Title
An Emotive Mechanism: Phonographic Wonders and Possibilities at the Turn of the 20th Century

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Publication Date
2012

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

An Emotive Mechanism:
Phonographic Wonders and Possibilities
at the Turn of the 20th Century

A dissertation submitted in partial satisfaction

of the requirements for the degree Doctor of Philosophy

in History

by

Gustavo Alberto Garza

2012

ABSTRACT OF THE DISSERTATION

An Emotive Mechanism:
Phonographic Wonders and Possibilities
at the Turn of the 20th Century

by

Gustavo Alberto Garza
Doctor of Philosophy in History
University of California, Los Angeles, 2012
Professor Theodore M. Porter, Chair

This dissertation examines the intellectual and cultural reception of the phonograph at the turn of the 20th century in Western Europe and the United States. My main goal in this project is to investigate the varied reception of the phonograph by different constituencies, such as scientists, cultural critics, ethnomusicologists, and musicians. From apprehension to enthusiasm, the phonograph generated a diverse set of reactions amongst its users and listeners. In order to better understand this range of responses to the sound-recording device, I utilize the theory of the automaton as an important reference point throughout this dissertation. In scientific, musical, economic, and fictional contexts, the phonograph was imbued with life-like characteristics by its users, which stirred fear in some and excitement in others. This perception of the phonograph to be uncanny – to be both mechanical and somehow alive – shapes the focus of the dissertation and demonstrates how a seemingly simple device managed to destabilize

traditional notions about human identity. The perceived ability of the phonograph to preserve and reproduce the human voice in isolation from its bodily source raised fundamental questions about what it meant to be human at a time of unprecedented technological and cultural change. The various manifestations of modernization transformed the human experience of time and space. As a consequence, the phonograph became part of this reconceptualization of the human experience in a plethora of human activities. The first part of the dissertation examines the positioning of the phonograph as a doubling agent in the domains of stenography, law, and music. It then explores how the phonograph shaped Thomas Edison's ideas about the structure of the universe and the possibilities of immortality. The second half of the dissertation looks at the role of the phonograph in the domain of ethnomusicology – in both the United States and England – and how it impacted debates over musical authenticity and the practice of scientific objectivity. In its various applications, the phonograph elicited a spectrum of emotions and this dissertation explores the critical first 20 to 30 years of the phonograph before it became a commoditized playback machine in the early 1900s.

The dissertation of Gustavo Alberto Garza is approved.

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2012

CONTENTS

ACKNOWLEDGMENTS

This dissertation would not have been possible with the support of my committee members, my family, and my wife.

I would like to express my deepest gratitude to my dissertation advisor, Professor Theodore M. Porter for his guidance, critical eye, and encouragement. Throughout my graduate studies, he engaged and challenged me in ways that deepened my writing and thinking. From his thoughtful questions to his steadfast enthusiasm, he created an ideal supportive and encouraging atmosphere. I thank him for his commitment to me and for the guidance necessary for the completion of this project.

Lastly, I want to thank my wife Carolyn. She supported, listened to, and tolerated the many dimensions of this academic project. Her unwavering love and patience are a testament to the powerful role she played in this undertaking. For that, I am extremely grateful.

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Introduction

Chapter One:

An Ambivalent Welcome

Francis Burraud's 1899 painting *His Master's Voice* depicts a dog, Little Nipper, obediently listening to his owner's voice reproduced with a phonograph. This iconic marketing image employed by a variety of phonograph and gramophone companies at the turn of the 20th century conveys a sense of playfulness and amusement, and a simple narrative of a marvelous new technology effortlessly accommodated into modern daily life.[1] But the inclusion of the phonograph into Anglo-American intellectual and cultural life at the turn of the 20th century did not occur so easily. An examination of different constituencies that responded to the presence of a new technology in their own respective fields raised many questions about what the phonograph was and what it signified for society as a revolutionary technology. At the core of this uncertain and enthusiastic attitude towards the phonograph was a concern for the uniqueness and integrity of human identity.

