The Era of Master Domain Music 1964-1994

Adrian D. Carr

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This essay and the musical compositions of Adrian Carr together constitute the dissertation but are otherwise unrelated.
This dissertation is offered in appreciation to the guidance and help provided by my advisor, Professor Paul Lansky, who encouraged me to finish this dissertation after 25 years.

Many thanks to the coffee crew (Bryan Martin, Mike Greenfield, Yves Bertrand, et al.) who met religiously at the San Simeon Social Club in Montreal. It is in the spirit of those lively conversations and debates that I found the reasons to write about the music I love. And special thanks to my wife, Deborah, who lovingly contributed her efforts as editor.
Abstract:

A new art form in music grounded in the recording medium itself emerged in the second half of the 20th century. This new medium-based art form no longer relied on a written score to preserve music. Rather, it preserved music and the recording artist’s performance with a recording master. The recording master was a definitive version of the music that could be reproduced mechanically. This art form is defined here as “master domain music.” In this dissertation, the development of mainstream master domain music between 1964-1994 is discussed. The musicians, the music, and the industries that produced the music developed and matured symbiotically to produce the enduring successes of this era. This dissertation examines the development of the technology, the evolution of the music industry, and the seminal music that achieved acclaim in each decade. The contributions of master domain music to artistic creativity, cultural influences, and technological innovation are discussed. The last chapter, 1994, analyzes the sweeping changes that took place in the industry’s production and distribution of music, as well as the value of the master. These changes can now be recognized as signaling the end of an era. The major works of master domain music discussed in this dissertation include The Beatles’ Sgt. Pepper’s Lonely Hearts Club Band, Jimi Hendrix’s “The Star-Spangled Banner,” Pink Floyd’s The Dark Side of the Moon, U2’s The Joshua Tree, and Nine Inch Nails’ The Downward Spiral.
Chapter Summaries

Chapter 1 An Introduction to Master Domain Music
A brief history of this new, evolving musical art form in the 20th century is traced from the first recording media to the beginning of master domain music. The meaning and basic parameters of master domain music are defined. Different types of music are categorized in master domain music. The concept of an internal interpretive system of listening to recorded sound is presented. A preliminary discussion of Jimi Hendrix’s “The Star-Spangled Banner” concludes the chapter.

Chapter 2 Creativity and Technology in the Music of Jimi Hendrix
The balance between creativity and technology in the creation of master domain music is explored in the work of Jimi Hendrix. The idea of the electric church is presented as the creative basis for his body of work. Jimi Hendrix’s track “The Star-Spangled Banner” is discussed as an analysis of an effective balance between creativity and technology, and the representation of the electric church is detailed through the use of a spectrogram.

Chapter 3 The Beatles and Sgt. Pepper’s Lonely Hearts Club Band
The Beatles, with the help of their producer George Martin, became master domain musicians exclusively and worked to develop the recording studio as a creative tool. The discussion includes how new production methods were analogous to the visual arts,
the unprecedented use of multiculturalism, and the rise of the concept album. The underlying incorporation of eastern spiritual ideas into the music is considered and an analysis of “A Day in the Life” is offered.

Chapter 4  Pink Floyd: The Dark Side of the Moon
Pink Floyd’s *The Dark Side of the Moon* is presented as the next stage of creative and technological advancement in master domain music. Recording aesthetics and ideology of master domain music are differentiated from previously used classical recording ideology and techniques. A detailed analysis of *The Dark Side of the Moon*, Side One is undertaken. The integration of dialogue, techniques of musique concrète, and synthesizers are discussed as the concept of the internal visual image is defined. A cinematic analysis of the techniques and narrative used in the music is presented.

Chapter 5  Master Domain Music Circa 1980
An examination of several significant areas of change in the 1980s begins this chapter. The music video is discussed as a format change in master domain music. The music of U2’s *The Joshua Tree* is presented to illustrate the organizing principles of perceptual evaluation and dependent arising in master domain music. The discussion then turns to other significant advances in production technology including multi-track and digital recording devices, the advent of sampling, FM digital synthesis, and MIDI. Finally, the change in medium from analog vinyl record to digital compact disc is discussed.

Chapter 6  1994
This chapter surveys the remarkable confluence of music at the beginning of 1994, which included Nine Inch Nails’ *The Downward Spiral* and Nirvana’s *In Utero*. The
discussion then turns to the factors in 1994 that led to radical changes in the music industry. An examination of the destabilization of the industry includes the introduction of the mp3, the growing power of the personal computer, and the development of the Internet. The massive paradigm shift within the recording industry from an audio-company-infrastructure to a computer-company-infrastructure delineates the creative destruction of one industry and the origins of another. This creative destruction and its hi-fi to my-fi consequences are discussed using changes in audio hardware, listening habits, recording distribution, production facilities, production standards, and the value of the master as illustrations.

Conclusion

There was a unique balance between innovation and creativity that can be seen in the musical successes of this era. The artists and industries that produced this music developed and matured symbiotically. By 2013, the landscape in which the master domain musician finds him or herself has changed completely. The challenges faced by working musical artists today are outlined.
Chapter 1: An Introduction to Master Domain Music

1.1 Background

From the time of the monks, who scribed their chants of the Middle Ages, to the present day, western art music has been preserved by the use of a written score. With the advent of the Gutenberg press in 1450, the first musical scores were mechanically reproduced. This enabled music distribution for the first time.¹ For the performers of western art music, the written score was a document that was studied in order to learn the music. By understanding style and interpreting the score, the musician used his skill to render a performance. If there were discrepancies or questions about the music, the performer would normally consult the published score or perhaps even the autograph, if available.

In many ways, the score has developed to notate the wishes of the composer. For example, in much of the ensemble music of the Baroque period, the keyboard score notated the Figured bass and let the performer add voices and ornamentation. By the classical period, ensemble music with keyboard was fully notated. In the romantic and

¹ The earliest example of printing both staves and notes with moveable type was the *Constance Graduale* (1473). In 1476, master printer, Ulrich Han, published *Missale Romanum*, a masterpiece of music printing for its time that was far beyond the experimental stages of the craft. The staves and notes are said to be well designed and cut, printed clearly and strongly on paper vellum, precisely registered for the proper placement of black notes on red staves. Ottaviano Petrucci (18 June 1466 – 7 May 1539) is known as the first music publisher and printed numerous works from various composers between 1500-1510.
modern periods, there was even greater specificity in the score. It became common to see expressive adjectives, as well as notations for performance production techniques like *col legno* or key clicks. The degree of specificity in the score can be seen as a collective attempt in western art music to preserve the wishes of the composer.

In 1877 something revolutionary happened. Thomas Edison invented the phonograph cylinder as a way to record the actual sound. The phonograph cylinder attracted widespread interest from the general public and created a great desire in entrepreneurs and inventors of the day to enhance the technology. One of these inventors was Emile Berliner, who advanced the recording technology from cylinder to disc with the gramophone record.

Mr. Berliner worked with Eldridge Johnson to establish the Victor Talking Machine Company in 1901. Victor manufactured a gramophone player for Mr. Berliner’s gramophone records and, in 1906, the Victrola gramophone player was offered to the public. The Victrola was a redesign of the original gramophone player that tucked the acoustic horn into a wood cabinet.\(^2\) It was a commercial success and triggered an ever-growing demand to record music. The advantages of the gramophone were touted in editorials and advertisements in newspapers and journals. It was even asserted that the gramophone would “help America become a truly musical nation.”\(^3\) At that time, Europe

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\(^2\) RCA archives show that this was done for aesthetic rather than acoustic reasons. The idea was to make the phonograph look less like a machine so that it would be more readily accepted into households. It should be noted that the Victrola was not electric at this point. The motor was wound by hand and the transmission between needle and horn was acoustical.

was perceived as the center of musical development. The United States had not yet developed its own art music cultural voice.⁴

The phonograph represented a new type of mechanical reproduction. Just as the printing press initiated a major paradigm shift for music in 1473, the invention of the phonograph in 1877 was going to create another. The phonograph record was a new format to preserve music, as well as a more immediate way of reproducing sound. Aaron Copland remarked on this when talking about improvisation in Jazz music. He said, “what gives...[group improvisation]...more passing interest is the phonograph, that makes it possible to preserve and thereby savor the fine flavor of what is necessarily a lucky chance result.”⁵ Mr. Copland was pointing to the basic way that recording can add to the enjoyment of music: recording was a new way to preserve and document music. Michael Delliara called this document mode and defined it as “a reasonable audio representation of a sequence of events that took place in real-time.”⁶ In the first part of the 20th century, recording was in its early stages of application and used in document mode. This early recording equipment used a mechanical topology. In the 1920s, with the introduction of the vacuum tube and electric motor, recording equipment was able to utilize an electric topology, which greatly enhanced fidelity and reliability. The challenge in the early stages of recording was to record and extend the fidelity of the signal while reducing production noise.

⁴ Aaron Copland, Music and Imagination (Cambridge: Harvard University Press, 1952), 96-111.
⁵ Ibid., 89.
Did the phonograph record really make America a more musical nation? To illustrate the immediate cultural effect of the phonograph record, one can look at the sales of sheet music. With the boom in sales of the Victrola and gramophone records, sales in sheet music, even from popular outlets like Tin Pan Alley, began to fall. By the 1930s, sheet music was no longer a “driving force” in music sales. In the age of recording, rather than playing a song on the piano, music could be played on the phonograph with results that were perceived as easier and better. The manufacture of pianos in the United States follows a trend similar to that of sheet music: sales peak in 1909, fall sharply after 1923, and never recover after that.

In his book, Capturing Sound: How Technology Has Changed Music, Mark Katz documents several “phonograph effects” as a result of the new technology. Dr. Katz points out performance issues like violin vibrato and composition length. These are musical adaptations that could be seen as attributable to the technology of the phonograph. Dr. Katz suggests that the vibrato was a compensation mechanism for the shortcomings of the gramophone; the vibrato helped cover some of the oscillating, inconsistent pitch of a gramophone record. However, there were more than performance issues being changed by the technology. There were also socio-cultural phonograph effects. Rather than using the term “phonograph effect,” the term “recording effect” will be employed here, because changes continue to evolve throughout the century, even after the phonograph is no longer the means of reproduction. In addition,

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the term recording effect can be applied to some of the larger shifts taking place in socio-cultural values of the time.

1.2 Recording Effects – The Internal Interpretive System

In 1913, the record companies were making many claims in journals and newspapers about the realism of their recordings. These claims were successful in convincing consumers that listening to phonograph records was nearly interchangeable with experiencing live sound\textsuperscript{10} but they were not founded in acoustical reality. Phonograph records in 1913 were capable of representing a frequency range of roughly 250 Hz to 3 kHz, with plenty of hum below the musical reproduction range and lots of crackle above. Compared to today’s standards, this level of fidelity seems primitive\textsuperscript{11} but in 1913 the experience of sound reproduction was completely new. Sound, a sense perception, is a two-fold process: the ear perceives a sound, then, almost immediately, the brain interprets the perception. The standards of fidelity hailed as au courant in 1913 were dependent upon the interpretive experience within the mind of the listener. As fidelity standards advanced during the 20\textsuperscript{th} century, the internal interpretative system evolved with it. Eventually, this interpretative system evolved to the point where it could re-evaluate historically early experiences of sound perception. The development of the internal interpretive system was a recording effect.

\textsuperscript{10} Ibid., 24. In his book, Dr. Katz reprints the original instructions of The Edison Realism Test of 1916, which was designed to show the listener that the emotional reaction was the same between the experience of the real sound and the record.

\textsuperscript{11} In 1913, the phonograph and recording process was completely acoustical and did not yet incorporate the use of magnetism, electricity, or vacuum tubes.
The internal interpretive system remains a question today: what do we actually hear and what does our brain tell us we hear? Although this is a contemporary issue in digital perceptual coding of the mp3 audio format, this is also an issue raised in signal transformation and amplification. Most people have not heard unburdened sound reproduction without the use of negative feedback loops (Fig. 1.1) to focus the precision of the circuit. The negative feedback circuit was invented by Harold Black of Bell Labs in 1928 as a way to reduce distortion in repeater amps for the transmission of sound over telephone lines. Engineer and designer Bryan Martin has pointed out that this became the assumption for amplification design that followed. Mr. Martin has said, “It has always been cheaper and easier to make a circuit that fed some phase-altered version of itself back into the circuit to reduce total harmonic distortion (THD) than to build an accurate circuit in the first place. The resulting output of a negative feedback amplification circuit retains only a small part of the original input signal.”\(^{12}\) Other electrical engineers and designers of the 20\(^{th}\) century, like Nelson Pass, also found ways to engineer circuits without negative feedback to create an improvement in fidelity and the listening experience.\(^{13}\) This is the definition of unburdened audio.

\(^{12}\) Bryan Martin, interview with the author, Montreal, Quebec, June 18, 2011.

1.3 The New Way to Preserve and Appreciate Music

Certain genres of music had much more to gain from being recorded. For example, folk music had traditionally been passed down orally from one generation to the next. With the introduction of recording, folk music could, for the first time, be accurately preserved. Similarly, jazz and country music, neither of which used traditional notation, benefited greatly from being recorded. Jazz music grew to maturity in the age of recording. Due to the improvisatory nature of jazz, and the impromptu formal decisions made during live performances, any a priori score gave little indication as to what a listener might actually hear in performance.\(^{14}\) Jazz music embraced recording as a way to preserve the art of individual musicians, as well as the collective movement. Compared to a written score, a recording preserved much more information. The record preserved not only information about the music, but about the specific performer as well. For the jazz performer, the recording was the breadth of his art in sound. Musicians learning to play jazz would study recordings as a way to have more direct contact with

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\(^{14}\) In the big band era, scores had to be written out to facilitate the performance of the ensemble, however, it could not be said that a remarkable performance of any big band was one that adhered to the written score, as would be the case in Western Art Music.
the sound and style of a soloist.\textsuperscript{15} For jazz, the recording had become the definitive way to preserve the art of the musician and the music of the era. This was a significant recording effect. Country music was another popular music genre that quickly embraced recording as an essential way to preserve, distribute, and monetize its musicians’ art and music.

In the recording process, the role of the performer took on new significance. A recording artist became to a record what a composer was to a score: an \textit{auteur}. This was another recording effect. On a record, recording artists could now define their style and sound, creating a unique time/space picture. In the age of recording, the songwriter and other personnel involved in the recording often took a more supportive secondary role. The popular music audience usually expressed their preference for the recording artist. This was especially apparent with vocalists, who were sought after by record companies and the focus of popular music recordings from the beginning.\textsuperscript{16} Through the years there have been many examples of famous recording artists who assumed a primary role in cultivating an audience through their recordings. These include female jazz vocalists like Billie Holliday, Ella Fitzgerald, Sarah Vaughan, and male jazz vocalists like Frank Sinatra, Nat “King” Cole, and Tony Bennett. The recording artist had become the focal point of recording.

\textsuperscript{15} Mark Katz, \textit{Capturing Sound}, 88. Dr. Katz states, “In jazz, the values of the classical world are inverted: the performance is the primary text while the score is merely an interpretation.”

1.3 Further Development

The role of the recording artist continued to expand in the 1950s as the genre of rock music began to emerge. The most recognized singer of this period was Elvis Presley. Mr. Presley would eventually record approximately 700 songs by various composers in collaboration with many producers and musicians. By 1956, sound recording had moved away from simple document mode. In his New York recording session, Mr. Presley insisted on 28 takes of “Don't Be Cruel” before he was satisfied. It is not known exactly which parts of which takes were used for the final master. With advances in recording studio technology, there was much more work that could be done to ensure a definitive performance. Mr. Presley held himself to a high standard and had a clear vision of what he wanted in the recording. It was the art of Mr. Presley’s recorded performance that was the primary appeal for the general audience and all the production elements contributed to the success of the song. Michael Dellaira observed this and called it *pseudo document mode*, which he defined as “a recording that gives the illusion of a performance, but is in fact a performance that never happened in real time, an impossible [live] performance.”

There is another, deeper significance to what had happened to recording by the early 1950s. The paradigm shift from document to pseudo-document recording mode

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18 Elvis Presley published music and negotiated songwriting credits as a means to procure royalties. This set a new precedent in the industry. Mr. Presley never took full credit for writing any song but the five songs he actually co-wrote were “All Shook Up” and “Paralyzed” with Otis Blackwell, “That's Someone You Never Forget” with Red West, “You’ll be Gone” with Red West and Charley Hodge, and “We’re Gonna Move” with Vera Matson.
19 Michael Dellaira, “Some Recorded Thoughts on Recorded Objects.”
was evidence of something new. It was clear that the recording studio had evolved and would continue introducing innovation to the recording process. Because of this innovation, recording artists spent more time in the recording studio in pursuit of creating a definitive performance. The studio’s personnel and technology played a greater role in shaping the performance of the artist. Now the work of many people, along with the talent of the recording artist, was being funneled into making a recording master. This was the beginning of a process in which the recording itself was approached as a work of art. This approach was the product of 75 years of recording evolution and gave rise to a new art form that can be called master domain music.

1.4 The Arrival of Master Domain Music

Our culture has incorporated the concept of master domain music into our current language but its full significance is yet to be recognized. For example, the description of an artist’s activity in a recording studio has changed from "being recorded" to “making a record.” This is more than a subtle shift in semantics; this points to a new art form being born. Master domain music is an art form that creates, performs, transforms, and/or preserves sound with the intention of creating a recording master.

Master domain music was not a development exclusive to popular music and all popular music did not become master domain music. In the United States, the establishment of the Columbia-Princeton Electronic Music Center in the early 1950s was, by the definition used here, a center for master domain music. Music was being created, performed, transformed, and preserved with the goal of creating a recording
master. The creators of early pieces may have used written notation as a starting point of realization, but electro-acoustic music did not require the use of traditional notation. With access to new sound sources developed at that time, electro-acoustic music creators did not even need a recording artist or musicians. Figure 1.2 shows various genres of music and a general classification of genres. There are some musical genres that elude strict classification, as well as exceptional artists who do not follow their genre of music. Glenn Gould played notated western art music but could be considered a master domain musician because of his predominant interest in the sound and technology of recording to express his musical vision. Frank Zappa was the opposite: a rock musician who notated every note and nuance to be recorded on his album. Though Mr. Zappa’s predominant interest in musical notation was used to express his musical vision, the recording was the still the definitive version of his music.

In the 1960s, master domain music saw the roles of the recording artist and the songwriter/composer begin to merge. At first, recording artists needed help from studio personnel to create the sound they were looking for. They wanted innovation in the studio, tools for inspiration, and non-traditional musical influences. Recording engineers could provide all these things. This meant that recording artists, in collaboration with recording engineers and producers, were now taking a more active role and greater responsibility in shaping the sound of the recording. As the reputation of the most skilled recording engineers and producers spread, their experience and creativity became a significant contribution to the making of a master. The recording engineer went from
being a lab coat technician to the liaison between the artist, the technology, and the record label.20

The musicians most responsible for advancing master domain music in the 1960s were The Beatles. The art form grew richer and deeper with each new album they released, until finally it seemed as though the record was nearly as important as the recording artists themselves. With the launch of Revolver in 1966, master domain music became clearly defined.21 Marshall McLuhan summed up what was happening in the music industry at this time when he stated, “The medium is the message.”22 There was no doubt that musicians were creating an art form in a recording master. As well as being an example of early master domain music, Revolver pointed the way to the concept album, as did Pet Sounds by the Beach Boys, also released in 1966.

In the 1970s the concept album would evolve even further. Pink Floyd’s The Dark Side of the Moon released in 1973 went far beyond the incorporation of related song titles and a theme; it included the organic organization of the sound.23 To this day, The Dark Side of The Moon remains one of the most brilliant concept albums ever created.

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20 Virgil Moorfield, *The Producer as Composer* (Cambridge: MIT Press, 2005), 2-3. Mr. Moorfield comments on the career of John Hammond, a producer whose recordings span several decades. In the case of Mr. Hammond, it is easy to see the increased presence of a producer as a contributor in shaping the sound of a recording.

21 The title of The Beatles album was a pun on the gun and the phonograph turntable, which revolved. The Beatles understood the evolution of the new art form.


23 Early examples of theme albums include many recordings by Frank Sinatra. Perhaps the first example of a rock theme album was The Ventures in 1961 with *Colorful Ventures*. Each song had a color in the title. These examples could better be called theme albums rather than concept albums because they did not incorporate the organic organization of the sound.
**Fig. 1.2 Genres of Music in Master Domain Music**

<table>
<thead>
<tr>
<th>Western Art Music</th>
<th>Master Domain Music</th>
<th>Performance Music</th>
</tr>
</thead>
<tbody>
<tr>
<td>The music is composed and preserved by use of the score. Any number of different recordings can be made.</td>
<td>The art form is the recording. The music is created in the studio and the master becomes the way the music is preserved.</td>
<td>The music is intended to be preserved by oral traditions. Examples include east Asian music from countries such as India and Indonesia.</td>
</tr>
<tr>
<td>The score is effectively singular (Different editions but essentially the same score)</td>
<td>The master is effectively singular (Different re-masters but essentially the same master)</td>
<td>The performance is singular</td>
</tr>
<tr>
<td>Songwriter</td>
<td>Recording Artist</td>
<td>Musician</td>
</tr>
<tr>
<td>Renaissance</td>
<td>Concept Album</td>
<td>Blues &gt; Jazz &gt; Folk</td>
</tr>
<tr>
<td>Baroque</td>
<td>Rock Band</td>
<td>&lt;Blues &lt; Jazz</td>
</tr>
<tr>
<td>Classical</td>
<td>New Age /Electronic</td>
<td>Traditional music from India</td>
</tr>
<tr>
<td>Romantic</td>
<td>Rap</td>
<td>Native American Music</td>
</tr>
<tr>
<td>Modern</td>
<td>Electronically Produced</td>
<td></td>
</tr>
<tr>
<td>Tin Pan Alley Music</td>
<td>Music</td>
<td></td>
</tr>
<tr>
<td>Broadway Musicals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Era of Master Domain Music 1964-1994
1.5 The Importance of the Master

In order to understand master domain music, it is essential to understand the art form on its own terms. Master domain music is a product of technological developments that enabled the evolution of a new cultural model of artistic expression. A meaningful discussion of this new art form must include an analysis of the many information levels that are relayed in a sound recording. Applying traditional models of analysis to master domain music gives us insight only into the level at which it conforms to traditional western art music practices. There are more levels of information and many unique aspects of a recording that often account for the essential appeal of the music. These extend beyond a conventional discussion of musical issues and help reveal the scope of imagination that exists in this medium.

