” and Pandora apologizes and promises to remove songs that are similar. Select “thumbs up” and, using the same formula for analysis as when you initially typed in a song or artist, Pandora takes the elements of that particular song to pull other songs from its database that are similar. A small menu button allows you to ask why the song was selected, inform Pandora you are tired of the song, move the song to another station, create a new station based off that song, or bookmark the song.

Though other Internet radio sites had features that were similar to what became the present form of Pandora Radio, no other site had thought to integrate all of these characteristics. Slacker radio was officially launched in 2004, but, despite its stark similarity to Pandora Radio on the surface, the online audience outside of eager technophiles has yet to latch onto Slacker’s streaming site. Slacker Music Service utilizes DJs to organize its 2.4 million-song database based on the songs or artists you pick. Upon hearing this, Pandora’s database seems pitiable by comparison. However, because they do not utilize a distinct proprietary algorithm, Slacker does not have any other features to further personalize your station, and its operations are more similar to the e-commerce concept of “users who bought this also like this.” New York Times writer Rob Walker points out that such a massive database is perhaps not the primary concern of users. Rather, users embrace Pandora’s “radical” approach to “conventional digital-music wisdom,” while Slacker “rejects the supremacy of social-data taste communities” (Walker). Thus, though it boasts a larger database, the lack of personalization has hindered Slacker’s success.

Slacker music service is, however, available in Canada, and other streaming sites such as last.fm also allow access in other parts of the world. Last.fm, founded in 2005, is a result of a U.K. merger between Audio Scrobbler and the former version of last.fm. Last.fm goes beyond streaming and primarily focuses on an interactive community approach. Users of last.fm create

an account where they can add artists to their library, and, via a click on artist profiles, the site links users to artists that are similar. Additionally, the site will introduce you to other users and allow you to send a friend request, subsequently allowing you to browse their music library. This trait, coupled with the broadened accessibility, has fueled last.fm's growing number of users, but has yet to launch the site past the Pandora Radio hype.

Despite Pandora's apparent power, however, not all has run smoothly for the Internet radio portal. As a result of pressure from the recording industry, Pandora remains IP blocked outside of the United States (Riley). Further, this is not the only attribute that was shaped as a result of the individuals concerned with royalties. Having just recently smoothed over the Napster debacle, royalty fees were still fresh on the mind of the colossal recording industry. As Pandora gained momentum, those involved with digital rights management kept a close and anxious eye on the site. Even prior to Napster's conclusion, royalty rights were a looming cloud over the music industry. When webcasting and Internet showed the first signs of becoming a reality, royalty standards were revisited again. As a result, the Digital Millennium Act of 1998 was introduced to reestablish that non-subscription broadcasts licensed by the FCC were exempt from sound recording performance royalties (Pozen 6). This act, however, only protects radio stations operating under FCC standards. Internet radio sites that were independent enterprises were poised to begin a bold fight against the key players of the recording industry.

In 2008, at the height of Pandora's popularity, the Copyright Royalty Board wanted \$17 million from Pandora for freely streaming songs, or it threatened to shut down the site (Whoriskey). They argued that Pandora threatened the music industry, all while blog posts and petitions such as savenetradio.org sprung up across the nation. Independent musicians sang the praise of Pandora, receiving weekly e-mails from new fans claiming to have discovered them

through the Internet radio site (Hazard). Many musicians such as Matt Nathanson, who toggled between independent and major labels, expressed concern that “demands placed on Internet radio could ‘choke’ the industry before it gets its footing,” asserting that such sites are actually good for musicians like himself and that the promotion that Pandora provides is far more important than any lost revenue (Whoriskey). Additionally, a group of far more lucrative players in the industry—The Dave Matthews Band—recently recognized the expansive potential of Internet radio and utilized Pandora to promote its latest studio album in 2009 (PRNewswire).

Broadcast AM/FM radio did not have to pay royalty fees, and, in an attempt to appeal to the Congressmen who played a significant role in the outcome of their situation, Pandora Radio suggested expanding these fees in order to even out the playing field. Presented with such radical assertions, Congressmen started recognizing and feeling sympathy for Internet radio’s plight but had no concrete plan of action, so the company had to eventually restructure its site in order to meet the monetary demands of the recording industry (Pozen 11).