This dissertation addresses how the phonograph – also known as the "Talking Machine" during the 1890s – disrupted accepted notions about human identity. It explores a variety of different perspectives in order to better capture the moment in the phonograph's history when its role as simple and successful playback machine had not

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[1] Leonard Petts, *Story of Nipper and the 'His Master's Voice' Picture,* (Bournemouth: The Talking Machine Review International), 1973. This type of narrative can also be found in Roland Gelatt, *The Fabulous Phonograph, 1877-1977*, (New York: Macmillan, 1977).

been firmly established, which occurred in the early 1900s.[2] The initial 20 to 30 years of the phonograph – when the phonograph was able to both record and playback – generated a great amount of excitement and fear over its potential usurpation of human qualities.[3]

The role of the phonograph in popular music was far from clear in the early 20th century. William Kenney's *Recorded Music in American Life*, a cultural study of sound reproduction, examines how the phonograph shaped ideas about popular memory from 1890 to 1945. Kenney points out that the tastes and demands of a modern population played as important a role as the music recording businesses in determining the role of the phonograph in American musical life.[4] Should it be an entertainment machine or a means of spreading musical taste throughout the country? Was it a musical instrument? Answers to these questions came from different groups and individuals, who all had specific agendas, whether economic, cultural, or intellectual. These responses, which I explore in this dissertation, were steeped in larger cultural and intellectual conversations over the state of music education and artistic development in a modernizing society.

Recent scholarship has examined the early reception of the phonograph during these important shifts in cultural and intellectual history. Jonathan Sterne's

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[2] By the first decade of the 20th century, the phonograph and gramophone slowly began to become permanent fixtures in homes as well as public venues, so much so that these new technologies were being designed to fit into unobtrusive furniture pieces. For more on the distribution of sound recording technology across the United States and the stiff competition between Thomas Edison and other entrepreneurs, see Mark Katz, "Making America More Musical through the Phonograph, 1900-1930," *American Music* 16, no. 4, (Winter 1998): 448-476.

[3] Edison's phonograph company would hold out the longest in terms of allowing its phonographs to have a recording and playback capability. Other companies, such as the Berliner Gramophone Company (1895), did not allow the recording ability for its gramophones. Users would only be able to playback purchased music discs, which could be acquired through regularly published music catalogues. In the end, the disc method of the Berliner Gramophone won out, due to overall cost and efficiency of production.

[4] William Howland Kenney, *Recorded Music in American Life: The Phonograph and Popular Memory, 1890-1945*, (New York: Oxford University Press, 1999), xii-xiv.

comprehensive study of sound reproduction from the mid-19th century to the early 20th century explores the historical conditions necessary for the development of sound reproduction technologies, such as the phonograph and radio. He demonstrates the emergence of new ideas about sound and hearing, which included a re-examination of the physiological process of hearing as well as the breakdown and study of sound into a discrete physical entity. These new ideas about sound were made possible by larger cultural re-orientations regarding time and space. New experiences of time and space, brought on by the technological products of modernization, forced individuals and societies to confront and make sense of the unprecedented achievements brought on in the transportation and communication revolutions of the 19th century. Electrical systems of power and lighting, which represented part of the reconfiguration of time and space, connected previously isolated regions to one another with power lines and stretched out the duration of daylight with Edison's improved incandescent light bulb. Additional developments, including the telegraph, the telephone, faster ships and trains, universal standard time, bicycles, automobiles, and efficient manufacturing techniques, contributed to the collapsing of time and space, creating far-reaching experiential shifts, which required new conceptualizations of the basic dimensions of human experience.[5] In all of these fields, the fundamental assumptions of the human experience were re-examined, including the human act of listening to the process(es) of modernization. As Sterne puts

[5] Stephen Kern, *The Culture of Time & Space, 1880-1918*, (Cambridge: Harvard University Press, 1983), xi-xiv.

it, "sound and hearing were reconceptualized, objectified, imitated, transformed, reproduced, commodified, mass-produced, and industrialized."[6]

This new attitude towards sound manifested itself in different ways. In the mid-19th century, scientists both in Europe and the United States intensified their study of sound, with a particular focus on the human voice and the reproduction of vowel sounds through mechanical means. Alexander Ellis's *Alphabet of Nature* (1845) and Hermann von Helmholtz's *Tonempfindungen* (1863) epitomized a theoretical study of sound and speech, which attempted to establish the basic principles of sound production and experience.[7] In the United States, Joseph Henry, physicist and the first Secretary of the Smithsonian Institution, conducted experiments on the absorption of sound by different materials.[8] In the 1870s, he developed a relationship with Alexander Graham Bell due to overlapping interests. Bell was working on ways to best visually represent sound. In 1874, after learning about experimental work on the visualization of sound conducted at the Massachusetts Institute of Technology, Bell announced his "ear phonautograph," a fusion of mechanical pieces and an ear and its accompanying parts from a cadaver, as "the most accurate mechanism for recording sound."[9] Here, sound was detached from its source and treated as its own unique entity, as an independent phenomenon in the physical environment that could be studied and defined.

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[6] Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction*, (Durham: Duke University Press, 2003), 2.

[7] Thomas L. Hankins and Robert J. Silverman, *Instruments and the Imagination*, (Princeton: Princeton University Press, 1995), 203-209.