Master domain music exists in sound and can be discussed beginning with the five physical parameters of sound: frequency (pitch), amplitude, duration, timbre, and location.24 These five physical parameters are inextricably linked and a meaningful appreciation of master domain music is achieved by examining them from a holistic perspective. We must also acknowledge that there can be other distinguishing characteristics of master domain music that are of equal importance to traditional sonic elements. These include the lyrics and the meme. Lyrics are important for constructing a narrative or presenting a poetic/surprising use of words, but also function often as a central structural element. Meme is a term originally defined by Richard Dawkins as a

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unit of cultural transmission. Memes represent important markers, transmitted with the performance of master domain music. In summary, a general breakdown of parameters in master domain music could look like Fig. 3. A recording in master domain music draws on a unique combination of these parameters to create its own singular identity, much like a fingerprint. Once the master is made, the art form is complete.

**Fig. 3 Parameters of Master Domain Music**

<table>
<thead>
<tr>
<th>Sound</th>
<th>Lyric</th>
<th>Meme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Words</td>
<td>Cultural Markers</td>
</tr>
<tr>
<td>Amplitude</td>
<td>Story</td>
<td>Style Markers</td>
</tr>
<tr>
<td>Duration</td>
<td>Form</td>
<td>Themes</td>
</tr>
<tr>
<td>Timbre</td>
<td>Rhyme</td>
<td>Message</td>
</tr>
<tr>
<td>Location</td>
<td>Meter</td>
<td></td>
</tr>
</tbody>
</table>

In master domain music, the logical attributes that were previously ascribed to the written score can now be ascribed to the recording master. This discussion represents a shift away from traditional music conventions. By the definition presented here, the same song recorded by two different bands is rendered as two different songs. These two songs may share the same general melody and lyrics, but the other parameters of master domain music do not match; the two recordings do not feature the same musicians, they were not recorded in the same space or even the same year, and

> Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1989), 192. Richard Dawkins coined this term in 1976. In modern usage, meme refers to an image that has gone viral on the Internet. Mr. Dawkins said of his first use of the term, "We need a name for the new replicator, a noun that conveys the idea of a unit of cultural transmission, or a unit of imitation. 'Mimeme' comes from a suitable Greek root, but I want a monosyllable that sounds a bit like 'gene'. I hope my classicist friends will forgive me if I abbreviate mimeme to meme. If it is any consolation, it could alternatively be thought of as being related to 'memory', or to the French word même. It should be pronounced to rhyme with 'cream'.

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they do not share the same master. In master domain music, these are two different compositions. Consider the famous recording of Jimi Hendrix’s performance of the “The Star-Spangled Banner” at Woodstock in 1969. It was a uniquely recorded master of a distinct piece of music that happened to share a melodic line with a song of the same title by John Stafford Smith. In the realm of master domain music, this was an original piece of music that had never been performed prior to Woodstock and could only be performed again by playing the recorded master. Likewise, subsequent performances of “The Star-Spangled Banner” by musicians imitating Mr. Hendrix are not the same composition. A different master, like a different score, is a different piece of music, even if the pitches are similar.

Mr. Hendrix’s “The Star-Spangled Banner” is also differentiated from the John Stafford Smith song by its memes. The musical and social memes that produced Mr. Hendrix’s performance and the new memes he created with his recording/performance reflected many American socio-cultural attitudes in the 1960s and 1970s. In traditional musical discourse, all Jimi Hendrix did was play “The Star-Spangled Banner.” In master domain music, he composed a unique piece of music that elicited a distinct emotional response to the memes he generated in his passionate re-imagining of the national anthem. This idea will be explored in the next chapter as we discuss the roles of creativity and technology in the music of Jimi Hendrix.
Chapter 2: Creativity and Technology in the Music of
Jimi Hendrix

2.1. Defining the Distinctive Qualities of Master Domain Music

Jimi Hendrix's biography in The Rock and Roll Hall of Fame says, "Jimi Hendrix was arguably the greatest instrumentalist in the history of rock music. Hendrix expanded the range and vocabulary of the electric guitar into areas no musician had ever ventured before. His boundless drive, technical ability and creative application of such effects as wah-wah and distortion forever transformed the sound of rock and roll."26

The previous discussion of "The Star-Spangled Banner" defined Jimmy Hendrix's composition as a unique master and, thus, a unique piece of music. The paraphrased melody from the John Stafford Smith song played a less significant role than the other parameters that distinguished it as an original composition. The components of Mr. Hendrix's sound and performance, along with the new cultural markers of the meme, were characteristics which qualified the master as a original piece of music and a genuine contribution to master domain music. In 2011, the United States Supreme Court, hearing arguments in the foreign copyright case of Golan v. Holder, defended Mr.

Hendrix's use of “The Star-Spangled Banner” as fair use, not public domain. This meant that Mr. Hendrix was considered to have used the original melody as a critical reference in an otherwise original work. Recognition of Mr. Hendrix’s work as an original contribution to master domain music was confirmed by the initial reception and social reaction when the recording was released in 1969. Mr. Hendrix’s performance was perceived as a defining moment in the 1960s. This was coupled with a boost in record sales, career popularity, and public interest in hearing what Mr. Hendrix had to say about his beliefs and intentions. This interest in Mr. Hendrix’s work was not an interest in the national anthem: there were no reports of increased sales of other “Star-Spangled Banner” recordings or the music of John Stafford Smith.

2.1.1 The Electric Church as a Generative Idea for Creative Work

At the heart of “The Star-Spangled Banner” was the imaginative concept that Mr. Hendrix’s called “the electric church.” Mr. Hendrix advocated the belief that electrically amplified music, and his guitar-playing performances in particular, could “go inside the

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27 Jess Bravin, “Copyright Law Challenged,” *The Wall Street Journal*, October 6, 2011. On October 5, 2011, the United States Supreme Court heard arguments in a case *Golan v. Holder* concerning the 1994 United States federal law that protected foreign copyrights. At stake in the outcome was whether previously unprotected foreign works could be suddenly copyrighted and withdrawn from public domain. In a hypothetical argument Justice John Roberts asked, “What about Jimi Hendrix?” and if Hendrix's rendition of "The Star-Spangled Banner" at Woodstock violated copyright protection or was protected under public domain. Solicitor General Donald Verrilli, who defended the 1994 law, submitted that, “Jimi Hendrix could claim fair use.”


30 Electric church was a quasi-spiritual belief that electric music had the ability to bring out emotions or creative ideas in people and to encourage spirituality.
soul of the person, and awaken something inside, because there are so many sleeping people.\textsuperscript{31}

The idea of the electric church was a convergence of numerous influences that had dominated Mr. Hendrix’s childhood experiences. He grew up in an unstable home and was often cared for by friends and relatives. Destitute poverty and a troubled relationship with an alcoholic, frequently violent, father characterized his family life.\textsuperscript{32} These childhood traumas never truly healed and seem to have driven Mr. Hendrix to seek many different forms of refuge to calm the distressed parts of his psyche. When he was a child, his parents found him hiding in closets to escape witnessing their frequent domestic arguments. Throughout most of his adult life, Mr. Hendrix sought to escape his past and establish a healing place. Though he was not raised with the guidance of organized religion, Mr. Hendrix did believe that music was “more spiritual than anything”\textsuperscript{33} and felt a need to create a refuge where he and others could find truth. This was one defining factor in the establishment of the electric church.

Shortly after his mother died, 15-year-old Jimi Hendrix got his first acoustic guitar. He taught himself how to play, spending several hours a day practicing, getting tips from more experienced guitar players, and listening to the records of numerous and diverse artists. At age 17, he got his first white Supro Ozark electric guitar. He developed sophisticated guitar-playing techniques and impressive showman gimmicks, like playing his instrument while it was positioned behind his back or playing with his

\textsuperscript{31} Dick Cavett and Jimi Hendrix, September 9, 1969, \textit{The Dick Cavett Show (DVD)}, Toronto: Sony Music Canada, 2011.
\textsuperscript{33} Dick Cavett and Jimi Hendrix, \textit{The Dick Cavett Show}.
teeth. This commitment to mastering the guitar was a demonstration of his love for music and his determination to excel. With practice and yet more practice, he was developing his unique musical voice and expressing it through the electric guitar. It was as though Mr. Hendrix had come to understand that personal development through music was his salvation. This would be his way out of the destitute and emotionally draining conditions of his childhood.

Technology was vital to the existence of the electric church. Throughout his life, Mr. Hendrix sought out new sounds and technologies to expand the expressiveness of his music and his inspiration came from a wide range of sources. He worked extensively with recording engineer, Eddie Kramer, who recalled how the stereo flanging effect came to be used in Mr. Hendrix’s song “Bold as Love.” Mr. Kramer remarked that, “Hendrix had come into the studio after having a dream of an underwater electric guitar sound.” The two men worked at various experiments until they arrived at results that matched the sound in Mr. Hendrix’s dream and stereo flanging became a hallmark of Mr. Hendrix’s sound. Mr. Hendrix’s innovations in electric guitar sound are what solidified the creation of the electric church. The electric church was the sonic unfolding of a performance in time: a performance that had the effect of “waking the sleeping people.”

It was the confluence of the emotional and technological characteristics of the electric church that shaped the creative framework for a significant body of work by Mr. Hendrix. This work included several pieces that define what could be regarded as the sacred texts of the electric church: “Electric Church Red House,” “Voodoo Child (Slight 34 Johnny Black, Jimi Hendrix: The Ultimate Experience (New York: Thunder's Mouth Press, 1999), 126-128.
2.1.2 The Expression of the Electric Church in “The Star-Spangled Banner”

In order for Mr. Hendrix to achieve his electric church mission of “waking the sleeping people,” he needed an alarm clock. To this end, he instinctively chose a melody with the greatest cultural significance to his political agenda. Mr. Hendrix used the meme of the original “Star-Spangled Banner” to create his own piece. The use of the original melody was only circumstantial because it was the melody’s meme that Mr. Hendrix was borrowing. He did not need the melody; he needed what the melody symbolized to an American citizen. It was by changing the context of the meme’s meaning, through the process of the electric church, that Mr. Hendrix’s true message could be articulated.

Although Mr. Hendrix had performed his “Star-Spangled Banner” publically several times before, the definitive master was captured at Woodstock in 1969, the largest music festival of the century. Mr. Hendrix believed that the United States was on the brink of a new political era, defined by the more altruistic values of a younger generation.36 He also believed that the music festivals of this period were evidence of this political evolution. Although the evolving political path never materialized in the way he imagined it, Mr. Hendrix used the festival stage to create a new performance

36 Jimi Hendrix, United Block Association Press Interview, September 3, 1969, accessed March 1, 2012, http://www.youtube.com/watch?v=Sw2g8HNT2yk&feature=colike. Unfortunately, the video has since been taken down because of claims of copyright infringement.
experience for himself and the audience. It was fertile ground for expression, creativity, and technology.

Mr. Hendrix used the music festival scene to establish himself in the American market just two years earlier. He had organized his band, The Jimi Hendrix Experience, shortly after arriving in England in 1966. There he succeeded in achieving much attention and acclaim, while in the United States he was still known only as a backup guitar player. In 1967, Paul McCartney recommended him to the organizers of The Monterey International Pop Festival. At Monterey, the last song Mr. Hendrix performed was “Wild Thing.” He ended his performance by kneeling over his guitar, drenching it with lighter fluid, setting it aflame, then smashing it on the stage seven times before throwing its remains into the audience.37 These gestures produced unforeseen sounds that were undoubtedly remarkable but they had another implication that has gone unnoticed. These actions were rituals of the electric church. Their symbolism is comparable to Christian rites of lighting candles and giving away fragments of the wooden cross upon which Jesus died. Mr. Hendrix’s unique performance at Monterey succeeded in bringing him to the attention of a massive American audience for the first time. It also established the music festival as the theatre for Mr. Hendrix’s ritualistic acts.

Two years later, Mr. Hendrix went well beyond his “Wild Thing” display of pyrotechnics at Monterey. At Woodstock, he was speaking directly to his congregation of believers in evolution. Without lighting a match, Mr. Hendrix delivered a political message from the electric church that would not be extinguished. His performance of

“The Star-Spangled Banner” was all the more poignant because it was delivered by a man who was part African American and part Native American during a time when race relations in America were raw; an extraordinarily talented man who was only able to gain recognition in the United States after achieving considerable success in the United Kingdom.

The triumph of Mr. Hendrix’s “Star-Spangled Banner” can be illustrated by the power it had in generating memes. His performance had a profound effect on his audience, other musicians, and American society as a whole. The memes it generated ranged from how Mr. Hendrix dressed, his use of psychedelic drugs to achieve an altered state of consciousness, the expressive possibilities of the electric guitar, and, most significantly, social dissent. The social dissent meme challenged the belief that the United States government was still “of the people, by the people, and for the people,” and its intention was “the waking of the sleeping people.” In 1969, everyone had heard about Mr. Hendrix’s performance of “The Star-Spangled Banner” and interpreted it according to their personal beliefs: the “establishment” saw it as a disgrace while young people saw it as a political wake up call. Regardless of how they interpreted it, no one was immune to the memes it generated. Through the voice of his electric church, Mr. Hendrix was able to communicate what “The Star-Spangled Banner” actually meant to him as a young American in 1969. When asked about his intention during a press interview three weeks later, he replied, "We’re all Americans…it was like 'Go America!'…We play it the way the air is in America today. The air is slightly static,

The “static air” remark highlighted the contrast between what Mr. Hendrix perceived as stagnant, unchanging attitudes and his expressed objective of “waking the sleeping people.” He went on to say that the political system had failed the American people and that the Woodstock festival represented the new era of love, peace and harmony that was coming.

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The Era of Master Domain Music 1964-1994
Fig. 2.2 Spectrogram: The Woodstock Recording: Jimi Hendrix, “The Star-Spangled Banner”

Note: The two systems in the spectrogram are left and right channels of the stereo recording.
2.1.3 An Analysis of the Recording Using the Imaginative Idea of the Electric Church (Figure 2.2)

A detailed look at a film recording of Mr. Hendrix’s concert at Woodstock reveals the interaction of creativity and technology in his expressive performance. For all time references, please refer to the online posting of the sound recording. A film excerpt of the event is available online as well. Mr. Hendrix’s performance at Woodstock lasted for over two hours. It was the longest set he had ever played. “The Star-Spangled Banner” was performed about three-quarters of the way through. Mr. Hendrix had just finished a Voodoo Child/Stepping Stone Medley with an E major power chord, followed by a powerful glissando up to the G#5. With his use of overtones and harmonic distortion, the whole frequency field was alive when he launched into “The Star-Spangled Banner.”

“The Star-Spangled Banner” lasts only 3:47. The diversity of sonic improvisation around the theme is one of the most remarkable aspects of this performance. The fragments of the theme that are used in the improvisation are abstract and often unrecognizable until after repeated listening. Throughout the track, the theme is played entirely in the low power chord register of the guitar. The sonic improvisations encompass the entire frequency range of the guitar with generally greater density than the theme. This can be seen in the spectrogram (Fig. 2.2). It is important to consider Mr. Hendrix’s performance techniques within the context of 1969 rather than from the perspective of the present day. No guitarist had ever used extreme feedback, stereo

\[41\] The recording can be downloaded and referenced at https://www.yousendit.com/download/M3BreFlZYXl0d0YzZU1UQw. The film can be referenced at http://www.iviewtube.com/v/76340/jimi-hendrix-star-spangled-banner-woodstock-1969. The film is only for visual reference. The sound on the film recording is not the original, as it is in mono, and has been sonically compromised.
flanging, and the mechanical-electrical parameters of the guitar as an integral compositional element to the degree that he did. Mr. Hendrix was discovering new sonic ground. At 0:02, he begins the theme in the lower register starting on B3. He then smiles and flashes a two-finger peace symbol at the audience.

At 0:26, with the second stanza of the theme, Mr. Hendrix’s expression quickly changes as his focus shifts to his inner journey. At 0:31, there is a stumble on the E, slowing the pace of the melody. As the melody continues, it is derailed by his ornamental trills. At 0:47, there is a significant downward pitch movement in which the theme is set aside and an inner journey is begun. This downward movement can be interpreted as the electric church metaphor of “going inside the soul of a person.” Mr. Hendrix goes inside the soul of a person by going to the innermost place within himself. By 0:56, he is stone cold serious. Between 1:03 and 1:37, he delivers a remarkable string of electric sonorities with harmonics and partials. This succession of sonorities transport the listener to another sonic world, the altar of the electric church, where melody, rhythm, and conventional elements of music seem pale in comparison to this brave new world of thick sonic walls. In this section the sonic elements suggest the sounds of war. Was this a reference to the Vietnam War? Or was it the pain of Mr. Hendrix’s childhood and the domestic violence he witnessed? Perhaps we are listening to his most profound voice. The sonorities scream beginning and ending with the emphasis of F#6-E6, as a connection to the theme. At 1:37, he rejoins the melody ending on A and then plays an A#-E tritone at 1:41. This has the effect of a wake up or warning light and evokes another message of the electric church: Mr. Hendrix’s alarms are intended to “wake the sleeping people.” The tritone then morphs into a barrage of
improvisation, sounds of war with power chord notes, distortion, ending with remarkable high fluttering guitar notes that recall pieces of the theme.

At 2:24, Mr. Hendrix rejoins the melody in a markedly different emotional state of acceptance and serenity. This is heard in the recording and visible in the film. At 2:37, he interjects a brief reference to “Taps,” a traditional U.S. Army melody played at funerals and dusk. Mr. Hendrix plays it in the B5 – G#5 high register, creating an ethereal effect. Mr. Hendrix had served one year in the Army in 1961. Playing “Taps” could have been a direct reference to his experience and/or the war in Vietnam where many young American soldiers had lost their lives. At 2:47, he returns to the closing theme of “The Star-Spangled Banner” in the lower power chord register. At the end of the phrase, he morphs back to his interior space of the electric church by hanging on a chord. The resulting feedback from this chord has the effect of transfixing the listener, like light from a jewel glistening on the alter of his electric church. At 3:33, he finishes the melody and concludes the track with power chords C – D – E, recalling the melodic design at the end of the second melodic phrase. The chords have the effect of raising the listener from the musical emotional depths to the surface resolution. Without pausing, Mr. Hendrix launches immediately into “Purple Haze” with B octaves.

“The Star-Spangled Banner” was a performance risk. Even though Mr. Hendrix had a truly original idea and a strong personal commitment to present it, success was not assured. The piece could not be danced to. It could not be sung. It had no repetition other than the minimal repetition in the original theme. Mr. Hendrix’s “Star-Spangled Banner” was an unstructured, largely improvisational solo. He could have been booed off the stage for bringing the national anthem to Woodstock, the counter-
culture gathering of the century. Instead, his performance was immediately recognized and embraced for being an expression of what “The Star-Spangled Banner” truly meant to young people in 1969.

2.1.4 “The Star-Spangled Banner” in the Context of Master Domain Music

Mr. Hendrix’s unprecedented use of sonic elements (harmonic distortion, overtones, electric guitar virtuosity, and effect pedals) was preserved in a unique master and established his “Star-Spangled Banner” as an original track of master domain music. Despite the fact that “The Star-Spangled Banner” was a pillar of master domain music in the 1960s, the art of making the master was not advanced. “The Star-Spangled Banner” was a rare example of master domain music in which the process of recording and production played no creative role in making the track. The recording was only document-mode, to capture the performance of the track. In our upcoming analysis of studio-produced music in Chapter 3, the technology of recording studios and production facilities will be examined as part of the creative process in master domain music. Collaboration between musicians and recording engineers/producers was responsible for the most significant advances in the art form’s sophistication. This became clearly evident with the arrival of the concept album.
Chapter 3: The Beatles and *Sgt. Pepper’s Lonely Hearts Club Band*

3.1 Meet the Beatles

There is a memorial in Central Park for John Lennon. It is called Strawberry Fields and it was a gift from Yoko Ono. The focal point of the memorial is a circular mosaic, a path of inlaid stones, which was a gift of the City of Naples. At the center of the circle is the word IMAGINE. Born to poor families and growing up in a lower middle-class Liverpool neighborhood in post-World War II England, the members of The Beatles were forced, from the very beginning, to excel in music using the one element that did not cost anything: imagination. This will be demonstrated in the many ways that they approached the creation of music. The Beatles are a singularity in master domain music. There has never been another band or creator in master domain music with such a massive body of work that has maintained interest, popularity, and critical acclaim. The Beatles were hugely popular in 1967 and significant interest in their music has never subsided. When The Beatles Catalog became available on iTunes in 2010, sales topped 450,000 albums and over 2,000,000 singles in one week.\(^2\) This is roughly 40% more than any current popular artist will sell in a debut week. In addition, the 2010 iTunes release occurred one year after EMI had re-released new physical re-masters of

the Catalog with sales of 626,000 units in the first week. In an interview, actor and musician, Jack Black said, “It's the only way you know – you check in after 25 years. Is it still resonating? It's the only true test…the test of time.” The music may still be resonating but the question now is: how did The Beatles contribute so significantly to master domain music?

3.2 A Discussion of The Beatles in Beatles’ Style

3.2.1 The Evolution of Compositional Process in the Transition from Performance-Based Music to Master Domain Music or Did Glenn Gould go to a Beatles’ Party?

By 1966, The Beatles were producing master domain music exclusively and they had come to the conclusion that it was impossible to reproduce their music, with all of its complexity in content and production techniques, in their live performances. The group gave their last public performance on August 29, 1966. The decision, taken at the height of their popularity, to stop performing in favor of recording was a choice that only one other musician had ever made and only two years earlier. In 1964, Glenn Gould played his last public concert. Both Mr. Gould and The Beatles became master domain musicians and produced music solely for the art form of the record. Mr. Gould insisted that the concert hall was precisely the wrong venue for the kind of music he liked to play:


44 *Rush: Beyond The Lighted Stage* (DVD), dir. Scott McFayden and Sam Dunn (Toronto: Alliance Films, 2010), 01:41:44.
structurally complex works that tended to be intimate in scale and rhetoric. These reasons were remarkably similar to those of The Beatles. During their last concert tour in 1966, the group did not perform any tracks from their newly released album, Revolver. They performed tracks from their earlier albums and two cover songs. As Chris Ingham explains, “there was no way a four-piece rock 'n' roll group could do them [their songs] justice, particularly through the desensitizing wall of the fans’ screams.” Concert tickets for their August 29 performance were distributed by lottery and due to a lack of organization the event was not even sold out. No one knew this would be the last Beatles concert. The band arrived in an armored Brinks truck, played their 45-minute set, and left as soon as it was over. The general atmosphere was tense. 