As a result of such demands from the Copyright Royalty Board, Pandora added advertisements to the site to fund the project after the sensational battle over song royalties. If using a free Pandora account, after every three or four songs the station stops to present you an advertisement. Additionally, Pandora One was introduced for \$36 dollars a year to let users enjoy unlimited listening and stations, as opposed to the allotted 40 hours per month and 100 stations per user with the basic account. Slacker and other Internet radio sites either followed suit with similar features or had already done so to help provide revenue.

All of the sites mentioned thus far reluctantly accepted that the battle over royalty fees was going to be an ever-present discussion as they continued to develop their products. Sites such as Slacker, last.fm, and Pandora Radio all now have features that do not allow you to skip

more than a set amount per hour or per day. This struggle between the Copyright Royalty Board and Internet marked a new era in the discussion of digital media and continues to be a shadow over the evolving concept of Internet radio. Both groups hold deeply valuable stake, with the recording industry strongly asserting that Internet radio threatens to destroy their industry while music-streaming innovators fight to utilize the Internet enterprise to appeal to a new type of audience.

Amidst the royalty fee showdown, another company was quickly gaining momentum. Apple launched its first version of iTunes in 2003, and four years later Amazon also created a site that sold MP3 song files. Rhapsody, launched in 2001, was already offering the option of purchasing music through their company directly, but garnering the audience's trust proved to be difficult, and most consumers brushed the site off. Amazon and iTunes had spent years building consumer trust. Introducing MP3s for purchase was a far easier step for them. Recognizing another way to integrate optimal features into its application, Pandora acknowledged the credibility of these sites and managed to negotiate a deal with both companies shortly after they had started. The top right corner of Pandora's visual interface soon offered the option to purchase songs or entire albums via iTunes or Amazon.

In another realm of development, only a year after the social networking site Facebook hit one million users, last.fm explored the concept of online communities. As previously discussed, the site allows users to create a profile with a library of "liked" artists. Additionally, they can download their "audio scrobber," which keeps a digitized log of all the songs and artists listened to in order to allow last.fm to automatically continue to build a profile. Users can then explore information on the artist, and the site will provide them with artist recommendations, or they can create a station based on an artist, which will play songs from

other similar artists. Again, after creating a profile, users can send friend requests to other users and, in turn, look through their music libraries. Last.fm streams from the UK, Germany and the United States. These last two features are what last.fm thrives on. Users perhaps get the sense that they are able to share their tastes with the world while exploring new artists through other users.

Though Pandora prided itself on empowering users while aiding them in exploring new music, they had yet to integrate a feature that would connect users and help build online music communities. The social media phenomenon arrived in approximately 2004, and by 2009 Facebook was found to be the most widely used social media website with nearly 2 million worldwide visits per month (Kazeniak). In 2007, Pandora announced it would be implementing Facebook synchronization into its site. Users could now log in with their information and, rather than starting from scratch, could view the stations of their friends on Facebook (Van Buskirk). Though initially largely ignored, this feature continues to evolve and gain momentum as Pandora's executives attempt to capitalize on the potential of both social media and Internet radio. By attempting to become the most inclusive and expansive Internet radio product, Pandora now sits at the intersection of music radio and the current Web 2.0 phenomenon.

The complex assimilation of multiple traits is what sets Pandora apart from other Internet radio sites, though, ultimately, it is not the only contributor to the staggering implications Internet radio holds for the future of broadcasting, music streaming, and online communities.

Aftermath: What Does It All Mean?

So what do these technological and social factors, both for Pandora and for overarching Internet radio, tell us about our listening culture (and culture in general)? While some of the

social influences certainly seem technologically deterministic, the bulk has been socially constructed, and it is worth exploring this techno-cultural tug-of-war. In the final section of this paper, we shall discuss the social impact of Internet radio while seeking the middle ground between the extremes of these two theories.