In addition to the complexity of the music, the sound reinforcement technology used during concert performances at that time presented no satisfactory solutions to pioneering master domain musicians. This was long before the advent of midi, remote triggering, and sound banks. For Glenn Gould and The Beatles, the studio had become a space to record, create, and transform. Such was the importance of the recording studio in master domain music.

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48 Judy Ingerman, interview with the author, Montreal, Quebec, June 21, 2012. Ms. Ingerman won a pair of the lottery tickets and attended the last Beatles concert.
49 This was long before the evolution of live sound technology. Loudspeaker arrays and CAD design technology for speaker efficiency have transformed live sound reinforcement.
In the recording studio, production techniques were evolving to meet the imaginative needs of the creators of the concept album and, as a result, greatly enhanced the complexity of this budding master domain music art form. *Revolver* and all subsequent Beatles’ albums were studio creations never intended to be performed in a live concert setting. Perfect examples of imaginative realizations within the recording studio, these albums included *Sgt. Pepper’s Lonely Hearts Club Band*, *The Magical Mystery Tour*, *The Beatles* (commonly known as *The White Album*), and *Abbey Road*. The artists were looking for imaginative uses of technology and the technology spurred the imagination of the artists.

3.2.2 Factors of Compositional Process in a Visual Context

or

Did Mark Rothko go to a Beatles’ Party?

The Beatles’ producer, George Martin, described the *Sgt. Pepper’s* album as “a painting in sound.”50 In 1979, Brian Eno elaborated on this analogy when he said that “the making of music puts the composer in the identical position of the painter – he's working directly with the material, working directly onto a substance, and he always retains the options to chop and change, to paint a bit out, add a piece.”51 Both of these producers and their ideas helped define the developing art form of master domain music. Both men recognized that the process of music creation had changed.

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By 1967, recording technology had advanced significantly in fidelity since its inception in 1877. Even so, the creative tools of the studio were still in their infancy. Imagination was about to introduce new demands on the recording studio. The previous analogy to painting can be carried further: The Beatles, George Martin, and Abbey Road Studios were required to develop their own paint for the canvas. They had to surmount unprecedented creative and technical challenges in order to realize imaginative ideas through the transformation of recorded sound.

An examination of The Beatles’ creative process illustrates the analogy to painting. A track would begin with band members bringing song sketches to the studio, playing them and having everyone contribute ideas. The track would then be scheduled for an initial recording session. In the studio, the foundational tracks of voice, guitar, and/or piano would be recorded. Then, in the same way that a painter puts down layer after layer of paint to create depth, the song would be developed with additional tracks. The play of ideas between the different band members was a synergistic activity that enabled significant development during the creative process. This will be described later in the chapter when the specific recording logs for “A Day In The Life” are accessed. Once the initial tracks were recorded, The Beatles would stop work on them completely and then return to the studio a week or two later to continue the process. This was like letting the paint dry before putting down the next layer. The resultant sound of the recorded tracks in one layer was used as a guide for the sounds that might be developed in the next layer. Each layer of material would evolve in relation to the “previous layer of paint.” The recording engineers, key contributors in the development of this “paint,” had to create technology that could meet the imaginative needs of expression as they arose.
George Martin said that “Producing is like being a painter, it is not what you see, but what you make others see by your painting.”\textsuperscript{52} He was referring to the mixing process, which establishes relationships between layers of sound. These relationships might have no connection to their physical relationship in the actual recording because master domain music would create its own contextual space. This contextual space was further expanded with the development of spatial simulators like the plate and other reverb effects. With spatial simulators, the perspective of the recording space became completely plastic. It could be defined and edited in the mixing process according to the preferences of the creators. Just as space and perspective had been reinterpreted by Cubist painters of the early 20\textsuperscript{th} century, creators of master domain music had redefined recording space and perspective.

3.2.3 The Influences and Inspiration in Making \textit{Sgt. Pepper’s} or Who Else Came to a Beatles’ Party?

Another way The Beatles developed paint for their musical canvas was by searching for new influences that would expand their vision of what was sonically possible. George Martin remarked that the band’s most important trait was curiosity.\textsuperscript{53} Early musical influences of The Beatles as they grew up in Liverpool in the 1950s included American artists like Elvis Presley, Little Richard, and Buddy Holly. As adults, the band members retained their open nature and continued to absorb new styles. They found new musical and lyrical avenues by listening to the work of their contemporaries.

\textsuperscript{52} George Martin Interview, \textit{Produced by George Martin}.
\textsuperscript{53} Ibid.
The Beach Boys 1966 album, *Pet Sounds*, amazed Paul McCartney and inspired him in the making of *Sgt. Pepper’s*. The cohesive nature of the tracks on *Sgt. Pepper’s* and its experimentation with sound can be seen as a concerted effort to go above and beyond what The Beach Boys had done.

The single most important influence on *Sgt. Pepper’s* did not come from western music or thought. It came from India. The Beatles’ many visits there were a powerful source of musical and spiritual inspiration. Their incorporation of eastern musical principles and instruments on *Sgt. Pepper’s* was a first in master domain music in particular, and in North American and western European pop music in general. The influence of Hinduism can even be seen on the album cover; The Beatles’ brightly colored uniforms are comparable to the traditional, brightly colored paintings of Krishna, Brahma, Shiva, and Vishnu. In 1966, George Harrison studied sitar with Ravi Shankar. On the *Sgt. Pepper’s* album, the only track attributed to Mr. Harrison is “Within You Without You” in which he played sitar and overdubbed tambura with an ensemble of Indian instruments and musicians. George Martin added traditional string instruments with notated parts that imitated the slides of Indian instruments. This was an example of western instruments arranged and played to fit into a classical Indian music structure and sound. The raga of the piece is khamaj taat, which corresponds to mixolydian mode. The rhythmic structure of the piece begins with a 16 beat tintal. The background ideation, which generates the lyrics, is a direct reference to *The Mahavakyas* or “The Great Sayings” from *The Upanishads*, which form the foundational text of Advaita Vendanta. The theme of this track culminates in the lyrics, “try to realize it’s all in

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yourself… and life flows on within and without you.” This relates directly to the second Mahavakyaya: ātmā brahma, which is taken from The Mandukya Upanishad, verse 2, and translates as, "Brahman is all and the Self (Atman) is Brahman."

Another eastern spiritual reference appears just two tracks later. On its surface “Lovely Rita” is about Rita, the meter maid, and because of the entertaining nature of the lyrics, few people have looked below the surface of the words. Upon deeper examination, however, we find that Rta, a Sanskrit word, is a central concept in the Rig Veda. Rta represents the concept of law, commandment, order, sacrifice, truth, and regularity. It appears 390 times in the Veda. It is perfectly fitting that the meter maid in the track should be named after the concept of law and regularity in Hindu sacred text.

In addition to Indian music and spiritualism, The Beatles turned to avant-garde music to expand their sound palette. Mr. McCartney in particular was said to have been listening to many contemporary composers such as Luciano Berio at that time. On the album cover, Karlheinz Stockhausen is one of the people in the crowd behind The Beatles. The sound collage, musique concrète, unconventional recording techniques, and tape loops used in Sgt. Pepper’s were all inspired by avant-garde music. This was the power of their imagination: The Beatles had the ability to absorb, remold, and integrate everything around them into their music. They were continually experimenting individually and in the studio with George Martin’s help.

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All these different influences never overpower the music in *Sgt. Pepper’s*. The Beatles’ ability to evolve musically and incorporate new elements while maintaining their sound and identity was one of the most remarkable aspects of the band and this album. This achievement may have been due to the guidance of their producer, George Martin, who was able to help facilitate the use of technology, give advice as needed, and provide musical arrangements consistent with the band’s intention. In expanding the very notion of what a concept album could be, *Sgt. Pepper’s* made a significant contribution to the evolution of master domain music.

3.2.4 Recording “A Day in the Life”

or

Did The Beatles Have the Best Parties?

In Mark Lowinsohn’s book, *The Beatles Recording Sessions 1962-1969*, studio logs from all The Beatles’ recording sessions, as well as personal accounts and photographs, are accessible and give us a good indication of the band’s creative process.⁵⁶ For *Sgt. Pepper’s*, nearly 700 hours of studio time went into making the record. Recording began in December 1966 and the album was released on June 1, 1967.⁵⁷ There was a degree of experimentation in the recording process that had never before occurred in the history of master domain music. Recording engineer Geoff Emerick recalled The Beatles insistence, “Everything on *Sgt. Pepper’s* had to be different. We had microphones right down in the bells of brass instruments and

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⁵⁷ Ibid. 70.
headphones turned into microphones attached to violins.\textsuperscript{58} We used giant primitive oscillators to vary the speed of instruments and vocals and we had tapes chopped to pieces and stuck together upside down and the wrong way round.\textsuperscript{59} Not only was the world about to experience a new type of album in master domain music, the conservative recording practices of capturing sound were changing as well. “A Day in the Life” built on the achievement of “Tomorrow Never Knows,” the last track on their previous album, \textit{Revolver}. The underlying imaginative ideas in both tracks point to a more eastern spiritual way of seeing the world.

\textit{Sgt. Pepper’s} was an album of many firsts. Most importantly, it is seen as the birth of the concept album. The different tracks flow sonically into each other. It was the first album to include all the lyrics in print on the back cover. The words were considered a significant contribution to the product. From a technological standpoint, it was the first time two four-track tape recorders had been linked via the alternating current wave of the capstan motors. It must be understood that this was long before the ability to frame sync tape machines.\textsuperscript{60} By linking the tape machines, the useable recording tracks increased from four to eight. This technology also gave The Beatles the ability to sync the speed of the capstan motor to insure pitch consistency, or inconsistency, when desired. Vari-speed was used extensively on \textit{Sgt. Pepper’s} to alter the sound of voices and

\textsuperscript{58} Speakers (headphones) and microphones share a similar design of a movable coil of wire wrapped around a magnet. When the voice coil of a speaker moves, it produces a voltage, the same phenomena as demonstrated in a dynamic mic. Sound waves moving through air can not move a speaker cone to produce a significant electrical output, but the addition of a conductor wire across the magnetic field of the speaker magnet can produce a voltage that can be amplified and recorded.


\textsuperscript{60} The ability to frame sync audio equipment was developed by The Society of Motion Pictures and Television Engineers and the European Broadcast Union by using a square wave that contained time code information. The SMPTE was recorded or striped on a tape for use by a master machine to control slave machines.
instruments. There was also extensive use of automatic double tracking (ADT) which used the tape delay between two machines and created a thickness to the vocals due to phase difference.\textsuperscript{61}

“A Day in the Life” was the most complex track in terms of musical, as well as technical, elements. Its placement on the album is important to understand. The album opens with “Sgt. Pepper’s Lonely Hearts Club Band” and returns to a reprise of this track at the end to close what feels like a circus. “A Day in the Life” serves as a kind of encore piece that gives the listener the impression that the circus-like action has ceased and we are now going behind the scenes. This is due partly to the simple guitar, piano, and vocals that start the track in a relaxed fashion. It is also due to the lyrics and a new narrative that are different from everything else on the album. Many of the lyrics on previous tracks contain imaginary, exaggerated characterizations of The Beatles to form a profile of a fictitious Sgt. Pepper’s Band. “A Day in the Life” is different. Its lyrics are pensive and set in the present.

The conception of “A Day in the Life” started in early January 1967 with sketches by John Lennon. From start to finish, the track took a little more than a month to produce. The first major recording session was on January 19, the orchestral session took place on February 10, and the track was finished and mixed on February 22. Most of the sessions for the entire album were in the evening from 6 p.m. to 2:30 a.m.

\textsuperscript{61} ADT (Automatic Double Tracking) was developed at Abbey Road Studios. Designed to create a thicker vocal track, this process used the signal from the record and playback head from two tape recorders. The inherent delay between the two signals creates a new altered phase signature of the original signal. The effect is similar to the chorus effect that is commonplace in the studio today. The effect of ADT can be augmented when the speed of the second tape machine’s capstan motor is slowed down by an oscillator.
The essential form of “A Day in the Life” is A B A or more precisely:

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Closer examination of the production process will reveal how the track was created. On January 19, take one was recorded using just two of the four available tracks: a basic rhythm (bongos, maracas, piano, and guitar) on track one and Mr. Lennon’s main vocal using ADT on track two. Mr. Lennon insisted on the deep reverb on his main vocal track as part of the sound of this piece. After initially working out the track with the band, Mr. Lennon recorded the first and second verse with a 24 bar count off at the end. At this stage of the recording, The Beatles did not know what else would be added. Their roadie, Mal Evans, counted out 24 empty bars on the recording, beginning as Mr. Lennon sang the lyrics, “I’d love to turn you on.” The band simply extended the piece with Mr. Lennon keeping the beat with chords on the guitar, Mr. McCartney on piano, and Mr. Starr on drums. As they played, there was a natural tendency to increase intensity and pitch, even at this early stage. The group simply vamped and left space on the tape for something to happen. After the band finished playing the 24 bars of the vamp, Mr. Lennon’s voice returned for the third verse. After the third verse, there was another 24 bar count-off as before, the piano built upward in pitch and then stopped. At the end of the first count-off, partly as a joke, Mal Evans set off an alarm clock, the sound of which got recorded. This sound reminded Mr. McCartney of a song segment he had composed a year earlier with the lyrics, “Woke up, fell out of bed.” That song segment was later recorded and inserted to form a new middle section of the track. In his book, *The Producer As Composer*, Virgil Moorfield
defines the form of “A Day In The Life” as ABAB. The contrasting middle section by Mr. McCartney, however, can be thought of as formally distinct.\textsuperscript{62}

With the middle section inserted, there was still the question of what to do with the two 24 measure blanks at the end of the second and third verses. The piece was put aside for a week and production focused on other tracks. Two weeks later, Mr. McCartney suggested an idea to Mr. Lennon and producer, George Martin. It involved a 90-piece orchestra performing an untimed, atonal glissando up in the empty 24 bar sections. George Martin was able to arrange, as well as conduct, this experiment. When EMI refused to pay for 90 musicians, The Beatles settled for 40 and overdubbed their performance three times on the other tracks of the second four-track tape machine.\textsuperscript{63} This glissando was another unique experiment by The Beatles in master domain music. Mr. McCartney had borrowed musical concepts he heard from the avant-garde and incorporated them into the sonic realization of “A Day in the Life.”

After the recording session, The Beatles recorded an ending comprised of their voices humming the E major chord. After multiple overdubs, they were still not satisfied with the result and wanted something with more impact. They left the piece for another 10 days to see what solution might unfold. This was The Beatles’ often-used technique of letting the paint dry during the making of \textit{Sgt. Pepper’s}.

The Beatles returned to the unfinished coda eleven days later on February 22.\textsuperscript{64} Mr. McCartney and Mr. Martin had come up with an imaginative experiment that required

\textsuperscript{62} Moorfield, \textit{The Producer as Composer}, 34.
\textsuperscript{64} Ibid.
four pianos. With each at their own piano, Mr. Lennon, Mr. McCartney, Mr. Starr, and Mal Evans all played an E major chord simultaneously. The final chord was made to ring out for over 40 seconds by using The Fairchild 670 compressor and increasing the recording input level as the vibration faded out. Towards the end of the chord the recording level was so high that, as Mr. Martin stated without exaggeration, “You could have heard a pin drop.” The sound was preserved for as long as possible before the noise floor took over. It required nine takes to perfect this ending because of the difficulty in executing a precise attack on all four pianos simultaneously. The ninth take was selected and then overdubbed three times, with George Martin compounding the sound further on an harmonium, filling out the four tracks of the tape. The composite sound lasted for 53.5 seconds. This ending is an example of The Beatles’ use of creativity and technology to achieve a unique result and has been universally acknowledged as one of the most remarkable moments in master domain music.

“A Day In The Life” demonstrates The Beatles’ exceptional ability to harness the power of imagination to create a world in a track. This world had many depths of meaning, ideation, and appreciation. Anyone could listen to the music and take pleasure from it according to their subjective interpretation. One could appreciate the surprise ending of an E major chord borrowed from the middle section of a track performed mostly in G major. One could delight in the drug references. One could take pleasure

65 Ibid.
66 Ibid.
67 Though Mr. Lennon and Mr. McCartney always denied any intentional drug references in their lyrics at the time of the album’s release, music writers and critics continue to encourage the idea. In his list of “Top 10 Beatles Road Songs” on the website Ultimate Classic Rock, for example, Frank Mastropolo describes “Lucy in the Sky with Diamonds” as having “a title with initials that spell LSD.” Accessed July 12, 2013, http://ultimateclassicrock.com/beatles-roadsongs/.
in the great fidelity of the recording and the rich sound palette. One could enjoy the voices of Mr. Lennon and Mr. McCartney. One could even revel in the track as a spiritual allegory and journey, which would influence many artists and albums to come. The discussion will now continue with an analysis of the lyrics and some deeper meanings of the track.

3.2.5. A Study of Lyric Composition and Formal Correlation

or

What Did They Talk About at Beatles’ Parties?

The lyrics of “A Day In The Life” (Fig. 3.1) had several unusual sources. Each of the three verses was an adaptation of a newspaper article that Mr. Lennon had read. The first verse was based on a story about a friend of The Beatles, Tara Browne, who died when he crashed his Lotus Elan in Redcliffe Gardens, Earls Court, London, the previous year. Like many Beatles’ lyrics, this verse is part truth, part fiction and often allegorical. The second verse made references to a movie, How I Won The War, in which Mr. Lennon had an acting role. The third verse was inspired by an article that appeared in The Daily Mail about the many potholes in Blackburn, a town in northern England, near Preston. The middle section, composed by Mr. McCartney, was a recollection of his younger years that included riding the bus to school, smoking, and going to class.

Taken as a text, the three verses written by Mr. Lennon, with the contrasting middle section by Mr. McCartney, are original in form, without refrain, and represent a stream-of-consciousness expression of seemingly unrelated, trivial events. However,
the important line that repeats in all “A” sections is “I’d love to turn you on,” a reference to drug use. Mr. McCartney echoes the allusion to altered states in the “B” section when he writes, “I went into a dream.” The importance of these lines is that they encouraged listeners to look for allegorical meaning. This was a common technique used by The Beatles. Mr. McCartney later said, "This was the only one [line] in the album written as a deliberate provocation. A stick-that-in-your-pipe…But what we want is to turn you on to the truth rather than pot."68 Truth for Mr. McCartney was finding the real meaning of life. This was also one of the purposes of embarking on a lysergic acid diethylamide (LSD) experience. As psychiatrist Stanislav Grof said in his book, “LSD was not a pharmacological agent generating exotic experiences by the interaction with the neurophysiological processes in the brain. This remarkable substance was clearly an unspecific catalyst of the deep dynamics of the human psyche.”69 “I’d love to turn you on” and “I went into a dream” lead us to another spiritual concept in Vendanta; brahma satyam jagan mithya (Brahman is real; the world is unreal).70 This line is taken from Vivekachudamani, a Sanskrit poem composed by Adi Shankara in the eighth century, which extensively expounds the Advaita Vedanta philosophy. “Brahman is real; the world is unreal” is one of the Mahavakas or “Great Sayings” and conveys the idea that the physical world is merely a projection, unreal against the backdrop of the true self, which is unmoving. It is the exact opposite of traditional western thought in which it is believed that the individual's consciousness is in his mind and he is moving in an external “real” world. This was a theme that was present in much of The Beatles music.

during this period and another link to “Tomorrow Never Knows” from their previous album, *Revolver*.

As mentioned earlier, the placement of “A Day In The Life” at the end of the album is significant. Many of the preceding tracks were created, intentionally and with great fun, as an illustration of *maya*, the physical world of illusion. In fact, a circus could be described as a physical world of illusion. “A Day In The Life” is about waking up to what is real, the truth. This track is not about seeing “how many holes it takes to fill the Albert Hall.” Quite the opposite; it is asking the listener to stop examining the minutia of life and instead look for what is real. Regarding drug use, a spiritual master of *Vendanta* would not encourage the use of drugs to achieve seeing, but rather, many years of critical thinking, spiritual study, and meditation. The Beatles were busy studio musicians and did not have a great deal of time to devote to a monastic life. The band was also aware of the attention span of their audience and knew they only had the length of a song to communicate an idea that had taken centuries to evolve. In this sense, The Beatles were able to express *brahma satyam jagan mithya* (Brahman is real; the world is unreal) in 5’ 37”, the length of “A Day In The Life.”

The worldview of *brahma satyam jagan mithya* is reflected in the composition of the coda. The wall of sound created by the four pianos is another wake-up call in the piece. The effect of 45 seconds of one chord, positioned after the extreme density of material and building beat of the previous four minutes, is astounding. The coda is not so much an ending as it is a beginning: it is like an A-bomb of consciousness has just

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71 The Beatles took a “Guide Course” in monastic life with their Guru at the time, Maharishi Mahesh Yogi, at his ashram in Rishikesh, India. Mr. Starr left after 10 days, Mr. McCartney after one month, Mr. Lennon and Mr. Harrison after two months.

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been dropped. After the chord finishes decaying, there is a 15 kHz sine tone followed by a tape loop of many chattering voices overdubbed with Mr. McCartney singing, “never could be any other way.” The sine tone and the tape loop seem chaotic and nonsensical, especially coming after the blast of consciousness. Many people have tried to read meaning into the words of the tape loop, but it could be that the meaning is not to be found in any interpretation of the words at all. The meaning may be in the function of the loop. The loop functions as a meaningless sound in contrast to the immense resonation of the piano chord. Brahman is what is important and what resonates (the piano chord) and the petty grievances of the world are just repetitious, insignificant natterings (the tape loop). The track invites the listener to see the world in a new way. The ending resonated with listeners when the track was released in 1977 and continues to resonate with a new generation of listeners more than 45 years later.
I read the news today oh, boy
About a lucky man who made the grade
And though the news was rather sad
Well, I just had to laugh
I saw the photograph
He blew his mind out in a car
He didn't notice that the lights had changed
A crowd of people stood and stared
They'd seen his face before
Nobody was really sure
If he was from the House of Lords

I saw a film today oh, boy
The English army had just won the war
A crowd of people turned away
But I just had to look
Having read the book
I'd love to turn you on

Woke up, got out of bed dragged a comb across my head
Found my way downstairs and drank a cup and looking up, I noticed I was late
Found my coat and grabbed my hat Made the bus in seconds flat
Found my way upstairs and had a smoke Somebody spoke and I went into a dream

I read the news today oh, boy
Four thousand holes in Blackburn, Lancashire
And though the holes were rather small
They had to count them all
Now they know how many holes it takes to fill the Albert Hall
I'd love to turn you on
Fig. 3.2 Spectrogram: “A Day in the Life”
Fig. 3.3 Markers Relating to Fig. 3.2 “A Day in the Life” Spectrogram
3.3 Commentary on the Spectrogram

The spectrogram shows the phenomena of sound as it relates to the discussion of form in “A Day in the Life.” The shape of the [A2] and [A3] are identical and the [B] section is contrasted. Likewise, the coda is marked by the burst of the piano chord with the subsequent 15 kHz tone and tape loop. It is also interesting to notice how the piece builds in frequency density and amplitude intensity. The [A1] section is sparser than the [A2] and [A3] sections. The glissando section from [A2] and [A3], as well as the crescendo in the [B] section and even the Intro to the [A1] section, all have a frequency intensification that can be easily seen in the spectrogram. The signature of frequency intensification is more harmonic in the Intro [A1] and [B] section, as is shown by the evenly spaced frequency markings and a more natural feathering off of higher harmonics. This is also documented in the apex, E major piano chord of the coda. The signatures of frequency density, in both glissando sections of [A2] and [A3], are very non-harmonic with the delineation of full-frequency density. Further, the distinct spectrogram signatures indicate that the two glissando sections, [A2] and [A3], were not duplicated from the same take, but were different takes from the recording session.
Chapter 4: Pink Floyd: *The Dark Side of the Moon*

4.1 The Times and the Narrative of *The Dark Side of the Moon*

Pink Floyd’s *The Dark Side of The Moon* was another landmark in master domain music and helped elevate creativity and production standards of the art form. Recording took place between May 1972 and January 1973, and the album was released in March 1973. Work on the album was interrupted by two concert tours, during which the band actually performed and refined the musical material that would later become part of the album. Using state-of-the-art technology, the recording of *The Dark Side of the Moon* set a new fidelity standard that became a benchmark for any serious effort in master domain music. Their 16-track technology was the apex of recording technology at that time and the album featured extensive use of synthesizers such as the EMS VC3 and the later version, the EMS Synthi A, which were among the first portable synthesizers produced in 1972. The Synthi A included a primitive sequencer that made it possible to create sound loops within the synth, as well as modify and modulate the loop in real time. The album was recorded at Abbey Road Studios with engineer Alan Parsons. Mr. Parsons was also the engineer for The Beatles’ *Abbey Road* and *Let It Be* albums. Pink Floyd was well aware of *Sgt. Pepper’s Lonely Heart’s Club Band* and used similar production techniques, such as tape loops.

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and *music concrète*, to create a rich and diverse palette of sound. The similarities between the two albums include formal elements, like the continuity of music on the both sides of the master and unifying narrative themes, to deliver a significant social message. Although *The Dark Side of the Moon* followed in the concept album tradition of *Sgt. Pepper’s*, it greatly expanded the art form in master domain music. For example, “On the Run” was one of the only tracks in master domain music that consisted entirely of synthesizer, tape loops, recorded voices, and abstract musical effects. The track contained no melody, lyrics, or harmonic chord progressions, all of which were standard practices at the time. Nor was there a producer on the album. Having made seven albums before *The Dark Side of the Moon*, Pink Floyd felt well versed in studio work and appointed themselves as the producers of the album. Chris Thomas, an English producer, was called in only as a mix supervisor to provide a “fresh pair of ears” during the final mixing to help facilitate the workflow and resolve musical issues.⁷³

*The Dark Side of the Moon* was also remarkable for its ability to bring to the fore social issues of the time. Most notably, the album is dedicated to one of Pink Floyd’s founding members, Syd Barrett, who was forced to leave the band because of his deteriorating mental health. The subject of mental instability was one of the main themes of the album. In the 1970s, general societal attitudes were only beginning to accept mental illness as a health issue. Pharmaceuticals and cognitive/behavioral treatment techniques were still being developed or refined. In the United States, general treatment was either by institutionalization or at nursing centers. Although nursing centers were seen as a preferable alternative to institutionalization, they were

inadequate for sustained patient improvement. Many patients who were treated through nursing centers returned eventually to welfare and criminal justice institutions, while many more became homeless. Mental health became a central issue in the United States during the 1972 presidential race when U.S. Senator Thomas Eagleton was forced to step down as a vice presidential nominee after it was revealed that he had been successfully treated for clinical depression. The tracks “Brain Damage,” “The Great Gig in the Sky,” and “Eclipse,” relate directly to the themes of mental health and insanity.

Another pervasive social theme in the album was a commentary on the capitalistic values of western civilization. This commentary included the band’s observations of greed and ambition in our western capitalistic society. For example, the lyrics of “Us and Them” and “Breathe” highlight what happens when greed and ambition become the driving motivators of behavior. Empathy is lost; people are reduced to objects that are manipulated and exploited in the pursuit of a goal. The commentary also included observations on western society’s view of time, which often amounts to an obsession with the past and the future and a disregard for the present. In much of western capitalistic thinking, happiness is a state of mind that is achieved by the acquisition of something in the future. For example, statements like “I will be happy when I make a million dollars” or “I will be happy when I own those shoes” demonstrate a concept in which happiness is fixed in the future and prevents us from experiencing happiness in the present. This theme was explored in the tracks “Money,” “Time,” and

“On the Run.” Greed, ambition, time, and the futuristic nature of happiness were at the heart of social issues in the early 1970s and Pink Floyd’s album found a sympathetic audience among young people questioning the state into which western capitalistic values had evolved in the 20th century. Popular music was seen as a vital voice in the articulation of anti-establishment sentiment and Pink Floyd was at its forefront.

The success of *The Dark Side of the Moon* attests to the ability of its music to deeply touch and emotionally connect with a large portion of the younger generation. Band member, Roger Waters, who wrote all the lyrics for the album, summed it up this way when asked about “Eclipse:”

I don't see it as a riddle. The album uses the sun and the moon as symbols; the light and the dark; the good and the bad; the life force as opposed to the death force. I think it's a very simple statement saying that all the good things life can offer are there for us to grasp, but that the influence of some dark force in our natures prevents us from seizing them. The song addresses the listener and says that if you, the listener, are affected by that force, and if that force is a worry to you, well I feel exactly the same too. The line 'I'll see you on the dark side of the moon' is me speaking to the listener, saying, 'I know you have these bad feelings and impulses because I do too, and one of the ways I can make direct contact with you is to share with you the fact that I feel bad sometimes.'

Mix supervisor, Chris Thomas, said, "People respond on an emotional level because the album is driven by emotion, there's nothing plastic in it.” It was also one of the biggest commercial successes of all time, ranking on Billboard’s original album

By 2011, the album had sold an estimated 50 million copies worldwide. The album continues to chart on Billboard as new re-masters are released. For the week of May 5, 2006, *The Dark Side of the Moon* achieved a combined total of 1,500 weeks on the Billboard 200 and Pop Catalog charts. It is estimated that one in every 14 people in the United States under the age of 50 owns, or has owned, a copy of the album. “Money” was the breakout hit single of the album. Until this time, Pink Floyd had never had a major charting hit single. It was Bhaskar Menon, the chairman of Harvest/Capitol Records, who suggested that the band develop an older Roger Waters song, “Money.” What is remarkable is that a song rewritten using a meter of 7/4, with no chorus, and over six minutes long became a chart-topping hit.

*The Dark Side of the Moon* has also become one of the most discussed albums of all time in master domain music. An analogy of its narrative has been made to the MGM film, *The Wizard of Oz.* It has also been subject to the application of analytical methods, such as Schenkerian Analysis, in an attempt to better understand and appreciate the album.

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82 *The Making of The Dark Side of the Moon* (DVD), dir. Longfellow.
As a result of their decision to reinforce the visual aspect of their music during concert performances, Pink Floyd became one of the first bands to make visuals and lighting important components of their live show. This is a trend in master domain music that has continued, as evidenced by immense advancements in lighting technology, computers, automated lighting control panels and image projection. On the cover of *The Dark Side of the Moon* is the now famous image of a prism that the band immediately and unanimously chose when the album designs were presented.85 86 The band liked the image because it connected the album to the light and color of their live shows.87 Many young people at the time understood the cover image and the band’s light shows as a simulation of the experience of using LSD. The drug produced altered awareness and enhanced color perception. Now, many years later, it is possible to have a different perspective on how LSD enriched a listener’s experience of the music. *The Dark Side of the Moon* has continued to be appreciated long after the decline in popularity of LSD use, not to mention the ability of its original, aging audience to tolerate the experience of a “trip” today. In whatever way LSD may have inspired its creators or enhanced the experience of the listener, its importance can now be seen as over emphasized.

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85 *The Making of The Dark Side of the Moon* (DVD), dir. Longfellow.
86 The graphic design by Storm Thorgerson is not an accurate scientific representation. In Mr. Thorgerson’s rendering, the ray of light remains white as it passes through the prism instead of refracting immediately upon entry. His design also omits the color indigo completely and displays the refracted colors as distinct bands rather than blending one into the next.
87 *The Making of The Dark Side of the Moon* (DVD), dir. Longfellow.

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4.2 Observations on Unique Tonal Qualities in *The Dark Side of the Moon*

*The Dark Side of the Moon* has individual names for tracks but there are no pauses between tracks. The continuous tracks are made distinct from each other by the changing instrumentation, sonic textures, and lyrics. The only pause was the natural intermission, which happened when side one of the vinyl record finished playing and the record had to be turned over physically in order to play side two. The disc was originally intended to be experienced with this pause between the two sides.

There is a close key and scale structure that unifies the album. The key structure of the pieces is shown in Fig. 4.1a and 4.1b. The extensive use of modes and minor keys is unique to Pink Floyd and not many other popular music bands have been able to create this kind of harmonic richness. The keys for all of side one’s tracks are in minor (either dorian or aeolian) mode. There is no dominant chord used within the context of each track until the penultimate song on side two, “Brain Damage,” where a major key (Ionian mode) is used throughout a whole track for the first time. The unique and inventive chord structures in minor modes without the use of a dominant chord is part of the harmonic richness of the album. Side one begins with a subtle E7 chord with a B base (“Speak to Me”) to E dorian mode for “Breathe.” The E tonic is used as the anchor for the ostinato pattern for “On the Run.” The next track, “Time,” moves up to F# aeolian mode and increases the musical tension. The track falls back to E dorian for the “Breathe” reprise. Side one closes with a G dorian mode for “Great Gig in the Sky.”
**Fig. 4.1a Key Structures in The Dark Side of the Moon, Side One**

<table>
<thead>
<tr>
<th>“Speak to Me”</th>
<th>“Breathe”</th>
<th>“On the Run”</th>
<th>“Time”</th>
<th>“Great Gig in the Sky”</th>
</tr>
</thead>
<tbody>
<tr>
<td>E7/B</td>
<td>E dorian</td>
<td>E pedal</td>
<td>F# aeolian – E dorian (reprise time)</td>
<td>B aeolian → G dorian</td>
</tr>
</tbody>
</table>

**Fig. 4.1b Key Structures in The Dark Side of the Moon, Side Two**

<table>
<thead>
<tr>
<th>“Money”</th>
<th>“Us and Them”</th>
<th>“Any Colour You Like”</th>
<th>“Brain Damage”</th>
<th>“Eclipse”</th>
</tr>
</thead>
<tbody>
<tr>
<td>B aeolian</td>
<td>D major/B aeolian</td>
<td>D dorian</td>
<td>D ionian (major)</td>
<td>D major/minor</td>
</tr>
</tbody>
</table>

Side two begins with “Money,” which is remarkable for several reasons. “Money” introduces a new key center of B aeolian and has a different feel than anything that has come before due to the 7/4 time signature and the passacaglia walking bass line. In addition, the overall form is a da capo within a da capo. This form can be expressed as follows:

$$A(A-A1-A2\{sax solo\}) \rightarrow B\{guitar solo B-C-B1\} \rightarrow A(A3) \rightarrow CODA$$

The A2-section features a stylistically groundbreaking tenor saxophone solo by one of the group’s long-time friends, Dick Parry. The tenor sax solo is a sonic and energy bridge into the B-section, an extensive guitar solo. These irregular formal qualities of “Money” add to its complete unconventionality as a Billboard-charting single. The track switches to 4/4 time for the B-section and is a showcase for Mr. Gilmour’s guitar solo. To a large degree, the production effects shape the form of the inner da
capo B-section. The B and B1 sections contain a large spacious reverb, giving the effect of a large cathedral-like space. The C-section has a tight gate type reverb and gives the impression of a room so small that one would not be able to stand up straight in it. The contrasting acoustical spaces could be interpreted as representing the expansiveness of having money (in a sense, a room with a view) and the squeeze of a lacking money (the cramped accommodations of third class). The lyrics for “Money” and the next track, “Us and Them,” are similar in their biting honesty in observations on survival in a capitalistic society.

“Us and Them” begins in D major (Ionian mode) but moves to the anchor key of B aeolian for the B-section. The B-section does not represent a chorus because it is integrated as part of the narrative line in the track. Minimizing or eliminating the chorus was a formal experimentation that Pink Floyd would have seen in late Beatles music. Examples include “A Day in the Life” from Sgt. Pepper’s Lonely Hearts Club Band, as well as many songs from The White Album such as “Dear Prudence,” “Come Together,” and “Glass Onion”.

The D tonic is kept in “Any Colour You Like” but the mode is changed to dorian. This is the second instrumental track on the album and, like the first, follows no standard song form, being an improvisation between the keyboard and the guitar. We then transition to D major for “Brain Damage” where both the major key is used for the complete track for the first time and the dominant chord is introduced. The last piece, “Eclipse” is in D tonic, but oscillates between major and minor. Here the dominant A chord is also a pivotal chord.
4.3 Observations on Harmonic Relations and Tonal Centers in
*The Dark Side of the Moon*

This close connection of keys has drawn much attention from music theorists and hobbyists alike. On side one of the album, the key centers of the tracks move up a minor third but stay in the minor mode. Side two key centers move up a minor third as well, but transform from minor to major and end with a major/minor duality. Although some analyses consider *The Dark Side of the Moon* as one continuous piece, it can be regarded as two complete and distinct halves, as originally created in the vinyl master. The two halves can be seen as related by narrative themes, but are musically sequential, like two movements, rather than musically related.

In analyses which consider the album a continuous whole, it has been argued that the key centers of the tracks support an overall structure of a ii chord of E minor (key centers for “Breathe,” “On the Run”) → V chord (A major implied but does not actually exist as a key acenter for a track) → I chord (D major key centers for “Brain Damage,” “Eclipse”).\(^{88}\) In a Schenkerian analysis, it has been argued that the prolongation of the F# of the overarching VI chord (first presented in “Time”) on side one connects to the F# (from the tonic chord of “Money”) on side two.\(^{89}\)

Another argument for interpreting the album’s key relation and overall key structure as a continuous whole utilizes the prism metaphor. The cover’s graphic designer, Storm Thorgerson, omitted the color indigo from the diffracted spectrum to

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89 Shaugn O’Donnell, *Speak to Me: The Legacy of Pink Floyd’s The Dark Side of the Moon.*
create a scale of six colors rather than the usual seven. If the entire album is seen as ascending through an E minor7 chord, then the E minor7 chord is the white band of light diffracted into its colors of the tracks. Side one starts with the E dorian opening, moves through F#, to G dorian; side two starts with B aeolian, moves through D ionian, to D dorian, and back to D ionian. This represents the six key centers corresponding with the six colors of the spectrum on the cover. When we get to the final D, it is time to start over. The end of the album is the heartbeat, which takes the listener back to the beginning of the album.

While a discussion of pitch and form is useful in becoming familiar with the album, these musical aspects are not the reason why *The Dark Side of the Moon* is important from the perspective of master domain music. This is a record that advanced the listening experience into another dimension: for the first time, each side of an album continuously stimulated the listener’s imagination to create, within the audio experience, an internal visual storyline. This aspect of the album could be understood as the central feature that accounted for its popularity. The album, taken as a whole or in part, gave the listener an experience that was different from that of any previous work in master domain music.

4.4.1 The Internal Visual Image: Cinematic Structure Within Audio

One of the remarkable traits of master domain music was the creative inspiration that its artists found in the ideas and working principles of the visual arts. This was discussed in the last chapter with regard to painting and *Sgt. Pepper’s*. As television
and cinema grew to become a part of everyday life in the 20th century, the moving image also grew in its influence on master domain music. Principles borrowed from filmmaking helped to develop the imagination and complexity of art forms in master domain music. The interrelationship between cinematography and master domain music was likely due to similarities in their technologies and techniques. It was the same inventor, Thomas Edison, who contributed to transforming both phonograph and moving picture technology into practical and commercial businesses. Examples of techniques shared by films and master domain music art forms included the fade-in and fade-out, extensive editing, contextually defined perspective and depth, multiple exposures, as well as close-ups, wide shots and jump cuts. Since these cinematic techniques and their meaning had already become culturally ingrained, their incorporation into master domain music was straightforward and often taken for granted.

Pink Floyd was one of the first bands to fully incorporate these cinematic production techniques into master domain music. In a sense, the music of *The Dark Side of the Moon* is not just heard. It is seen. It is as close to being a visual experience as audio can be. This was achieved by the use of cinematic techniques and sound effects to prompt the listener’s creation of internal visual images. While hearing the

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90 James Lastra, *Sound Technology and the American Cinema* (New York: Columbia University Press, 2000), Chapter 1, Kindle edition. Mr. Lastra pointed this out in his book with Thomas Edison’s famous quote, “I am experimenting upon an instrument which does for the Eye what the Phonograph does for the Ear.” Mr. Edison’s model for developing sound and, later, moving picture technologies was similar.

91 Master domain music was still eight years away from the next step in cinematic imagery, i.e., when the music video became integrated as the new master with the launch of MTV in 1981.

92 There were some precedents to audio-visual imaging: sound effects and narration in radio drama production, as well as sound effects in musique concrète. However, this level of integration in master domain music production by combining musical, lyrical, and narrative elements went beyond what had ever been done. This audio-visual imaging is also distinct from program music, which is based in traditionally notated musical elements to suggest an experience.

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sound effect of a helicopter and a person running in “On The Run,” the listener would internally project an image of a helicopter and imagine themselves running and being overtaken. There are also multiple sound effects in this track that suggest airport imagery and the dizzying effect of signs, directions, the rush to catch a flight, and, finally, the tragedy of a plane crash. The listener’s creation of internal visual images was being directed by compositional arrangements of sound effects, musical effects, and artistically defined spatial relations. All of this might occur without the listener being conscious of how much of the experience was internally heard and how much was internally seen. “On the Run” has no melody, no chords, no lyrics, and no conventional development, which are all critical presuppositions for popular master domain music. Yet “On The Run” was readily accepted, understood, and appreciated. The meaning of the track was communicated most effectively through internal visual images.

4.4.2 Segues and Cinematic Techniques Used on Side One

In the following discussion of cinematic techniques and internal visual imagery, track listing details and the spectrogram can be referenced at Fig. 4.2 and Fig. 4.4, respectively. “Speak to Me,” the first track on the album, lasts only 1:09. It is quite remarkable for its power in initiating the process of internal visual image creation with the sound effect of a heartbeat. The listener is drawn into identifying with the track by imagining they hear their own heart beating in the story. The backward piano chord adds to the narrative by creating the cinematic effect of flash-forward, as if waking from a dream or, in this case, a nightmare filled with Clare Torry’s screams. The flash forward is conveyed with references to many of the sonic elements that will be presented during the course of the album. In addition, the backward piano chord is mixed in a way that
emphasizes the b and d pitches. This minor third is used to segue to the “Breathe” reprise in “Time” and the tonal center rise on side two. After the intensity of this crescendo, the album quiets down with the down-tempo second track, “Breathe.” This is an experience anyone can have: the dead calm of sleep, waking up from a bad dream, and settling into one’s daily routine. The depiction of this universal experience is one example that illustrates how the album came to be related to by such a wide audience.

As mentioned, “On the Run” is an audio-visual montage (without the film or video footage) that uses sound effects and *mise-en-scène* voices to stimulate the listener to project specific internal visual images. The track is a collage of threatening audio elements that exist in dreams and nightmares. An expansive explosion ends the track and resonates for 48 seconds, allowing the significance of what has just happened to be fully articulated in our internal projection. This explosion is akin to slow motion in film editing, which enables the viewer to linger over each frame, to completely see, feel, and comprehend the movement. There is a long cross-dissolve into the ticking of a clock. This quiet segue is the calm before the storm of ringing clock alarms that follows. These sounds are a wide frequency band and create a dramatic image of an infinite depth of clock alarms. These clock alarms are all ringing for the opening of “Time.”

The clock alarms create the cinematic equivalent of a jump cut. A jump cut is an abrupt transition from one filmed scene to the next, creating an effect of discontinuity or acceleration. This creates another wake-up sonic experience, especially coming after the slow motion explosion at the end of “On the Run.” This sonic wake-up call refers back to the wake-up experience of “Speak to Me,” the opening of the album. Next, the listener is presented with the entrance of the low, E octaves on the guitar with the time-
ticking synth-bongos, creating a desolate soundscape. The low resonating guitar note, doubled by a synth square wave tone on the right side, oscillates between E and F#. At this juncture, the heartbeat is also present with the synth-bongos. The entrance of the roto-toms solo, over this low bass note and synth bongos, is another layer that adds unique texture with superb sound and depth. The roto-toms are predominantly panned to the right side, but have one tom panned to the left. This is an example of a cinematic technique known as deep focus. Deep focus is a technique in which objects near the camera and objects far away from the camera are all in focus at the same time. The synth-bongos ticking off time after the ringing alarm clocks are one inch from the microphone and have no sense of any room presence. When the resonant guitars and roto-toms enter, in a large church-like resonant space, they too are very present and forward in the mix. As a result, there are different spatial relations occurring simultaneously and although this sound design is impossible in real physical space, the listener has no difficulty accepting this anomaly. The sonic equivalent of deep focus is used again when the vocals enter. For the A-section, the vocals are closer to the sound of the original bongos (although they are given a slight phased gating effect) then change in the B-section to the deep resonance of the guitar and roto-toms with a rich array of background vocals.

The track increases in tempo and drive to reach the guitar solo jam, which is one of several climactic densities of side one and can be seen in the spectrogram (Fig. 4.4). The B section of the guitar solo jam marks the 5/8-point of side one, which defines an overall shape with its density and grandness of sound. Timing the point of greatest action is a primary concern of film editors and serves here to provide shape to side one.
The reprise of “Breathe” could be thought of as a cinematic flashback or re-enactment of memory. The lyrics of the reprise are different from the original “Breathe” and create a strong internal visual projection. The words “home again...it’s good to warm my bones before the fire” prepare the listener for a quiet moment and increase receptivity to the last track on side one. The closing lyrics of the “Breathe” reprise create a narrative segue to the last track: “...calls the faithful to their knees, to hear the softly spoken magic spells.” With these words, the chord sequence descends and projects an internal image of going deeper from C to b minor – am – G – F where bottom is hit, then rises to F# bass with a b minor chord on top. The F# which started the track now ends it and is the segue to “The Great Gig in the Sky.” In this segue, Pink Floyd uses a continuity cut, a seamless and logical connector between two distinct sequences. In cinematic terms, a continuity cut is an unobtrusive editing technique that serves to move the narrative forward from one scene to the next.