There are two significant things worth mentioning that have been made possible by Internet radio that previously had not been. Most people would agree that the most significant attribute of Internet radio is that it allows for an alternate listening experience. Through the technology of the Internet, users are able to freely explore different genres of music and discover new musical artists with barely any limitation. For example, someone might be an avid listener of popular music and rely on traditional broadcast radio to discover new music. Since most traditional radio stations across the country are owned by the same company, their music playlists are undoubtedly the same and only feature the work of top-of-the-chart, signed artists. Without access to Internet radio, this person would be oblivious to the thousands of independent artists that are comparable to the big-name artists. This is said to be the most noticeable downside of traditional broadcast radio. However, once introduced to Internet radio, horizons may be expanded tenfold—for both the listener and the independent artist. This is arguably the reason why Internet radio has been able to thrive, even through the “royalty crisis” of 2007.

According to RedOrbit, “the Internet is gaining on radio as the medium to learn about new music. In 2008, radio is mentioned as the medium ‘you turn to first to learn about new music’ by [49 percent] of consumers, with Internet at 25 percent. In 2002, radio was mentioned by nearly two-thirds of consumers (63 percent) for this perception, while only nine percent mentioned Internet” (PRNewswire-FirstCall). In only six years, the amount of people who use the Internet as a medium to discover new music has more than doubled. Perhaps a technological

determinist would argue that the advancements in technology have made this statistic possible, but it can also be argue that our need for variety fueled this technology.

The second thing to mention is that the amount of people that listen to traditional broadcast radio for pure leisure seems to have dropped severely, especially since the “standardization” of the television, and even more so since the introduction of the Internet. “Since the rapid growth of the Internet...people are now used to working with computers and use their leisure time in front of their desktops or laptops” (Meyer). It is possible that listening to the radio is no longer an activity in itself, but is used as “filler” during other activities—predominantly while driving, as most vehicles are stock-installed with terrestrial radio receivers. However, since the introduction of Internet radio, more people are relying on listening to Internet radio as a form of entertainment. This has to do, in large part, with its extreme ease of access and endless options for customization. “‘Users continue to prove that they want to consume radio on their terms,’ said Tom Webster, Vice President [of] Edison Media Research. ‘On-demand media and a wealth of portable devices are creating listening occasions that were previously either unavailable or under-utilized, which is increasing the overall demand for audio content’” (Arbitron).

Equally as important is how Internet radio has affected society. In addition to positively expanding the music realm for both audience and artist and once again making listening a leisurely activity, the technology also brings forth negative issues. To date, the most significant of these negative issues directly involves the many facets of the music industry in the form of royalties. The Copyright Royalty Board, a Congress-made organization to settle royalty disputes in the music business, issued a high-fee structure for Internet radio companies in 2007, causing what’s known as the “royalty crisis.” According to Businessweek, AccuRadio, a small Internet

radio business, recorded about \$500,000 in annual sales (mostly from advertising) and paid about 10% of that revenue to the record labels to compensate for royalty-usage as of early 2007. With the passing of the law issued by the CRB, royalty fees for AccuRadio would have been \$600,000 for 2006 with an increasing yearly rate until 2010 (Kharif). With the fear that this new structure would eliminate Internet radio forever, companies like AccuRadio fought back. The Internet Radio Equality Act¹ (IREA) eventually passed to nullify the CRB issuance and established “a ‘transitional’ royalty rate, until the 2011-15 CRB hearing is held, of either .33 cents per listener hour, or 7.5% of annual revenues, as selected by the provider for that year” (Radio and Internet Newsletter).

Of course, the issuance of this high-fee structure had to be based on money. The question that should be asked is whether online music streaming hinders or enhances the copyright owners’ other revenue sources? Record labels, artists, and other copyright holders claimed that they were suffering from a major loss of revenue because of free, online music streaming, among other outlets. However, the CRB failed to realize a fundamental attribute of Internet radio—listeners were discovering independent and even unknown signed artists. “Where terrestrial radio play is not an option, the Internet provides the most democratic of channels of distribution for the band’s music. Lisa Mathews, a founding member of [a children’s music] band, put it this way: “When it comes to radio, there just aren’t many venues for children’s music via the traditional radio stations. Webcasters provide an outlet for kids and parents to hear new music—music that is pretty much ignored by traditional radio. For me the value is undeniable” (Robertson 34). At least with the exposure that Internet radio provides, the chance that someone in the audience is willing to purchase music increases—isn’t this ideal for the record labels and artists that would

¹ H.R. 2060

have never been heard otherwise? To prove just how effective Internet radio can be on music industry revenue “a [Digital Media Association] survey of 1,008 online music radio listeners and music services subscribers published in January [2007] found that nearly half are spending more than \$200 per year on music, and nearly 30% are spending more than \$300. Before the Internet, an average consumer only bought about \$100 worth of CDs a year” (Kharif).