Section one of “The Great Gig in the Sky” begins with piano and adds slide guitar, bass, and the mise-en-scene voice of Gerry Driscoll, the janitor at Abbey Road Studios, saying, “I’m not frightened of dying...” This emotionless, matter-of-fact statement is followed by an expansive expression of pure grief in the B section with Claire Torrey’s vocalise. To the listener, this presents a contradiction between what a person says and what a person really feels. This contradiction directs the internal visual image for the entire movement, forcing the listener to examine his or her own feelings about dying. In their mind, the listener is watching someone make a statement

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93 This fundamental disconnect, stereotypical of British society, appears several times as a central theme of the album and was an element of social discontent of British youth in the 1960s and 1970s. Even hallucinogenic drug-use was partly an attempt to re-establish the relationship between what was felt and what was expressed.

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while the movie cuts to a view of what is really going on within that character’s heart and mind. This dichotomy is reinforced by the music, which uses deceptively complacent B flat and E flat major 7th chords in the A-section then modulates to the relative G minor for the B-section. By the time we arrive at the end of the piece, Mr. Driscoll’s statement has transformed in the listener’s mind into a question: “Are you really not frightened of dying?”

The B-section, which features a remarkable improvisation by Clare Torrey, builds in intensity to create an emotional apogee that is among the most meaningful crescendos in master domain music.94 The apogee comes at 2:20, which is approximately the mid-point of the track. These last two sections, A1 and B1, are a long denouement, continuing at first with the supporting piano and bass, then only the piano. There is a cinematic pull back effect, which continues to the end, achieved by increasing the reverb on Clare Torrey’s vocal track. The B1 section is even quieter after the bass drops out and more reverb is added to Clare’s track. The tempo slows slightly and, at 3:33, there is a final, faint, mise-en-scene voice (the road manager’s wife, Patricia Watts) saying, “I never said I was frightened of dying.” This statement further reinforces the contradiction. The last G minor piano chord is allowed to ring out in a slow dissolve with a subtle nuance for the listener to notice. During the dissolve, the pitch of the fading

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94 *The Making of The Dark Side of the Moon* (DVD), dir. Longfellow. Pink Floyd had tried several ideas as a foreground to the recorded piano progression with no success. According to Chris Thomas, the band was already at the mix down stage of production when, at Alan Parson’s suggestion, an unknown singer named Clare Torrey was hired. She recorded two straight takes that would later become outstanding contributions to the final product. Ms. Torrey was not informed that her material had been used until she was in a London record shop and saw her name in the album credits.
chord rises one semitone and then falls back.\textsuperscript{95} Overall, side one of the record ends in a desolate place. This is a classic dramatic form utilized in films and other performance arts.\textsuperscript{96} At the end of side one, the hero – the projection of our self in the narrative – is left stranded and alone to reflect upon his or her feelings about dying. This, of course, incites the listener to turn the record over and seek resolution on side two. In many movies, the happy resolution is imminent, but in a Pink Floyd album, the resolution is negated.

4.5 Production Values in Master Domain Music

When \textit{The Dark Side of the Moon} was created, recording standards in master domain music had evolved to become quite specific. As established in Section 4.4, there was a shared technology between the recording of sound and film. In his book, \textit{Sound Technology and the American Cinema}, James Lastra discusses the dichotomy in early production models between “identity” and “non-identity” sound theory for film production.\textsuperscript{97} Identity sound theorists believed that there was a true sound that could and should be captured. In other words, the sound heard is the sound captured. In contrast, non-identity sound theorists believed that the original sound could never be captured and only a contextual representation of the sound was needed. Mr. Lastra goes on to document the sound theory dichotomy as it developed. The identity theory emphasized fidelity to the source of the recording while the non-identity theory took a

\textsuperscript{95} When the album was originally issued, I thought my vinyl record had a warp that accounted for the pitch inconsistency. In subsequent CD versions, the fade’s single semitone rise and fall in pitch is clear.

\textsuperscript{96} Richard Wagner often used this dramatic form in his operas.

\textsuperscript{97} James Lastra, \textit{Sound Technology and the American Cinema}, Chapter 4, Kindle edition.
more pragmatic approach toward sound production and emphasized results. In the early
days of film sound production, this was a major point of contention. Eventually, non-
fidelity production became the accepted norm. By the 1930s, it was not actual horse
hooves making contact with a dirt trail that one heard in a western film, but more likely
halved coconut shells being clapped together.98 Today, no one assumes that a film's
soundtrack is a compilation of the acoustics captured on the original film set.

In Chapter 1, there was a discussion of “document mode” in recording. Document mode can be seen as adhering to the identity/fidelity model of sound
production. Although it was an attempt to capture a performance as it occurred in a
defined space and time, fidelity limitations in the early days of recording technology
restricted document mode to an intention rather than a practice. At this time, it was not
sonically possible to capture the frequency and dynamic spectrum of a performance in a
recording. As recording fidelity improved with the introduction of magnetic tape in the
1950s, the possibility of realizing document mode became greater. However, with the
advent of editing, the finished product started to become a compilation of performance
fragments. This approach deviated completely from document mode with its goal of
preserving the performance as it occurred in one continuous time and space. The
production values in classical recording techniques, on the other hand, have always held
to the identity/fidelity model with regard to the intention of preserving the natural sound
of the musicians, ensemble, and acoustic space.99

98 Wikihow.com, accessed September 12, 2012,
http://www.wikihow.com/Make-a-Horse-Sound-With-a-Coconut.
99 In recent times, there has been more of a crossover in recording techniques where musicians in
an ensemble are miked, individually tracked, and edited. The intention of most acoustic music
recording is still the identity/fidelity model, even if the recording is an illusion of a real
performance and space.
Recording and production values in master domain music did not follow the values of the identity/fidelity model or the techniques of classical recording. For example, most instruments and voices in master domain music were close-miked. This enabled separation in multi-track recording and the addition of effects or processing at a later stage. There was usually no desire to preserve the original sound of the track or the acoustics of the original recording space. This was analogous to sound techniques used for film. The sound-space of the set in filmmaking is of little importance to the sound-space of the final movie.

In the case of *The Dark Side of the Moon*, non-identity values were always the path of production. The heartbeat that begins and ends the album is not a recording of an actual heart; it is Nic Mason’s kick on his bass drum. The heartbeat at the beginning of the album is not the same as the heartbeat at the end of the album (Fig. 4.5). As with film editing techniques, reverbs on the entire album were contrived or added later to suit the expressive needs of the track. The many effects on the vocals were added in mixing and distorted the original sound. These effects were the expressive choices of the band and mixing engineers. In this way, the recorded tracks are more like raw footage from film shoots that are edited and modified into the final product. There is no issue of fidelity to an original sound since it is understood that everything will be molded to fit the expressive needs of the track and, ultimately, the master.

Virgil Moorfield, in his book *The Producer as Composer*, makes the argument that “the contemporary producer is an auteur. The underlying mechanism is technological development encompassing both invention and dissemination due to the
In master domain music, producers and artists who shape the sound of their master play an *auteur* role analogous to that of a film’s director, producer, and production engineers. However, this analogy extends only to production technique. Compositional technique in master domain music was entirely different from film; unlike film, the production never started with a pre-written script to be realized. Actual compositional techniques of master domain music will be defined in the next chapter’s discussion of U2’s album, *The Joshua Tree*.

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100 Virgil Moorfield, *The Producer as Composer*, xiii (Introduction).
### Fig. 4.2 The Dark Side of the Moon Track Listings and Details, Side One

<table>
<thead>
<tr>
<th>Track</th>
<th>Key</th>
<th>Instruments (elements)</th>
<th>Dur.</th>
<th>Formal and Narrative Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIDE ONE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Speak To Me”</td>
<td>em7 Chord</td>
<td>The backward piano chord Heartbeat; Nick Mason's Kick Drum Helicopter noise, also heard in “On the Run” Clock ticking, also heard in “Time” Clare Torry's vocalise, also heard in “The Great Gig in the Sky” Cash register, also heard in “Money” Manic laughter of Peter Watts, also heard in “Brain Damage”</td>
<td>1:09</td>
<td>B-D pitch opening fade-in (representation of the key centers of side 2)</td>
</tr>
<tr>
<td>“Breathe”</td>
<td>E dorian</td>
<td>Lead guitar, lap steel guitar, Vocals, Organ, electric piano, Bass</td>
<td>2:49</td>
<td>Very Moderate Tempo Opening Track</td>
</tr>
<tr>
<td>“On the Run”</td>
<td>E pedal</td>
<td>EMS Synthi A, Taped Voices, Guitar FX, Percussion, Sweep Brushes</td>
<td>3:45</td>
<td>The 8-note ostinato (E2, G2, A2, G2, D3, C3, D3, E3) played at a tempo of 165 BPM. At 27 seconds into the piece, the sound of a female voice on a loudspeaker can be heard; apparently an airport public address system. The announcer says, “Have your baggage and passport ready and then follow the green line to customs and immigration. BA flight 215 to Rome, Cairo and Lagos.” At 1:54, Roger &quot;The Hat&quot; Manifold, Pink Floyd road manager says, “Live for today, gone tomorrow. That’s me,” then laughs. At 2:57, explosion resonates for 48 seconds</td>
</tr>
<tr>
<td>“The Great Gig in the Sky”</td>
<td>bb-ionian G dorian</td>
<td>Piano, Organ Slide Guitar Bass Guitar Drums Percussion Claire Torrey Vocals</td>
<td>4:44</td>
<td>Form A-B-A1-B1 At :35 Gerry Driscoll doorman at Abbey Road says, &quot;I'm not frightened of dying.” At 3:33 Patti Watts says, &quot;I never said I was frightened of dying.”</td>
</tr>
</tbody>
</table>
**Fig. 4.3 The Dark Side of the Moon: Track Markers on Side One Related to Fig. 4.4**

![Markers and Regions](image)

<table>
<thead>
<tr>
<th>Track</th>
<th>Start</th>
<th>End</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speak To Me</td>
<td>00:00</td>
<td>00:11</td>
<td></td>
</tr>
<tr>
<td>Breath</td>
<td>00:11</td>
<td>00:14</td>
<td></td>
</tr>
<tr>
<td>On the Run</td>
<td>00:14</td>
<td>00:19</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>00:19</td>
<td>00:25</td>
<td></td>
</tr>
<tr>
<td>Climactic Density</td>
<td>00:25</td>
<td>00:31</td>
<td></td>
</tr>
<tr>
<td>The Great Gig in the Sky</td>
<td>00:31</td>
<td>00:38</td>
<td></td>
</tr>
</tbody>
</table>

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The Era of Master Domain Music 1964-1994
Fig. 4.4 Spectrogram of *The Dark Side of the Moon* Side One
Fig. 4.5 Comparison of the Heartbeats at the Beginning and End of the Album
Chapter 5: Master Domain Music, Circa 1980

5.1 The Times of Change

The 1980s brought several profound changes to the course of master domain music. The platform of the production and reproduction shifted from an analog topology to a digital topology. Advances in technology were creating a new sophistication in professional recording studios, as well as enabling the beginnings of the home studio. Most significantly to this discussion, the master expanded in format. This expansion was not just the change from a 12" vinyl disc to a digital compact disc. It included the expansion of the audio to include visuals: the 1980s was the era that celebrated the music video.

5.1.1 When Music Got a Face and a Pre-Fabricated Narrative

As discussed in the previous chapter, Pink Floyd created a visual, as well as an audio, experience with their music. Many progressive rock bands of the 1970s followed this trend, finding their own way to create a visual and aural experience while staying within the audio format. The development of the concept album was a direct result of this trend. There was usually an elaborate narrative that supported these albums. The live shows tended to be theatrical performances that helped illuminate the album's
narrative and stimulate the audiences’ visualizations. For example, in 1974, Genesis released their album, *The Lamb Lies Down on Broadway*. The album tells a surreal story of a half-Puerto Rican juvenile delinquent named Rael, living in New York City, who is swept underground to face bizarre creatures and nightmarish dangers in order to rescue his brother, John. The album design featured black and white pictures and the live show, created for Peter Gabriel, used lighting, projection, costume changes, and dramatic enactment to illustrate the story in concert. In 1973, The Who released their second rock opera, *Quadrophenia*. It was a double concept album with an elaborate story about social, musical and psychological happenings from the perspective a teenager named Jimmy set in London and Brighton in 1964. In 1974, the group, Yes, produced a double concept album, *Tales of Topographical Oceans*, crafting the album design and the live show to work together to support the experience of the music. The trend of progressive rock bands creating concept albums and finding innovative ways to tell a story that invoked the imagination of the listener continued throughout the 1970s. All this came to an abrupt end when the master’s format changed from vinyl to videotape. There was no longer a need to encourage internal visualizations using the audio tracks because the video images did it for the listener.

To illustrate this change in format, consider the three cinematic models that had been used by master domain music before the 1980s. First, there was the *mise-en-scène* model in major Hollywood movies where the musicians perform music within a scene of a film. Elvis Presley was cast as an actor and performed *mise-en-scène* in all the films he starred in, beginning with the 1956 film, *Love Me Tender*. Second, there was the featured music model. This was a full-length Hollywood movie that did not
necessarily show the musician per se, but featured master domain music as an integral part of the movie. One of the greatest examples of the featured music model is the soundtrack to the movie, *Easy Rider*. The *Easy Rider* soundtrack made it onto Billboard’s *Top Ten Album Chart* and produced one of the greatest weeks of master domain music: December 20, 1969. The licensing rights for the songs used on the soundtrack cost more than the film’s entire production budget, a rarity for any Hollywood movie. It included songs by The Byrds, The Jimi Hendrix Experience, and Steppenwolf. Movies with featured music often became cult classics among music fans. Finally, there was the promotional model, where bands made a short movie as a form of publicity to help introduce their album and promote sales. Promotional movies included early Beatles films like *Help!* (1964) and *Hard Days Night* (1965). Most bands would create a short, live performance film to be used as a promotional tool. In television, the promotional model was used in the 1966-68 series, *The Monkees*, a sitcom about the adventures of a Hollywood-created pop band. The series copied the style of early Beatles movies but was designed to entertain the television-viewing audience. The Monkees’ sitcom was a promotional tool used by Screen Gems music, NBC, and Columbia Records to sell merchandise and albums. The Monkees did not actually exist.

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as a band and were not skilled musicians. In all three of these models (mise-en-scène, featured music, and promotional), the band and their record company used the cinematic image to promote the band and sell records. The film was not an art form in itself or a significant revenue stream for the record company.

As rock music advanced into the 1980s, some of the more mainstream bands had no interest in developing the elaborate storylines or sophisticated production techniques favored by progressive rock bands in their concept albums. These bands wanted to use moving images to help tell or create the story of their track and many of the more capitalized groups started making music videos. In 1979, Australian director, Russell Mulcahy started making successful music videos for several U.K. bands including XTC’s “Making Plans For Nigel” (1979) and The Buggles’ “Video Killed the Radio Star” (1979). The music video was a new format for music. The intention of the music video was not strictly promotional: it was an artistic expression itself and presented a narrative of the audio track in the video. With the invention of Video Home System (VHS) cassettes, music videos could be manufactured and sold as a product, just like albums. In 1981, the music video had a landmark moment in New York City with the launch of Music Television (MTV). Soon nearly every band, no matter how famous or unknown, wanted to make a music video for one or more of the tracks on their album. A video was often a chance for the band to create a new artistic expression of

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103 The Monkees were not a working band of musicians and did not play any of their instruments on any of their three released albums. The instrumental parts were played by a highly trained and versatile group of studio musicians known as The Wrecking Crew. The Wrecking Crew was responsible for recording many albums in Hollywood at the time, including The Beach Boys’ Pet Sounds and “Mr. Tambourine Man” by The Byrds.

104 This is an ironic name for a track that would prove to be prophetic. It was the first video MTV broadcast in 1981.
their track and, as a result, the master expanded its format. A track was no longer a vinyl record with audio. It was a video that contained an audio track and images illustrating what the track meant. The video contained information about the track that was not in the audio. This meant that the video now signified the most definitive and complete version of the track, or what could be designated as the master. In a culture that was becoming more and more dependent on visual imagery in communications, master domain music tracks developed a face and a pre-fabricated visual narrative. With the new central role of video, musical artists who emerged in the 1980s were founded as much on their imagery as on their music. Examples of such artists include Michael Jackson, Prince, Madonna, George Michael, Cyndi Lauper and even the B-52s. All of these artists made substantial contributions to master domain music of the 1980s, but their visual imagery and style were as important to their popularity and success as their music. With the launch of MTV, the visual imagery of music was maintained with programs hosted by a personality V.J., modeled after the paradigm of a radio D.J. Cable television music channels expanded with VH-1 to capitalize on different musical genres.

The expansion of the master to include visuals had a substantial effect on the state of master domain music. It signaled the end of the concept album for the most part, a change that could be viewed as a loss of imagination in the creation of master domain music. The music did not have to work as hard to tell a story or create mental images in its listeners because the video did these things. Once the video was released, the narrative of the track was defined. Listeners no longer closed their eyes to listen to music nor did they invent their own story about the track and the musicians. Instead, video commanded and split the listener’s attention between sight and sound.
Another effect of the master’s expansion was a return to the 1950s trend of putting greater emphasis on the single rather than the album. In the 1950s, the prominence of the single was due to technological limitations: the long play record had not yet been introduced commercially. In the 1980s, a music video was a single track, which meant that MTV and VH1 were only playing singles. Bands, and the industry as a whole, soon began to focus their energy on producing a few strong singles rather than a strong album. Consequently, album consistency began to deteriorate in the 1980s. For example, Mr. Mister released their breakthrough album, *Welcome to the Real World*, in 1985. It featured two outstanding singles while the rest of the album’s tracks were blasé and weak. There were exceptions to this trend and one of them was U2’s *The Joshua Tree*.

### 5.2 U2: *The Joshua Tree*

U2 released *The Joshua Tree* in late 1987. The album did not have the superior fidelity heard in many albums of the 1980s because of its eccentric recording locations and more experimental production values. Neither did the album have complex and elaborate videos like Prince’s *Purple Rain* or Michael Jackson’s *Thriller*. The videos U2 made for the leading tracks of *The Joshua Tree* were more akin to performance videos of the band filmed on location. The video for “Where the Streets Have No Name” was about an impromptu performance the band staged on a downtown Los Angeles rooftop. The outdoor performance seems to have been a provocation to the Los Angeles Police Department, who proceeded to shut the show down due to concerns regarding crowd control. The video was shot in black and white and edited in the style of a documentary.
It established U2’s performance-based videos, made a statement about freedom of expression in Los Angeles in 1987, and won a Grammy Award for Best Performance Music Video in 1988.

*The Joshua Tree* was a commercial success with over 25 million albums sold. This is noteworthy for an album that was experimental in its production, as well as politically left-of-center with a socially conscious slant away from the politics of Ronald Reagan and Margaret Thatcher. In its production, *The Joshua Tree* adopted creative values from the 1970s in terms of writing, recording, and producing the music, and was loosely organized as a concept album. Most of the album’s tracks were written as an expression of the band’s thoughts about places in the United States and cultural beliefs of Americans. Hence, the name of the album, *The Joshua Tree*, a tree (*Yucca brevifolia*) that only grows in the Mohave Desert in southwestern United States. The album had a general theme of social activism that was not limited to one specific social issue. The track, “Mothers of the Disappeared,” was about South American mothers whose children had disappeared at the hands of death squads serving Argentinean and Chilean dictatorships. “Red Hill Mining Town” was about the 1984 National Union of Mineworkers strike in Britain and its devastating effect on families and communities.
5.2.1 Composition in Master Domain Music

The success of The Joshua Tree has been credited in part to its producers, Brian Eno and Daniel Lanois, who worked essentially as additional members of the band. Mr. Eno’s thoughts about making this album are noteworthy because he is able to define the process of creating a record in master domain music. In the documentary series, Classic Albums: U2 - The Joshua Tree, Mr. Eno said, “It turned out not to be the same experiment for any one of the six of us. This creative collision comes from everybody pushing as hard as they can in a slightly different direction creating this stretched envelope, slightly defocused, quite rich, and densely interconnected thing called a record.” Mr. Eno was intricately involved in the creation of the album, adding keyboard parts and vocals. Discussing the process of recording the album, Mr. Lanois said, “They (U2 and Mr. Eno) bash it out in a band room jam where things get out of control to the point where you don’t know what it is anymore, where the music would take on a life of its own…And maybe out of an extended jam, there would be a little gem that would be the basis for a song.” Mr. Lanois added guitar and other secondary tracks, and worked with the ensemble issues of the band. Both Mr. Eno and Mr. Lanois were involved in every step of production, including the mixing.

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105 Virgil Moorefield, The Producer As Composer, 62. Mr. Moorfield describes this as “indicative of the emergence of a new evolving role for the pop producer as someone who does not merely oversee the recordings of others, but is himself a recording artist on the project.”
There were two organizing principles used in making *The Joshua Tree* that are characteristic of master domain music. The first is the process of perceptual evaluation, an approach to music that is not based on traditional notation (See Fig. 4.1). Perceptual evaluation is the dialogue among band members and producers that takes place after listening to the results of a recording session to ascertain what is kept, transformed and still lacking. Various statements made by U2 describe this process. In the opinion of the guitar player, The Edge, *The Joshua Tree* came together because “everyone put their preconceptions outside the door before they came in.”\(^{108}\) Bass player, Adam Clayton, said that, “we’ve always found the difficult way to write. Many of our songs grew out of improvisations. It’s us looking for a sound initially, not necessarily looking for a song.”\(^{109}\) The Edge confirmed, “That’s the story of our records…the songs start from something quite abstract and get brought into focus slowly.”\(^{110}\) Mr. Lanois said it this way, “Every once in a while you hit on a sound that has such a personality that it allows you to step into the future.”\(^{111}\) The future in this case could be seen as the track that would be born from the process of perceptual evaluation. The cycle of perceptual evaluation leads the artist from mind to hand to recording medium, and precludes written notation. After the track is recorded, it can be edited, transformed, and re-recorded. Then, like a spiral, transformation takes place in a new cycle of perceptual evaluation. After a few or a great many cycles the sound, the line, and the piece evolve.

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\(^{108}\) Ibid., 6:10.
\(^{110}\) Ibid., 3:50.
\(^{111}\) Ibid., Still Haven’t Found…, http://www.youtube.com/watch?v=giizHG_s-OI&feature=relmfu, 1:38.
The second organizing principle of master domain music is dependent arising.\textsuperscript{112}

This will be discussed in section 5.2.4 in relation to the track, “Running to Stand Still.” Familiarity with the concept of dependent arising is essential in understanding the significance of relationship in the creative development of a track in master domain music. The term can be used to describe causes, inside or outside the production, that affect the overall sound of the track. Dependent arising does not consider any discussion that separates individual parameters of music in order to gain an understanding of it. The parameters of a track must be analyzed holistically.

\textsuperscript{112} The connection between dependent arising and Gestalt Therapy is noteworthy. Frederick Perls and Wilhelm Reich studied and incorporated ideas of Zen Buddhism into Gestalt Therapy in the 1920s when they still resided in Germany. Taoism, for example, views nature as a giant self-regulating organism. This tenant was adopted by Gestalt Theorists and has been explored in music and art perception.
arising also includes the broadest parameters of a track, like favorable conditions and happenstance, which arise as the work evolves within the recording studio. Like perceptual evaluation, dependent arising does not allow a track in master domain music to be notated a priori because it is impossible to know beforehand the elements that will come together to form the finished track.

Dependent arising is a term borrowed from Buddhism that defines cause and effect in the physical world. This Buddhist belief states that nothing exists inherently in the physical world, but is dependent on the assembly of factors or parts (causes) leading to an entity (effect). The often-used Buddhist example of dependent arising is an examination of the existence of a table. The component parts of wood and screws, even the legs and rectangular top, are not independently definable as a table. In none of the component parts is a table to be found. It is only when conditions are precisely favorable, e.g. when the parts are cut and assembled in a specific way, that the table comes into being. Master domain music is similar in that component parts are of little significance if considered separately and have no logical necessity to a finished track. As in dependent arising, the right relationships, conditions, application, and assembly all occurring together create a functional track.

5.2.2 The Internal Visual Image

The Joshua Tree can also be said to harken back to earlier values in master domain music when music had the ability to create strong internal visual images without
help of a music video. Lead singer, Bono, said of the album, "It’s more like making a movie than a record."\(^{113}\) The Edge said, "we’d begin recording by setting up a certain feeling, a certain location with the sound, and that would be our jumping off place…we’d call it cinematic music, music that actually brought you somewhere physical, as well as emotional."\(^{114}\) This may have been partly responsible for the success of *The Joshua Tree* and the sustained popularity of U2 to the present day. They were delivering more musical depth than their peers by going back to earlier values and encouraging the imagination of the listener. They may have gone even a step further in prompting the internal visual experience of each track by tying it to a specific geographical place.

5.2.3 "Running to Stand Still" by U2

A vivid internal visual image is created on the track, “Running to Stand Still.” The lyrics (Fig. 4.2) are about Dublin’s Ballymun flats housing project near where Bono grew up. Bono had watched the neighborhood deteriorate to the point where it was inhabited mostly by junkies and vagrants. The poignancy of the Ballymun flat’s deteriorating social fabric inspired the song about two junkies fighting the pain of addiction.\(^{115}\) The Zen-like contradictory lyrics of “Running to Stand Still” present the situation without moral judgment and often as an objective third-person narrative. "Seven towers" refers to the seven tall apartment buildings that made up the housing project and creates a striking visual image, even in the minds of listeners who had never seen the Ballymun flats. The


\(^{114}\) Ibid., 8:09.

\(^{115}\) Ibid., http://www.youtube.com/watch?v=eQD4jqve95Y&feature=fvwrel, 0:36.
track was universal in its appeal because it spoke to contemporary urban issues of drugs and neighborhoods that had fallen onto desperate times. People living in middle and upper class neighborhoods understood that addiction and the ravages caused by addictive behavior could result in anyone becoming a resident of Ballymun flats in a figurative way. “Running to Stand Still” is an example of a track that created an internal visual experience of both an emotional and a physical place. Its lyrics also helped raise awareness of the social issues linked to addiction in western urban culture.
**Fig. 5.2**

Running to Stand Still  
(Bono)

And so she woke up  
Woke up from where she was lyin' still.  
Said I gotta do something  
About where we're goin'.

Step on a fast train  
Step out of the driving rain, maybe  
Run from the darkness in the night.  
Singing ah, ah la la la de day  
Ah la la la de day.

Sweet the sin, bitter the taste in my mouth.  
I see seven towers, but I only see one way out.  
You gotta cry without weeping, talk without speaking  
Scream without raising your voice.  
You know I took the poison, from the poison stream  
Then I floated out of here, singing  
Ah la la la de day Ah la la la de day.

She walks through the streets  
With her eyes painted red  
Under black belly of cloud in the rain.  
In through a doorway  
She brings me white golden pearls  
Stolen from the sea.

She is ragin'  
She is ragin'  
And the storm blows up in her eyes.  
She will suffer the needle chill  
She's running to stand still.
5.2.4 The Joshua Tree as an Example of Dependent Arising

Like all the tracks on The Joshua Tree, “Running to Stand Still” is not complicated in its formal elements, using mostly traditional binary forms with intros, verses, choruses, and the occasional bridge. The verse and chorus form are rather free and organic, designed to serve the structure of the lyrics. They are not differentiated by elaborate or complicated chord structure. Harmonically, they consist of a tonic chord (D) and sub-dominant chord (G) with the occasional use of a V or other pivot chord. In a similar way, the melody of the chorus does not frame a catchy hook that distinguishes it from the verse. The title of the track is present only as the last four words of the song. “Running to Stand Still” illustrates the concept of dependent arising in master domain music because the track’s success cannot be attributed to specific parameters. Dependent arising in its application here refers to a holistic perspective,\(^{116}\) which describes creative work as an array of interrelated contextual solutions. It is the dependent arising or, as Mr. Eno stated, “the creative collision,” that makes this track significant as an emotional and meaningful contribution to master domain music.

5.3 The Development of Technology in the 1980s

The 1980s were important to the development of master domain music because of the accelerating technological advancements that were being made during this decade. It was the advent of digital topology that would change the production and reproduction of music. This new technology enabled advancements in the professional, as well as the home, recording studio. Most significantly, it changed the final production stage of mastering due to the new capabilities it possessed. Since master domain music depended on the master to deliver the experience of the music, the change from analog to digital topology would have wide ranging implications.

5.3.1 How to Make a Hit Record with a Portastudio

One of the first and most important developments for the home recording studio was the inexpensive multi-track analog tape recorder called the Portastudio that debuted in 1979. The Portastudio enabled multi-track recording on cassette tape. Almost every musician used these small recorders to record demo material in the home or on the road. For the most part, master domain musicians did not write their music out with conventional notation and staff paper; they relied on personal recordings to reference ideas. The Portastudio also facilitated the process of perceptual evaluation. The ability to make simple multi-track recordings gave the artist or home studio enthusiast a sense of how their track sounded and how it could be developed.
Perhaps the most famous example of a Portastudio’s use is Bruce Springsteen’s fourth album, *Nebraska*. Mr. Springsteen’s Portastudio recording was made in his home and intended only as a demo of the tracks. The E-Street Band went into the studio with new arrangements and recorded the complete album in a professional environment. After the album had been recorded, Mr. Springsteen felt that the well-produced studio recordings did not do justice to his material. He thought that the original sound of the Portastudio recording better represented his artistic vision of the intimate and natural character of *Nebraska*. Subsequently, the album was mixed and mastered from the original demo Portastudio multi-track tapes. Although this was an artistic decision made by Mr. Springsteen, the success of the album ignited a flame of hope in people who wanted to record at home. Now anyone could be the next Bruce Springsteen by recording his or her own songs on a Portastudio. A common fallacy believed by many creators of master domain music is that technology offers creative salvation. The truth is that a technology may inspire creative work but it cannot provide the imagination, craftsmanship or ingenuity required to create a lasting work of quality. The tools of technology are only as good as the hands and the minds that use them. In the case of *Nebraska*, the remarkable, heartfelt performance of the band and the strength of the tracks rose above the substandard recording and presentation to create an album that was immensely popular and highly praised by Mr. Springsteen’s fans.

Mr. Springsteen never again used a Portastudio as a primary recording source device for an album. Concurrent with the release of *Nebraska*, Mr. Springsteen was recording the tracks for his next album, *Born in the USA*, in the well-produced studio environment of The Hit Factory and The Power Station in New York. *Born in the USA*
was Mr. Springsteen's most popular record, selling more than 30 million copies. It was also the first CD to be manufactured in the United States.\footnote{Dorothy Jerse, “Looking Back: 1984: DADC Begins Producing Its First CD – Bruce Springsteen’s ‘Born in the USA’,” Terre Haute Tribune-Star, last modified September 19, 2009, http://www.tribstar.com/history/local_story_262200740.html.}

5.3.2 New Paint for the Canvas

Chapter 2 discussed how the Beatles had to develop their own “paint” for the canvas. Paint, in that case, was an analogy to sounds and recording techniques used (and sometimes invented) to process audio for the creative expression of ideas in a track. The 1980s delivered “paint” of all types as the evolution of studio tools accelerated. This was partly because this was the decade of transition from analog to digital technology in sound creation and processing. The 1980s began with digital developments like the first programmable drum machine: the Linn LM-1. The ability to use digital drum samples and to program these samples was a remarkable advancement at the time. Previously, recording the drums on an album of master domain music took up a large portion of studio time. With the Linn LM-1, one of the most difficult and costly segments of the recording process was replaced with a few hours of programming. However, like many early digital devices, the Linn drum machine introduced a more mechanized sound and unvarying tempo to master domain music. Despite this, digital drum samples characterized much of the music of the era.
In 1981, Dave Smith of Sequential Circuits was among the first engineers who helped develop a protocol that would enable all synthesizers to be interconnected and communicate, regardless of the brand.\textsuperscript{118} This was the establishment of musical instrument digital interface protocol (MIDI), which standardized controller code and saw widespread development in the 1980s and 1990s. At the same time, Yamaha had introduced the first all-digital synthesizer using John Chowning’s frequency modulation (FM) digital synthesis research at Stanford University.\textsuperscript{119} This led to a whole new generation of synthesizers such as the Yamaha DX-7, Korg M1, and Roland Juno series. These were relatively inexpensive keyboards with fully digital sound and fully MIDI controllable. Now master domain musicians could finally afford all the tools they needed to make their music. In fact, there had never been such a vast amount of “paint” for the creative musical canvas. The sources of sound had greatly expanded and although the quality of the electronic sounds in the 1980s was still evolving, the quality and ease of programming would improve as technology made further developments in the 1990s and 2000s.


5.3.3 The 0s and 1s of Digital Recording

By the 1970s, many companies had developed proprietary recorders and, in some cases, entire systems for digitally capturing sound. Tom Stockham Jr. was credited with creating Soundstream, the first commercially available digital recording system. Soundstream even had its own reel-to-reel digital recorder. In April 1978, the record label Telarc used the Soundstream system to release one of the first digital recordings: *The Holst Suites for Band* by Fred Fennell with the Cleveland Wind Ensemble. The earliest digital recordings were being made before the launch of the digital compact disc (CD) and so the final product delivered to consumers was still in the form of a standard analog vinyl record.  

Digital recording offered several advantages that analog recording could not. Firstly, the dramatically decreased noise floor in digital recording opened up the potential for greater dynamic range. Secondly, there were no longer any media fingerprints to impart color to the sound, as had always been the case with analog tapes and vinyl records. Thirdly, editing in digital recording was non-destructive and could be done with ever-increasing precision. Fourthly, the manipulation of the signal in digital recording did not necessarily result in a generation loss or degradation. When a program was processed in the analog/tape domain, the new signal would have to be re-recorded,

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resulting in a generation loss. These were drastic changes in the production of music and each of them addressed significant limitations of the analog topology.

Soundstream was not the only company introducing digital recording systems. In 1972, Denon debuted its 8-track digital tape recorder with a proprietary 47.25 sampling rate/13 bit depth. There was the 3M System, which was capable of recording 32 tracks, also in a proprietary digital format. In 1979, the 3M System was used by Warner Brothers for the first digitally recorded album of master domain music: Bop 'Til You Drop by guitarist Ry Cooder. The landmark advancement in digital recording and editing systems arrived when personal computers developed the CPU processing power to handle the data streams for audio. This led to the debut of digital audio workstations (DAW) like the Commodore Amiga computer. Launched in 1985, it was a remarkable, inexpensive computer for its time. The Amiga had a sound chip named Paula that supported four channels of sound and a MIDI sequencer. Popular music software programs such as MED (1989) and OctoMED (1991) were developed for the Amiga. More sophisticated than the Amiga, the NeXT machine ran a proprietary music program called Music Kit. Music Kit was open source software that was further developed by The Stanford Center for Computer Research in Music and Acoustics (CCRMA). Support for direct audio was added via a serial port and a Turtle Beach DSP56001 processing card. The NeXT machine was very expensive and, for this reason, its use was more exclusive to institutions. Sonic Solutions was one of the first companies to gain widespread acceptance in the professional production community with the launch of software that ran on the Quadra generation of Apple computers. Sonic Solutions remained an
industry leader in editing and CD mastering software through the 1990s and was used in all mastering and classical music production facilities.\textsuperscript{121}

In 1982 Sony and Mitsubishi introduced Digital Audio Stationary Head (DASH) tape recorders for high quality multi-track and mastering. These digital tape machines used the standardized 44.1 sampling rate/16 bit word depth of the Redbook/CD standard and became widely accepted within the industry, rendering earlier digital recorders obsolete. However, the DASH machines had many drawbacks. They were big machines that used open reels of specially formulated analog tape. The machines were expensive to buy and maintain. With the open reels of tape, dropouts and tape problems were common, especially as tapes aged. In 1987, Sony introduced DAT (Digital Audio Tape) machines. The DAT recorder used a small cartridge and the same technology as VCR machines with a rotary helical scan head. The cartridge protected the sensitive tape from exposure to dust and dirt. DAT tapes were easy to transport, affordable, and generally reliable and DAT machines received enthusiastic support from big studios and home studios alike. They enabled artists and small studio owners to record digitally at the sampling rate of the Redbook/CD standard. It was certainly not an ideal solution but, at the time, it was another landmark tool for the home studio.

5.3.4 The Format Change in Sound Reproduction

The compact disc was a joint venture between Sony and Phillips Corporations that was developed during the 1970s and launched in 1982. It would replace analog vinyl records by 1990, and audiocassettes by 1992, as the most popular medium for music. For production professionals, the CD was a superior format that allowed a linear frequency response and a linear dynamic response. For consumers, the CD offered many new benefits: it was much more durable than vinyl, it could be taken anywhere, and it had the capacity for 74 minutes of music.

With the introduction of this new format, the major record labels were able to re-package and re-sell their established catalogs to consumers on CD. These sales permitted record companies to amass unprecedented cash reserves from 1984 to 1990. All this cash initiated in a change in their business model: record companies began managing their assets strategically through mergers and acquisitions instead of tending to the business of talent scouting and artistic development. This led to the start of record companies being run more and more by accountants and corporate lawyers rather than the A&R people who had founded the companies. The major labels would leave the development of new talent to smaller, independent record labels. If midsize labels were successful in developing talent, the majors would buy a stake in it or purchase the company outright. For example, Def Jam Records was a midsize label whose commercial success with many R&B artists first drew interest from CBS/Sony Records. It bought a 50% stake in the company in 1984, then sold it to Polygram Records in
1994.\textsuperscript{122} The consolidation of record labels would continue for the next 20 years. At the end of the 1980s, the top labels were Sony, Warner, PolyGram, BMG, EMI and MCA. By 2012, only three independent companies remained: Sony, Warner, and Universal.

5.3.5 The Importance and Development of Mastering in the 1980s

Mastering is the last stage in the music production process. This is the stage in which issues of fidelity, overall sound, program flow, final assembly, and playability are all addressed. The introduction of the CD, along with advancements in digital signal processing (DSP) technologies, had far-reaching effects on the process and importance of mastering. In the 1980s, complete catalogs had to be transferred from vinyl to CD, creating an immense amount of work for mastering engineers. In addition, mastering engineers were doing more and more to optimize the sound, correct problems, and target the sound to fit into the appropriate genre of music. Mastering engineers were aided in these tasks by the CD’s greater flexibility of dynamic contour and other parameters. With the mass marketing of CDs and evolving DSP advancements, mastering went from being a technical assembly process to a critical, high profile position in the production chain. In order to highlight the significance of developments in mastering within the digital domain, a brief description of the mastering process in the analog domain will be given.

\textsuperscript{122} In 1984, CBS Records agreed to distribute Def Jam Records and bought a 50\% stake in the company. In 1994, Polygram bought Sony’s 50\% stake and, in 1998, when Polygram was merged into Universal Music Group, UMG purchased the remaining interest from Russell Simmons, the founder of Def Jam, forming The Island Def Jam Music Group. In spite of the formation of IDJMG, Def Jam and Island continue to operate as separate imprints under the larger umbrella of Universal.
5.3.6 Vinyl gets Reissued

When reissuing their vast catalog for CD, record companies went back to the original analog tape master that had been used to cut the acetate master as the source to make a new digital 1630 master. This analog tape master contained all the modifications the mastering engineer had made in preparation for transferring the two-track tape to vinyl, including the rolling off of frequencies as the program played toward the center of a side, the limiting of dynamics and bass response, the correlation of phase coherence, and high frequency limiting that had to be respected for the vinyl record to play. In general, the analog tape made compensation for the distinct media fingerprint of vinyl. The CD had no media fingerprint: it reproduced exactly what was written on it. For the first time in recording history, the product delivered to the consumer could replicate the full fidelity of the mix tape. It was not until after the first generation of CD masters were made, which was as late as 1991, that the record labels and production community began to realize that the analog tapes used to cut the acetate masters for vinyl were completely inappropriate for the production of CDs.

Subsequently, a second generation of digital masters was created. This time, the mastering engineers went back to the original analog mix tapes rather than the analog tape masters to create their CD master. This was an automatic improvement because it eliminated the loss inherent when generating a tape. Vinyl had a noise floor

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123 The 1630 master was a digital tape recording system developed by Sony using a U-matic ¾” Video Cassette. It contained a cyclic redundancy check (CRC) report to alert the mastering engineer and manufacturing plant of any anomalies or errors in the digital data stream. Due to the U-matic tape’s many moving parts, problems involving high CRC error rates developed, especially if the tape was played back on any machine other than the one it was originally recorded with.
that hid the tape hiss on the master tape; the CD had no noise floor so all the noise on
the analog tape was audible. In 1987, The Neve Corporation developed a digital
transfer console (the DTC-1) that became a primary tool in the mastering studio. The
transfer console gave the mastering engineer the ability to work in the digital domain,
optimizing the sound of an album in the transfer process from the analog mix tapes to
the DAW. The resultant sound on a CD improved dramatically. This was the beginning
of an understanding of what mastering could really accomplish in the digital domain.
With these new digital tools, the mastering engineer had an unprecedented ability to
improve the sound, fix problems, and arrange tracks with greater precision and ease.

5.3.7 The Evolution of the Digital Era in Mastering

In mastering, the most significant advantage the digital domain offered over the
analog domain was reliable consistency in three key areas:

1. Copying the signal did not result in a generation loss or degradation from the
original. With digital signal processing (DSP), editing and assembly could be
done non-destructively and without sonic degradation.

2. The master created with the band or producer was always the same master used
in replicating CDs. Analog used a different acetate stamper disc after every
20,000 copies, resulting in inconsistent quality. In addition, the vinyl material
itself had a wide range of consistency issues that affected the quality of the sound. The CD had no media fingerprint.

3. Greater precision in digital signal processing was achieved due to the ability to save and recall settings used by the mastering engineer. This was of paramount importance if the producer or band wanted to compare different versions or make adjustments at a later time. The replication of settings was only approximated in the analog domain as there were many variables possibly affecting the sound that could not be precisely calibrated.\(^\text{124}\)

Another significant advancement in the mastering process was the development of new and better tools in DSP. The new hardware and software could equalize, adjust dynamics and phase relationships, and create new spatial relationships with more precision, superior fidelity, and greater editability than had ever been available in analog. The equalization and dynamic components from makers such as Neve Corporation and Daniel Weiss, and more recently iZotope and Bricasti, have given the mastering engineer improved tools in signal processing which have led to advances in the fidelity and quality of the master.

New tools were introduced in the early 1990s as well. In response to the needs of record companies and forensic laboratories, Sonic Solutions and Cedar were the first companies to develop restoration and noise removal hardware and software programs.

\(^\text{124}\) Many physical attributes influence the sound of analog equipment, including a tube or component replacement, atmospheric conditions and their affects on conductivity, as well as ordinary wear of components while working within factory specifications as wide as ± 5%.
These tools greatly expanded the resources of the mastering engineer with improved signal-to-noise ratios and the ability to minimize or eliminate defects with greater precision in targeting the processing.

5.4 The 1980s: The Seeds of Change

There were significant developments in the 1980s that would have many profound effects on the future of master domain music. At the time, most people saw only the gains these developments offered but examination of the bigger picture reveals some losses also.

- When the master expanded from audio-only to audio-video, there was arguably a new type of master that emerged. With this new master, the attention of the listener was split between image and sound and the degree of imagination engaged in the listening experience was diminished. This marked the end of the concept album.

- The major record companies had extraordinarily large cash reserves but concentrated their efforts on merger and acquisition rather than the business of scouting and developing artistic talent.

- In terms of technology, midi, the drum machine, and the sound module were great new tools that made it possible for the master domain home musician to
avoid the prohibitive expense of recording drums and other acoustic instruments. 

On the other hand, widespread use of these new tools led to a mechanized beat in much of the music created during this era.\textsuperscript{125} Studio jobs for musicians and artistic contributions made by musicians to a project were also being lost.

- With the advancement of digital technology and improved application, the CD continued to improve in sound quality. On the downside, no one noticed because they were focused on watching the video.

The nature of digital mastering and manufacturing is exact replication, which in the 1980s was not an apparent problem. The sophistication and expense of the manufacturing process made it difficult for a consumer to copy CDs. However, the consumer owned, in terms of sound quality, the equivalent of the master.\textsuperscript{126} This would become a central issue in the 1990s and will be discussed in the next chapter.