Did the technology of Internet radio initiate these concerns by the music industry? Perhaps it did; however, social constructivists might argue that the issues brought forth called for a change in the technology as well. Earlier models of Internet radio aimed to provide the user with pure entertainment without the distractions of commercials or advertisements, but it seems that this has changed since the “royalty crisis.” Since Internet radio businesses have basically been forced to either pay the royalties or discontinue their services, most of them have allowed advertisers to use their websites in order to ‘stay alive.’ While currently the amount of advertising isn’t as invasive, to some the mere fact of having to deal with commercials while listening is less than ideal. This attitude evolves from the once-blissful knowledge that Internet radio used to have no advertising at all; listening was pure enjoyment. Internet radio services cannot be the only ones to blame, however—the need for advertising is a two-way street. “Advertisers who want to go where the trends are pointing need to be more involved with the new forms of audio media as they continue to expand” (PRNewswire-FirstCall). In fact, many of the advertisers on Internet radio sites pull information from the users’ accounts to provide advertising that personally caters to that user. For example, if one’s account holds the information that the user is a twenty-year-old male, the website might display advertisements for Axe Body Spray or the National Guard.

The usefulness of Internet radio is also apparent, especially to music-enthusiasts. It seems

as though logging onto Pandora, last.fm, or Live365 comes natural when one wants to listen to or discover new music. There are many factors as to why this is. First, it is incredibly easy to access the music—given there is a reliable Internet connection. All one has to do is go to the site and select an initial artist or genre to listen to, which is also to say that it does not take too much thinking. Second, the various Internet radio sites allow for customization. Pandora, for example, allows an account holder to save different “stations” that play music that is all similar. These “stations” are chosen according to personal preference, and can be accessed at later dates. Third, while one chooses his or her own “station” to listen to, the program allows for variety by randomizing the artists that are played. This is an important characteristic because repetition tends to get dull, and, after all, the user likely went to the site to discover new music. For the most part, all of these attributes contribute to the success of Internet radio and why people are so naturally inclined to use the technology.

Finally, we shall discuss how society might potentially change the current shape of Internet radio. According to the Media Literacy Clearinghouse, “70 million Americans listened to Internet radio (27%)...[and] three in ten who are 12–24 years old are ‘very interested’ in online radio for car” (Media Literacy Clearinghouse). The statistic that about 8% of Americans are “very interested” suggests that there are definitely more who hold some degree of general interest in online radio—for vehicles and otherwise. This interest will continue to push the proliferation of on-the-go Internet radio devices, which would in turn change the current shape of online radio access from solely computers to an array of media devices such as dedicated personal “radios” (not to mention further market saturation of smart phones). Though there is no guarantee that dedicated online radio devices will be massively available or generally used, further development in the technology appears inevitable. This all begs the question whether

online radio devices will be adopted on a broad scale, or, perhaps the more appropriate query, just how long will it take?

Conclusion

From our exploration it is evident that Internet radio, like all types of technology, has undergone times of questionable stability, surging success, and steady evolution, and it is society that ultimately determines when these phases occur. By incorporating solutions to the desires of relevant social groups and the most up-to-date technological developments, Internet radio has emerged as a successful association of elements that our modern society values. In particular, it appears that Pandora Radio, with the largest registered user base of any Internet radio site, has effectively engineered the most important of these facets into a technological system that delivers its users exactly what they are seeking—the music they want, when they want it. Though the distant future of this technology cannot be certain, Internet radio will continue to thrive in the current social climate. In fact, it just might lead to the next great development in our basic form of communication—the next great development in sound.

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