\textsuperscript{125} Ray McMahon, “Freddie Gruber Dies Aged 84,” \textit{Rich Chamberlain Rhythm Magazine}, last modified October 12, 2011, http://www.musicradar.com/rhythm/freddie-gruber-dies-aged-84-505560. Bec-bop drummer, Freddie Gruber remarked on this in an interview with Rush drummer, Neal Peart. Mr. Gruber said, “A lot of rock music is like a pogo stick, extremely vertical. You can have a beautiful body and look marvelous, but if you're not breathing, it's not alive.” [sic] 

\textsuperscript{126} Paul Lansky, “The Importance of Being Digital.” Dr. Lansky refers to the loss of a copying history which analog always possessed and digital does not. These are the developmental costs and benefits that are at the heart of the digital debate.
Chapter 6: 1994

6.1 Major Label Culture and Counter-Culture

1994 was a defining year for master domain music. It was the year many underground bands went mainstream with major label imprints. The underground bands profited from the major labels' access to broader markets and distribution. The major labels chose bands that were already established in their niche and capable of generating immediate revenue streams. It did not matter to the record companies what genre of music it was: melodic, commercial pop, or dark destructive metal alternative. They introduced small specialty labels that marketed the bands through the genre culture of the smaller label and, in so doing, were able to accommodate the many different musical styles. Some punk and indie artists like The Dead Kennedys, Fugazi, and Bad Religion condemned major label domination and started their own labels, launching the do-it-yourself (DIY) approach to music production and distribution.\(^\text{127}\)

Regardless, many alternative bands, following the lead of Sonic Youth, agreed to sign with a major label. Trent Reznor of Nine Inch Nails released *Downward Spiral* under the Interscope Label owned by Universal Music. Green Day released their breakthrough album, *Dookie*, under the Reprise Label (Warner Bros.). Alice In Chains released *Jar of Flies* on Columbia Records (Sony). Pearl Jam released *Vitology* on Epic Records

\(^{127}\) The independent or indie music record label is a record label setup and run by the artist(s) themselves for the promotion and distribution of their own music.
(Sony). These were all inspired, outstanding examples of master domain music and represent some groundbreaking work.

When these underground bands of the 1980s went mainstream with major label support in the 1990s, the major labels continued their tendency to exert control over the selection, promotion and, ultimately, the success of individual bands. They also, to a great extent, controlled the distribution of music. Smaller labels had to use these distribution channels to get their records into stores. As a result, it was practically every band’s dream to sign with a major label.128

The trend of master domain music corporatization also took hold in radio stations beginning in the late 1980s. The prime objective of radio stations was to sell time to advertisers and, because of this, their music and format were being shaped by the findings of marketing studies on how to enhance advertising sales.129 The Telecommunication Act of 1996 removed all limits on the number of AM and FM radio stations that could be owned nationally by one entity.130 Hence, most radio programming became syndicated. The media and record corporations controlled the music that was put into rotation on radio stations nationwide. This led to the elimination of local markets, regional music styles, and independent radio stations.

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128 It was the record label that could have the biggest impact on the career of a band. It must be said, however, that a new band’s contract with a major label was often extremely unfair to the interests of the band. This is an observation by the author based on experience running a recording studio in New York City from 1985 to 2006.

129 Danny Goldberg, Bumping Into Geniuses (New York: Gotham Books, 2008), 118. According to Mr. Goldberg, the idea of corporatization was coming primarily from the radio stations.

Another event momentous to master domain music in 1994 was the suicide of Kurt Cobain, whose death put him among the ranks of the 27 Club. Mr. Cobain's band, Nirvana, could not continue without his talent. His lyrics cut through what he perceived as the inordinate amount of accumulated social disease in our culture. This made him the icon of the disaffected youth of Generation X. A year before his death, Nirvana had released their third album, *In Utero*. The album combined Mr. Cobain's thorny lyrics with multi-layered and dynamic musical textures. Nirvana recorded and mixed the album in two weeks at Pachyderm Studio in Minnesota with producer Steve Albini. Due to the growing complexity of production in master domain music, completing an album in two weeks was a remarkable feat. The band was said to have been well prepared, rehearsing all songs in advance even though Mr. Cobain was still writing the lyrics up until the start of the first recording session. The recording and initial mixing went extremely well but finalizing the production stages leading up to the release of the record was not so easy. Disagreement about mixes, remixes, alleged interference by the record label, and complaints about the mastering created a whirlwind of discord that delayed the release of the album by weeks.

Another Seattle grunge band, Pearl Jam, followed in Nirvana’s successful path and made significant contributions to alternative music. In 1994, Pearl Jam went against the commercial mainstream by refusing to make music videos. Eddie Vedder, one of the

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131 The 27 Club is a term used in popular media and includes artists, celebrities, and musicians who died tragic deaths at the age of 27. Musicians in the 27 Club include Brian Jones, Alan Wilson, Jimi Hendrix, Janis Joplin, Jim Morrison, and Amy Winehouse.


founding members of the band said, "Before music videos first came out, you’d listen to a song with headphones on, sitting in a beanbag chair with your eyes closed, and you’d come up with your own visions, these things that came from within. Then all of a sudden, sometimes even the very first time you heard a song, it was with these visual images attached, and it robbed you of any form of self-expression." Mr. Vedder was confirming the observation discussed in Chapter 5 regarding the loss of the listener’s independently generated internal visual imagery caused by pre-fabricated narratives of music videos.

In 1994, Pearl Jam went against the commercial mainstream in another big way. The band filed a complaint against Ticketmaster with the United States Justice Department charging that the company had a monopoly on the concert ticket sales industry. The complaint was a difficult business decision for Pearl Jam because it meant that, without the support of Ticketmaster, the band was forced to cancel its 1994 Vs. summer tour.  

6.2 Nine Inch Nails

In the 1990s, grunge, industrial, and alternative rock movements expressed themselves with a voice that was different from the commercial music of the time. Nine Inch Nails is a good example of this divergence, pioneering the new genre of industrial

rock and making one of the last great concept albums in master domain music. By now, rock music had been around for over 30 years. Within this environment, Nine Inch Nails was able to craft an esoteric sound that became immensely popular, though not by possessing the universal appeal of earlier bands like The Beatles, Pink Floyd, or U2. Trent Reznor, the sole member of Nine Inch Nails, said in an interview, “Much of the musical style I was creating at the time was a reaction to the mainstream music I was hearing all around me.”136 In preparation for recording his 1994 album, The Downward Spiral, Mr. Reznor installed a professional studio in his home, the former Tate mansion in Beverly Hills where followers of Charles Manson had murdered Sharon Tate and her friends. The album explored dark themes of anger, violence, and grief. It was provocative music that found new sonic avenues and could be described as the voice of anguish in master domain music. “Hurt” and “Closer to God” are two tracks from The Downward Spiral that had particular resonance in 1994, as they still do in 2013. Following its release, the album did not receive a lot of airplay. Even though the lyrics were cleaned up to conform to decency standards of syndicated stations, the lengthy tracks with their somber subject matter probably did not align with many advertisers’ values. The Downward Spiral was promoted through extensive touring and supported by the fan-base Nine Inch Nails had amassed since the release of its first album, Pretty Hate Machine, in 1989. The Downward Spiral sold four million copies and has become one of the most acclaimed albums of the 1990s in master domain music.137

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Mr. Reznor’s composition of *The Downward Spiral* follows the distinct pattern of composition in master domain music. He would typically spend 14-hour days working on the tracks in his studio. Mr. Reznor stated, “(I wanted a record) that went in 10 different directions, but that was all united somehow.” Mr. Reznor was expressing the organizing principle of dependent arising that was applied to U2’s *The Joshua Tree* in Chapter 5. The Nine Inch Nails Wiki web page goes on to say:

The recording brought in a number of guest performers to record, including drummer Stephen Perkins who played drum parts that were recorded live in the studio. These tracks were then turned into sample loops. Reznor took a similar approach to recording guitar parts. Reznor would record 20 to 25-minute long sessions of himself playing guitar on a hard disc recorder with a Studio Vision sequencer, then would cut out parts of the recording he found interesting for later use. Reznor said, "Ninty-nine percent of the stuff we do – even vocals – is recorded into the computer (hard disk) first. We get an arrangement together and then dump it to tape."

This compositional description recalls the process of perceptual evaluation described in the previous chapter in relation to U2 (Fig. 5.1). With the evolution of new digital tools, Mr. Reznor had the ability to use the process of perceptual evaluation working as a solitary artist in the studio. He performed the role of recording artist, the band, vocalist, multi-instrumentalist, programing engineer, and, often, recording engineer. Although Mark “Flood” Ellis was the producer officially, everything was done in tandem with Mr. Reznor. Mr. Reznor is an artist worthy of attention because of his ability to skillfully assume practically every role in the creation of master domain music.

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139 Ibid.
The capacity to remain objective and produce a work of depth and quality was usually due to the collaboration of many people, but Nine Inch Nails was an army of one. Advances in technology such as the digital audio workstation (DAW) and advanced sampling capabilities helped Mr. Reznor achieve this. The process of perceptual evaluation was still an aural-based cycle beginning with a performance, a recording, listening, evaluation, editing, and then starting the cycle again. As in film production, the initial recording was simply raw material. This raw material was imported to the hard drive of a computer and appraised on a DAW that enabled the artist to edit the material in a non-linear fashion. Re-arranging, editing, and transformation would follow until the track was complete. Once complete, it was recorded back to tape.

6.3 The Arrival of a New Audio Format

The Moving Picture Experts Group (MPEG) was formed in 1988 in an effort to standardize digital video and audio formats. In the early 1990s, hard drives were just 500 to 1,000 mega-bytes (MB) in size and random access memory (RAM) was only around 4 MB. Because of these limitations, data compression was required in order for computers to play and store large video and music files. Lossy formats were developed, not to preserve data integrity, but to compress and condense data so that

\[ \text{Storing full value AIF or WAV files from a CD required 10 MB for every minute of music, making the size of the average CD approximately 550 MB. At the time, the maximum capacity of professional production hard drives was only 3 Gigabytes (GB).} \]
computers could play and store the files. For the first time, new audio formats were being developed by diverse research groups outside of the audio industry: physicists, electrical engineers, broadcast engineers, and computer programmers. The belief at the time was that the digital audio on a CD represented vast amounts of data about the sound that was beyond the limits of human hearing. As early as 1979, questions were being raised concerning how much information is enough to adequately represent a given sound or piece of music. Research on audio compression in the 1980s looked back to the earlier research of Manfred Schroeder and Bishnu Atal at Bell Labs. In 1967, Dr. Schroeder and Dr. Atal had pioneered work in linear predictive coding (LPC), a data reduction technique to transmit high quality speech at low bit rates for telephone lines. James Jameson continued the work at Bell Labs as research focused on the areas of perceptual coding and data compression in audio. Perceptual coding research used psychoacoustic models to discard or reduce precision of components less audible to the average person. Data compression research focused on finding the most efficient means to store the data. In 1993, the lossy format, MPEG-1, was introduced but was largely unsuccessful. Dr. Karheinz Brandenburg also began working on the

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142 There is much confusion between lossy formats and lossless formats. Lossy formats are compressed data formats that do not preserve the original data stream. Lossless formats preserve the original data stream.


145 MPEG-1 Audio Layer 1 was used by the Digital Compact Cassette format in the form of the PASC audio compression codec. PASC uses the rarely used (and under-documented) padding bit in the MPEG header to indicate that a frame was padded with 32 extra 0-bits (four 0-bytes) to change a short 416-byte frame into 420 bytes. The varying frame size only occurs when a 44.1 kHz 16 bits stereo audio signal is encoded at 384 kilobits per second, because the bitrate of the uncompressed signal is not an exact multiple of the bitrate of the compressed bit stream.
challenge of digital music compression\textsuperscript{146} and, in collaboration with The Franuhoffer Institute, introduced the first MPEG-3 (mp3) encoder in 1994.\textsuperscript{147} Dr. Brandenburg explained his work in a talk to the Audio Engineering Society (the parentheses are Dr. Brandenburg’s):

The basic task of a perceptual audio coding system is to compress the digital audio data in a way that the compression is as efficient as possible, i.e. the compressed file is as small as possible and the reconstructed (decoded) audio sounds exactly (or as close as possible) to the original audio before compression. Other requirements for audio compression techniques include low complexity (to enable software decoders or inexpensive hardware decoders with low power consumption) and flexibility for different application scenarios. The technique to do this is called perceptual encoding and uses knowledge from psychoacoustics to reach the target of efficient but inaudible compression. Perceptual encoding is a lossy compression technique, i.e. the decoded file is not a bit-exact replica of the original digital audio data.\textsuperscript{148}

This explanation shows that Dr. Brandenburg’s primary goal was efficient data compression within a codec. Although audio fidelity was important for testing, it was a secondary consideration. In the history of recorded sound, audio fidelity had always been the audio companies’ primary directive in developing new formats. This was still the case in 1996 when Sony and other audio companies launched the SACD. Computer and technology companies, on the other hand, had data compression as their primary objective. The mp3 file cannot be considered the same as the original PCM WAV or AIF file. It is a compromised audio format that was created for convenience with a data equivalent representation of 10% of the original WAV or AIF file. The CD’s audio


\textsuperscript{147} MPEG-2 was developed as a lossy compression format for video and audio.

\textsuperscript{148} Brandenburg, “MP3 and AAC Explained.”
delivery system, which was a leap forward compared to the compromised delivery system of vinyl, took a step backward when it adopted the mp3's audio delivery system. In addition to being compromised, this was a system in which a computer algorithm was deciding what was, and was not, important to the person listening to the music.

The mp3 was a compromised format but its small file size facilitated the sharing of music. Its popularity spread. It was also open source software, which meant that any developer could access and use the code for a nominal fee. The most successful music file sharing website was Napster. Launched in 1999, Napster offered its users a platform that gave them immediate access to music (both present and out of print) with unprecedented ease. In so doing, Napster and its users introduced a new price tag for music – free – and changed the definition of music from intellectual property to data file. With this development, the consumer was able to challenge a record company's rights to control the reproduction and distribution of music. The practice of music file sharing instigated one of the biggest challenges to the definition of copyright since the British Parliament passed the Statute of Anne in 1710.149 Many copyright infringement lawsuits were brought against Napster by the major record labels and the popular music file

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149 The Statute of Anne, passed by the Parliament of Great Britain, was the first statute to provide for copyright regulated by the government and courts rather than by private parties. The bill was granted Royal Assent on April 5, 1710, and became known as the Statute of Anne due to its passage during the reign of Queen Anne. The new law prescribed a copyright term of 14 years, with a provision for renewal for a similar term, during which only the author, and the printers to whom they chose to license their works, could publish the author's creations. Following this term, the work's copyright would expire and the material would fall into the public domain. The Statute of Anne is considered a watershed event in Anglo-American copyright history because it transformed a publishers' private law copyright into a public law grant. Under the statute, copyright was vested for the first time in authors rather than publishers; it also included provisions for the public interest, such as a legal deposit scheme. The Statute of Anne has influenced copyright law in several nations, including the United States. It is still invoked by judges and academics to this day as an embodiment of the utilitarian foundation of copyright law.
sharing website was legally forced to cease operations in 2001.

This event did little to stem the tide of file sharing. Napster-like technology was readily available and more music file sharing websites were already on the Internet. In addition, other countries did not automatically agree with the Recording Industry Association of America (RIAA), the organization representing major record labels. In Canada, for example, the Copyright Act of Canada from 1985 was upheld in 1997 in regard to sound recordings. It states that, “copying for the private use of the person who makes the copy onto an audio recording medium does not constitute an infringement of the copyright in the musical work, the performer’s performance or the sound recording.”

The proliferation of file sharing proved to be resistant to the influence of the RIAA, which asserted the record companies’ view that any change in the control of their music catalog was unacceptable. In an effort to protect their interests, the major record labels sought out downloaders and penalized individuals, yet they were reluctant to address the larger, more significant issue: the Internet was undermining their monopoly on the manufacture and distribution of master domain music. By the late 1990s, the entire delivery chain was changing. The control of a record label’s music catalog and flow of music had never before been challenged in toto.

6.4 The Rise of Apple as a Leading Distributer of Master Domain Music

Apple Inc. (formerly Apple Computer Inc.), under the leadership of Steve Jobs, saw in this environment an opportunity to enter the music business. Apple did not already have the necessary software in place, but in 2000 Apple bought SoundJam MP, which had already developed an easy-to-use, dependable computer music player and library. Apple made some small cosmetic modifications to the SoundJam platform and rebranded it as iTunes. Less than six months later, Apple introduced the first iPod, a new mp3 music player that integrated seamlessly with their iTunes program. Apple viewed the iPod as a “digital hub.”

Like all Apple products, the iPod was half the size of its competitors, exceedingly easy to use, and worked better than anything else on the market. Thanks to these attributes and the superior convenience it offered, consumers embraced the iPod immediately and enthusiastically.

Apple then turned its attention to the larger challenge of developing an iTunes Music Store to sell music online legally. Mr. Jobs spent the next two years negotiating tirelessly with the five major music labels to legally distribute their prospective music catalogs digitally. In 2003, Apple had secured contracts with all five companies and the iTunes Store was a winner as soon as it launched. In its first 18 hours of operation, iTunes sold 275,000 tracks and more than 1,000,000 tracks in its first five days.

With Apple’s success, innovation in audio was no longer being driven by the desire to achieve improved audio fidelity. Apple, a computer company that had combined digital convenience, ingenuity, and style, was now the music industry’s leader of innovation. By 2009, Apple Inc. had also surpassed all record companies as the largest distributor of music in the USA.\(^{153}\)

6.5 Creative Destruction in Master Domain Music: From Hi-Fi to My-Fi

The iPod was similar in function to previous personal stereos such as the Sony Walkman (analog cassette) and Discman (CD). Although the Walkman and Discman provided audio on the go, they never replaced the home stereo. The iPod would. In contrast to the Walkman and Discman, the iPod’s mp3 input connected to an internal hard drive with a capacity to store thousands of songs (most people’s complete music library) and this enabled unlimited self-selected content. No device from an audio company had ever offered this feature before. The iPod, paired with the iTunes library program, represented the computer industry’s concept of what a stereo system should be. It did not contain physical products like CDs or cassettes. Nor did it have large hardware receivers, CD players, speakers, or turntables with motors. The iPod streamlined audio to a revolutionary level of portability and convenience. Music could be added to an iPod as quickly as transferring a file to a computer or downloading an mp3 from the Internet. Creating a playlist on an iPod was fast and easy compared to making

\(^{153}\) Ed Christman, “Digital Divide,” *Billboard*, last modified May 22, 2010, http://www.billboard.biz/bbbiz/content_display/magazine/upfront/e3i12fe2557a9382597671a522cc1ce901d. *Billboard* reports on data for 2009 show Apple's iTunes Store as the largest distributor of music in the United States with 26.7% of the market, up from 21.4% in 2008 and 12.7% in 2007. Apple's lead was extended by second-place Walmart's drop from 15% to 12.5%.
a cassette mix tape, which was done in real time and usually considered a labor of love.

The iPod triggered a paradigm shift from hi-fi to my-fi. Many people sold their entire CD/LP collections and no longer wished to own a stereo. By 2005, the Apple iPod was the most popular audio device worldwide for listening to music (Fig. 6.1).

Fig. 6.1 iPod Sales Chart\textsuperscript{154}

\begin{figure}[h]
\centering
\includegraphics[scale=0.5]{ipod_sales_chart.png}
\caption{iPod Sales Chart}
\end{figure}

Another result of the hi-fi to my-fi paradigm shift was the elimination of the need for brick and mortar record stores. The reproduction and distribution of music were no longer controlled by the audio and record industries. Even if a listener never visited one of many illegal file sharing websites, by 2003 there were online stores and subscription services that enabled consumers to purchase music from the comfort of their own couch. On top of this, there was a new option for enjoying music: non-ownership. With access to the Internet, a listener did not have to own a particular track of music in order to play it. A great deal of music could be legally streamed without purchasing it. This was one of the attractions of YouTube. Physical media sales plummeted as digital download sales steadily rose. In 2011, only eight years after the launch of the iTunes Store, digital sales surpassed physical sales.155 156

The hi-fi to my-fi paradigm shift is an example of creative destruction,157 a term coined by Joseph Schumpeter, an Austrian-American economist, to describe the process in which a new capitalist economic structure arises from the destruction of the old. In this case, the many audio companies, record labels, record stores, audio production facilities, and stereo manufacturers were being replaced by computer manufacturing, technology, and software-based companies. The concept of creative destruction was originally alluded to in the work of Karl Marx. Mr. Marx wrote about annihilation (Vernichtung), an idea that went beyond creative destruction to imply that

156 If illegal downloading and digital music sharing were added to the data, the results would probably show that digital transmission surpassed physical distribution of music several years previously.
capitalism not only destroys and reconfigures previous economic orders. It must also ceaselessly devalue existing wealth in order to clear the ground for the creation of new wealth.\textsuperscript{158} In this case, the wealth of the major labels and the recording artist was being annihilated by the devaluation of the master. For record labels, their music is preserved on the master and their catalog is their most valuable asset. New technology enables consumers to set their own price for music. For artists, the devaluation of their work is evident in the fact that the average listener has between 2,000 and 5,000 songs on an iPod that is set to random play.\textsuperscript{159} In this environment, any song is interchangeable with any another. The changes in the new hi-fi to my-fi economic model have had far-reaching consequences. A few of these changes in regard to master domain music will now be examined.

6.5.1 New Listening Habits in the Age of My-Fi

In the age of my-fi, the music-listening experience has become completely individual and portable. A survey in 2009 found that most people listen to music on an mp3 player while they are in transit.\textsuperscript{160} The mp3 player also changed the way music was listened to. Now, instead of acquiring an entire album, listeners only purchased individual tracks from an album. In the first half of 2012, singles outsold albums by a

\textsuperscript{160} CNET Poll, accessed December 1, 2012, http://news.cnet.com/8301-13645_3-10356343-47.html. Based on a CNET Poll in 2009, over 33\% of people listen to music on their iPods, mp3 players or phones, with 25\% listening in the car, 23\% on computer, and 17\% at home on their hi-fi or home theatre.
The mp3 player’s random or shuffle function initiated a change in listening habits that had a tremendous impact on the listening experience. This function instructs the mp3 player to play songs from its internal music library in a random order, creating a listening experience comprised of a string of tracks with no continuity of artist, genre, or style. Also, the spacing between tracks on an album is eliminated when song files are imported to an mp3 player. This spacing was decided by the mastering engineer and helped define the pace of the album. Another effect of the iPod was to render all tracks to a similar loudness. "Sound Check" is a compressor circuit that raises the volume of softer tracks while reducing dynamic range and thus changing the intended sound of the audio track.

6.5.2 The Effects of My-Fi on the Sound of the Master

All these changes in listening habits and the listening experience had profound effects on audio production, especially during the mastering stage. Before proceeding with a discussion on mastering, terminology in metering (the way audio is measured) will be defined.\textsuperscript{162}


Volume unit (VU) is a term taken from the meter developed by Bell Labs, CBS, and NBC, and first used in May, 1939. The response of the meter relates to the perceived loudness of the audio due in large part to the averaging measurement characteristics of the meter. The VU meter is a voltmeter to measure the audio signal and has an attack/rise time of 300 milliseconds with standardized dB calibration (1.23 Volts = +4dB = 0 VU). On the VU scale, the sound doubles every 6dB.

Decibel (dB) is the preferred term for representing the ratio of different audio levels. It is mathematical shorthand that uses a logarithmic scale. In measuring sound pressure levels, phons and dB are used interchangeably where the sound doubles in intensity every 10dB.

Root mean square (rms) is the result of multiplying the RMS value of the voltage by the RMS value of the current in an electronic circuit. It is expressed in volt-amperes (VA) for reactive loads and can be expressed in dB on a peak level meter. It is another peak averaging signal representation to human hearing.

Dynamic range (DR) is the difference between the greatest peak value to that of the lowest peak value in an audio track as expressed in decibels (dB).

Peak level (dBfs) is an instantaneous measurement of the strength of a audio signal. It refers to the digital meter where 0db is the loudest definable point before clipping or distortion occurs. All values of audio definition on dBfs are negative or below the loudest value of 0. This measurement is not as useful in mastering because it is not an accurate representation of perceived loudness or distortion.

As explained in the previous chapter, mastering is the final stage of production and the process of creating the experience the listener has of the music. Mastering also seeks to take advantage of the capability of the delivery format. When the delivery format was vinyl, mastering engineers did everything they could to maximize the sound without overloading the medium to the point where it would cause playback problems. The vinyl medium had a limited dynamic range whereas the CD had a greater capacity for audio level and a wider dynamic range. As a result, audio levels on CDs began to increase slightly in the late 1980s and early 1990s then rose dramatically in the late
1990s. When listening habits started to change in response to the mp3, producers and artists looked to the mastering engineer to accommodate these changes. One of these accommodations was an increase in audio level, measured in RMS, VU, and dynamic range. Now that most people’s experience of music involved listening to a diverse selection from a library of singles, the bands, producers, record companies, and even the listeners, wanted the current track on their iTunes playlist or (random) shuffle to be as loud as the previous track. This has been referred to in mastering as “the loudness wars.”

Pushing the VU or RMS to new levels of loudness is possible only in the digital domain.

A mastering engineer today typically works with levels of +14 VU, which is on a logarithmic scale and represents sound levels that are nearly four times louder than vinyl. Although the digital domain offers an unprecedented dynamic range, music is much more compressed in mastering today, which has led to a reduced dynamic range. This means that lower level passages are lost. With the introduction of music that is loud all the time, a fatigue factor has developed. Listening to loud music on an iPod for sustained periods of time has also contributed to the hearing loss of many young people.

To illustrate how the sound of a master has changed, a comparison of excerpts from two tracks by the thrash metal band, Metallica, is presented (Fig. 6.2 and 6.3).

163 “Loudness War,” Wikipedia, accessed August, 16, 2012, http://en.wikipedia.org/wiki/Loudness_war. This article gives an overview of the many points of view regarding the “loudness wars.” In reality there was no “war,” just a general demand from iTunes users and suppliers to match or exceed comparative levels in their musical genre.

Both of these tracks are AAC downloads from iTunes. The first track, “Holier Than Thou,” was released on the band’s 1991 self-titled album, *Metallica*. The second track, “Broken, Beat & Scarred,” was released on the band’s 2008 album, *Death Magnetic*.\(^{165}\) Although loudness is typical of thrash metal music, a comparison between the loudness standards of these two tracks is insightful since one was produced before the introduction of the mp3 and the other was produced after. “Holier Than Thou” (1991) has peak readings at 0dB and RMS readings of -14dB with average VU of +7dB. “Broken, Beat & Scarred” (2008) also has a peak of 0dB, but has RMS readings of -8.75dB with average VU of +13dB. “Broken, Beat & Scarred” has RMS and VU readings that both show a gain of about 6dB compared to “Holier Than Thou.” This represents a doubling of the loudness level. Meanwhile, the dynamic range of “Broken, Beat & Scarred” has dropped from 11 dB to 5.5 dB, half of the dynamic range of “Holier Than Thou.” To summarize, the 2008 production is twice as loud as the 1991 production but has only half its dynamic range.

The mastering engineer of *Death Magnetic*, Ted Jensen of Sterling Sound, has been criticized over the years for his work on the Metallica album.\(^{166}\) In his effort to create the loudest master possible, Mr. Jensen sacrificed fidelity in terms of dynamic range, soundstage, and clarity of sound. Several critics have also complained about the digital distortion that resulted from pushing the audio level of the master beyond

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\(^{165}\) These two excerpts can be downloaded at https://www.yousendit.com/download/TEhWSXQ5WkJiR0pOeDhUQw.

optimal.\textsuperscript{167} Perhaps the question should be put to the fans of thrash metal music. Does the master of “Broken, Bruised & Scarred,” which is twice as loud but half as dynamic as “Holier Than Thou,” serve the music or create audio fatigue?

\textit{Fig. 6.2 Comparative Excerpts in Metallica 1991 and 2008 Recordings}

<table>
<thead>
<tr>
<th>Track</th>
<th>Peak</th>
<th>RMS</th>
<th>Dynamic Range</th>
<th>VU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holier Than Thou</td>
<td>0.0</td>
<td>-14dB</td>
<td>11</td>
<td>+7dB</td>
</tr>
<tr>
<td>Broken, Beat &amp; Scarred</td>
<td>0.0</td>
<td>-8.75dB</td>
<td>5.5</td>
<td>+13dB</td>
</tr>
</tbody>
</table>

\textsuperscript{167} Radio stations were unable to air the originally mastered tracks from \textit{Death Magnetic}. The record label had to ask another mastering engineer, Vlado Meller, to prepare a new master exclusively for radio station play. The extreme level of the original CD master was due in part to a “mastering shootout” between several top mastering engineers. The band presumably chose Ted Jensen because his work was the loudest in the competition.
Fig. 6.3 Comparative Excerpts in Metallica 1991 and 2008 Recordings
6.6 Fermeture: The Closing of the Commercial Recording Studio

From the beginning of master domain music, the domain of creation was the commercial recording studio. The recording studio developed at the crossroads of sound (physics), art (music), and science (electrical engineering). Standards advanced in each field of knowledge to ensure that the recording could be the best product possible.

The infrastructure of the recording studio was formidable. It included electrical design and refinement, which was tested and proven by many projects and sessions. The studio owners carefully chose, tested, and accumulated equipment produced by distinct manufacturers with their own teams of electrical engineers and research facilities. Finally, the infrastructure included acoustically correct rooms, designed by an architect and acoustician, which were usually built by specialized construction teams. It was no small effort or cost to put together a recording studio. The value of all this work in design and construction gave the recording artist confidence that what was recorded would be the best it could be.

With the ever-increasing processing power of personal computers in the early 2000s, as well as the development of digital audio workstation (DAW) software like Pro-Tools, the home studio grew in importance as the new production model for indie musicians. By this time, many recording artists were indie and circumventing the major record labels altogether. The perception of the indie musician was that he or she could buy all the recording tools they needed at a cheaper price than recording in a
professional facility. This idea was fuelled by the fact that digital recording tools were constantly improving and becoming less expensive. One factor the indie musician did not consider was that the DAW provided software tools only; it did not offer the accumulated knowledge, accumulated equipment or reliable infrastructure of a professional recording studio.

As more and more artists started recording at home, the utilization of commercial recording studios began to decline. Many professional recording studios were frequently overextended financially because of new equipment outlays and increasing costs of operating in major cities. When utilization dropped, there was a first wave of studio closings that included the more financially overextended studios. Then, major record labels like Sony, Universal, and BMG started showing heavy losses due to declining music sales. In an effort to cut costs, the major labels began shutting down their own production facilities. These studios were renowned for the quality of their personnel, as well as their acoustics, equipment, and history. This was the second wave of studio closings. After 2005, the liquidation of professional recording studios accelerated as other big and small commercial facilities went out of business. This was the third wave of studio closings. In the early 1990s, there were as many as 30 major commercial recording studios in New York City alone. In 2013, there are not many more than 30 major commercial recording studios in the world. Of these remaining studios, many do not rely solely on production as their main source of income. For example, Abbey Road Studios has developed a line of software plug-ins designed to emulate

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some of their famous analog hand-built sound modules. Many recording studios are
vanity businesses financed by revenue streams unrelated to the actual studio
business.\textsuperscript{169}

The closing of recording studios exemplifies the music industry’s loss of
infrastructure and the accumulated knowledge of music engineering principles. Much of
this knowledge was passed down orally through apprenticeship, the basic teaching
model of the studio. This knowledge is being lost because there are no more
professional studios to work in. The closing of recording studios was one more aspect
of the creative destruction in the music business as recording went from hi-fi (the
musician who records in a professional recording studio) to my-fi (the musician who
records in his bedroom).

6.7.1 Did Master Domain Music Really Change After 1994?

Dr. Joel Waldfogel did a study in 2004 entitled “Bye, Bye, Miss American Pie?
The Supply of New Recorded Music Since Napster.”\textsuperscript{170} His research study was an
investigation into the effect Napster had on the quantity of music. An offshoot of this
study defined a quality threshold based on annual album and song ratings by critics of
88 respected consumer and professional music evaluation services (e.g. Rolling Stone’s

\textsuperscript{169} Noble Street Recording Studios in Toronto is a premier facility that was opened in 2011 by
Henry Gooderham of Gooderham Real Estate, one of the largest real estate development companies in Toronto. The massive investment to build the studio was privately financed.

\textsuperscript{170} Joel Waldfogel, “Bye, Bye, Miss American Pie? The Supply of New Recorded Music Since

The Era of Master Domain Music 1964-1994
500 best albums, Pitchfork Media’s 200 best albums of the 1990s, etc.). He used multi-year ratings in order to gain a greater perspective of the last 45 years and was able to document the changes in critical acclaim of new releases for each year. For example, The Rolling Stone Index (Fig. 6.4) of critically acclaimed albums peaked in 1969, fluctuated over the next 14 years, recovered in the first half of the 1990s, then decreased sharply. Almost all the other music evaluation services showed results similar to the Rolling Stone Index. Dr. Waldfogel came to the conclusion that the quantity of economically consequential work has remained constant but music critics and listeners agreed that the quality had decreased.

*Fig. 6.4 Rolling Stone Index of Critically Acclaimed Albums*\(^{171}\)

As discussed earlier in this chapter, the two critical factors in the music industry’s creative destruction were a change in the production model due to the availability of

\(^{171}\) Ibid.
inexpensive software production tools and the development of the Internet. These changes led to the complete democratization of master domain music. In 2013, anyone with determination and a computer can record, create videos, and market their own music with no need of the previous paradigm founded on the recording studio and the record company.\footnote{Bill Weir, “Macklemore: Mega Success, Not by Music Industry's Book,” \textit{Nightline}, ABC News, first broadcast June 10, 2013, accessed June 18, 2013, http://abcnews.go.com/Nightline/video/macklemore-mega-success-music-industries-book-19370266.} As the number of indie labels ballooned in the 2000s, the role of all record companies continued to change. By 2013, midsize record labels have been bought out by major labels or forced to close, as there is substantially less profitability in music’s new business model. The major record companies have also consolidated and, in most cases, no longer nurture talent or work to achieve higher quality in music composition or production. As the Rolling Stone Index indicates, the quality and critical acclaim of contemporary music falls significantly below that of music released between 1964 and 1994.

In his article, “The Songs of Now Sound A Lot Like Then,” Simon Reynolds, music critic for the New York Times,” writes:


Perhaps when there is a decrease in the number of critically acclaimed albums,
as found in Dr. Waldfogel’s study, music artists look to the past for inspiration. According to Mr. Simon’s article, the distinguishing factor of music in the 2000s is the extensive use of Auto-Tune in the vocal lines. Auto-Tune or pitch correction is the digital process of changing or correcting the intonation of an audio signal without affecting other aspects of its sound. Pitch correction detects the pitch of an audio signal (using a live pitch detection algorithm), then calculates the desired change and modifies the audio signal accordingly.

The “fading of newness and nowness” can also be seen in the copious use of sampling\textsuperscript{174} and the growing number of mashups being produced in 2013.\textsuperscript{175} Music sampling is the process of using a short segment of a previously recorded song or instrumental track in a loop that is incorporated as an element in a new composition. The mashup uses larger, immediately recognizable segments of two or more songs to create a musical collage that is presented as a new piece of music.

6.7.2 Quality in Audio Reproduction After 1994

Along with the decline of audio quality in the production of master domain music, there has been a decline in the fidelity of reproduction. A simple A/B listening

\textsuperscript{174} Sampling is so pervasive in current music creation that independent CD manufacturers make the effort to inform their indi-musician-clients on copyright and licensing laws. For example, in a blog article entitled “Practice Safe Sampling – Copyright, Licensing and Your Music,” Disc Makers “dive into the murky waters of legality and copyright ownership.” Accessed July 19, 2013, http://blog.discmakers.com/2013/01/copyright-licensing-and-your-music/.

\textsuperscript{175} The popularity of mashups has spawned many top 30 and top 40 lists, such as Too Good For Radio’s “The 30 Best Mashups of 2013 So Far,” accessed July 19, 2013, https://soundcloud.com/toogoodforradio/sets/the-30-best-mashups-of-2013-so.
A comparison of the iPod and other audio information (IA) devices reveals this loss of fidelity.

On a technical basis, generating enough power to represent the dynamic audio program from a low voltage source is difficult, if not sometimes physically impossible. Second, the unbalanced electrical design of most IA devices allow for higher noise levels and lowered dynamic range. The analog component side has a typical signal-to-noise ratios measure in the 60 to 70dB range (re -20dBFS), which is a loss of 10dB compared to even older portable CD players. IA devices also tend to suffer from non-flat frequency responses (mid-bass and mid-treble boost being the biggest offenders) with limited low frequency response (typically rolled off beginning at 60Hz apparently to compensate for substandard headphones) and some high frequency responses rolled off as low as 5kHz. The line outputs can offer a slightly better frequency response and noise level ratio than headphone outputs but the fidelity still suffers from the low quality D/A converter.

This lack of audio quality is compounded by the compromised, lossy formats of the mp3, mp4, and AAC. These lossy formats are no longer obligatory today as the cost of hard drive storage has fallen significantly and capacity has increased exponentially since the early 1990s. Lossy formats add noise, mask frequencies, and drop least significant bit (LCB) information when encoding. The result is loss of detail, increased noise, a smaller soundstage, and distorted frequency representation, all of which contribute to audio fatigue.
Keith Negus, in his book *Music Genres and Corporate Cultures,* states as a central premise that “an industry produces culture and culture produces an industry.” The my-fi audio industry has its inspiration and innovation rooted in the computer industry. It has produced a computer culture that tends to make contributions to technology rather than innovations in music. Within this environment, music is a by-product and so it is not surprising that there has been a downturn in the production of critically acclaimed music. This explains why a music critic for the New York Times considers Auto-Tune to be the most distinguishing characteristic of music in the 2000s. It also explains how the iPod came to represent a computer culture’s version of the stereo. It is remarkable technology that enables a person to have 5,000 songs, easily accessible for listening, in the palm of their hand, even if that music is sonically inferior to the fidelity of a CD.

6.8. 1994: Summary

In this chapter, a discussion of the context of master domain music has shown the remarkable socio-economic changes that have taken place and their effect on the entire music industry: the way music is produced, recorded, mastered, distributed, publicized, and consumed. The greatest detriment to the growth of the industry was the devaluation of the master. This occurrence ushered in an era where the sale of music, previously the *raison d’être* of recording artists and music businesses, can no longer provide sustainable revenue. In 2002, Jeffrey Remedios launched an indie record label,

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Arts and Crafts, based on a new business model in which the record label and its artists shared profits equally. Mr. Remedios has said, “When we started Arts and Crafts, recorded sound revenues accounted for, on average, about 96% of the revenues for an artist. In 2012, recorded sound accounts for about 35% of most artists’ revenues.” The other 65% of their revenue comes from sources such as licensing fees from corporate advertising, film or television placement, and merchandise sales.

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Conclusion

Master domain music is a new art form brought about by the advancement of recording technology and extensive collaboration between the recording artist, producer, and studio engineers. It is the inscription of what happened in the process of transforming a blank recording medium into a final recorded master. The master is the product of this new art form and it preserves the music in its definitive form. The master itself has become so important that live performances now often consist of lip-syncing and instrument-syncing. This is because it is not possible to reproduce live what was created in the studio or the artist may not want to take the risk of giving an imperfect, unplugged performance. In 1989, MTV coined the term “unplugged” to describe a series of concerts in which bands performed more intimate, often acoustic, versions of their music in a relatively small venue. Today, unplugged could also be understood to signify “unplugged from the master.” Listeners have become so attached to the sound of the master that a qualifying term has to be used to describe live performances in order to adjust audience expectations.

Master domain music was a step forward in the delineation of everything down to the finest detail and the preservation of the entire creative process. It did not use the


179 Author’s term.
Western Art Music tradition of a score. The process of composition involved working directly with the sound. This had two profound ramifications on composition. Firstly, artists may have had a starting point to begin work on a song or project, but there were no a priori decisions about what would happen in the creative process. This allowed the artists to preserve relationships as they evolved, defined the process of perceptual evaluation discussed in Chapter 5, and eliminated the need for a music score. Secondly, in working directly with the recorded sound, the process of music composition began to resemble the creative process of the plastic and visual arts as described in Chapter 3. This eliminated the need for a creator of master domain music to be schooled in Western Art Music traditions of counterpoint, orchestration, and notation. Many master domain musicians could not read music. This was a liberating factor for creators of master domain music because it meant that they were less encumbered by the rubric of Western Art Music traditions and notation.

In conclusion, the era of 1964-1994 in master domain music represented an ideal balance between artistic creativity and technical innovation in the creation of music. This balance served to advance the complexity of the art form very quickly. Every new project built on the collective accomplishments of previous projects. In the 1960s and 1970s, the recording technology had to be re-fashioned or, in some cases, invented to meet the demands of the musicians and the music. Sonic imagination inspired new

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Phillip Norman, *John Lennon, The Life* (New York: Harper Collins Publishers, 2008), 140. It is well known that John Lennon and Paul McCartney were unable to read music. As teenagers getting together after school to compose songs, they wrote down lyrics but they had to commit melodies to memory. If they remembered the tune, the piece was considered good and they would perform it at the Liverpool dancehall; if they couldn’t remember the tune, they would just start a new piece. At this budding stage in their career, their memory played the part of the recording studio and emphasized the ability to write songs with a memorable hook.
technical innovation, which inspired new creative work. This is demonstrated by each of the works discussed in this dissertation. For example, Chapter 2 discussed how Mr. Hendrix introduced several innovations in electric guitar sound and techniques that would eventually lead to his expression of the electric church. The electric church inspired a whole body of creative work by Mr. Hendrix. Then, his accomplishments inspired a new generation of guitarists to adapt and advance the technology for their own expression and creativity. As discussed in Chapter 3, The Beatles were pioneers in the recording studio and one of the few bands that became exclusively master domain musicians. Recording innovations were needed to accommodate the expression of the imaginative ideas and sound they were creating. Chapter 4 outlined how Pink Floyd was inspired by many innovations from *Sgt. Pepper’s Lonely Hearts Club Band* when creating *The Dark Side of the Moon*. Technologically, they went beyond what The Beatles had done by developing their own innovations in mixing and recording. Pink Floyd required technical innovation to accommodate a vision that incorporated cinematic elements and a strong internal visual image. Building on the innovations and creativity of Pink Floyd, Brian Eno found creative new ways to produce U2’s album, as discussed in Chapter 5. Together, he and the band constructed sound to describe an emotional and physical space and then challenged themselves to create original music using extensive recorded jamming as their building blocks. In doing so, they demonstrated the Buddhist idea of dependent arising, the realization of emptiness, in a song. All of these albums used imagination and innovation to create a new vision and a new sound in master domain music.
During the era of 1964-1994, the infrastructure of the entire music industry supported this creativity and innovation. The contributions of many people went into creating new technologies, realizing creative ideas in the master, and developing an artist’s sound. It was the symbiotic relationship between the artist, the recording studio, and the record label that created the successes of this era. Richard Peterson further defines this relationship in his article, “The Production of Culture.” Mr. Peterson describes creative work in the old-school recording label paradigm as “the structural arrangements within which innovators work” rather than “the rare genius of a few select people.”

This symbiotic relationship was evident in the career of The Beatles. These four musicians were very talented, imaginative, and worked well together as a band for many years. Nevertheless, without the career vision of their first manager, Brian Epstein, the contributions of their EMI producer, George Martin, the staff at the EMI recording studio, and the many other people at their record label, there is no reason to believe that The Beatles would have exerted such an extraordinary musical, technological, and cultural influence within a span of ten years.

Since 1994, the balance between creativity and technology in master domain music has disintegrated. Current music software technology is so advanced that creators have become complacent, a characteristic incompatible with creativity. This begs the question: what will master domain music sound like in the future? There are still plenty of great songs to be written and many talented writers and musicians working at present but there are also significant challenges to achieving excellence today. Record companies no longer develop talent or trends. They follow them. This leaves

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the musicians and bands with the responsibility of developing their own talent. To do so requires funding and the right critical guidance, two commodities not easily accessible to a fledgling band. Once a musician has developed his or her talent, there is the challenge of finding a competent producer and a proficient studio to create a professional-grade product. Great producers and recording studios are becoming scarcer every year. Once the artist or band has a new album, there is the challenge of rising above the noise of today's indie music world. Every band and singer around them is shouting as loud as they can, in every social media outlet, to find fans and have their product heard. Even if the band is heard and has gathered a following, they have to provide free downloads, which means giving their music away. As discussed in Chapter 6, the devaluation of the master is an unsustainable business model and has led musicians away from music to other revenue streams such as fragrance and fashion lines. This is the conundrum that has confronted artists in their efforts to move forward in master domain music since 1994. Perhaps Brian Eno said it best:

I think records were just a little bubble through time and those who made a living from them for a while were lucky. There is no reason why anyone should have made so much money from selling records except that everything was right for this period of time. I always knew it would run out sooner or later. It couldn't last, and now it's running out.¹⁸²

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