[8] Emily Thompson, *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1930,* (Cambridge: MIT Press, 2002), 25-27.

[9] David L. Morton Jr., *Sound Recording: The Life Story of a Technology,* (Baltimore: Johns Hopkins University Press, 2004), 3-4.

The theoretical and experimental study of sound during the 19th century had direct ramifications for society as emerging experts on sound began to examine the new collection of sounds inherent in a modern city. An important consequence of this innovative approach to sound is captured in the argument made by both Emily Thompson's *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1930* and Jonathan Sterne's *The Audible Past* that the modern soundscape, as much as the visual landscape of an urban city, had a significant role in shaping the modern social experience.[10] In addition to visual changes in an urban landscape replete with faster travel, impressive physical structures, and photographic preservation, the sonic experience of the modern world created a fundamentally unprecedented audible landscape as the sounds of industrialization and urbanization filled factories, residences, city streets, and the ears of city inhabitants.

John Picker points out in *Victorian Soundscapes* that, in contrast to the Romantic tradition, which maintained an attitude of intrigue and mystery towards music, late Victorian culture turned sound into a "sonic commodity" which was consumed on a daily basis in Victorian life.[11] This consumption included the appropriation and aestheticization of street music and urban noise by a new set of professionals, including artists and writers such as George Bernard Shaw and Charles Dickens, who had to establish their legitimacy and place in the immigrant-filled streets of London and other major European cities.[12] Young artists and writers, needing to turn their home space(s)

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[10] Emily Thompson, *The Soundscape of Modernity*, 10-11. Jonathan Sterne, *The Audible Past*, 2-3.

[11] John M. Picker, *Victorian Soundscapes*, (New York: Oxford University Press, 2003), 10.

[12] John M. Picker, *The Soundproof Study:* "Victorian Professionals, Work Space, and Urban Noise," *Victorian Studies* 42, no. 3, (April 1, 1999): 427-435.

into quite, productive workspaces, could not ignore the urban symphony outside their doors and windows. They initiated their re-conceptualization and coexistence with the aural characteristics of the urban scene with a civic engagement of the local law. Even though early attempts at street music legislation in London failed, the young fin-de-siècle professionals did not surrender completely. They adapted themselves to the situation and romanticized the sounds of modernization as essential ingredients in their work and as remnants of an earlier past where sound and human expression circulated freely.

But, not everyone acquiesced to the noise. By the end of the 19th century, campaigns against the noise generated by industrial urbanization gathered momentum both in the United States and in Europe, which led to anti-noise ordinances to be established in major metropolitan areas for the sake of public health.[13] Bureaucratic institutions in concert with concerned intellectuals, and with Progressive groups in America, felt that the noise pollution of traffic, industry, and people represented a direct threat to silence, the feature of an advanced society signifying cultural and intellectual progress. Noise abatement societies in both Europe and the United States managed to pass legislation that monitored and reduced hazardous noises in the early 1900s, and did so to create an urban space that protected the silent, serene environment required for cultural development.

Sound, being a discrete entity that required rationalization, interpretation, and management in both public and private life, thus became a critical player in the formation

[13] Derek Vaillant, "Peddling Noise: Contesting the Civic Soundscape of Chicago, 1890-1913," *Journal of the Illinois State Historical Society* 96, no. 3, (Autumn 2003): 259. Karin Bijsterveld, "The Diabolical Symphony of the Mechanical Age: Technology and Symbolism of Sound in European and North American Noise Abatement Campaigns, 1900-1940," in *The Auditory Culture Reader*, Les Back and Michael Bull, eds., (New York: Berg, 2003), 165-189.

of social identities. The cultural and intellectual elite, who construed the closeness and loudness of the urban environment as a threat to their physical space, which was supposed to be their quite place of serious work, reacted differently to the new urban setting than the young professionals, middle class, or working poor. The fashioning of new relationships to the public sounds of modernity even trickled down to the personal level. And this is the level where the relationship between sound, human identity, and technology forced a re-examination of the fundamentals and uniqueness of human beings.

The phonograph, because of its unprecedented ability to separate the human voice from the body, intensified both the enthusiasm and tension over newly formed relationships to sound. It symbolized the mechanical ingenuity of the modern age and seemingly preserved the sanctity and vitality of human expression, while at the same time intellectuals associated it with unrefined street music and the noise pollution of trains, factories, and people. Previous technologies, such as the telegraph and telephone, allowed for the movement of the human voice and information over long distances, but what distinguished the phonograph was its ability seemingly to preserve the "unforgettable," yet easily lost temporary human voice with mechanical ease. One way that this complex relationship manifested itself was the fascination of using the phonograph to record family voices for posterity.[14] In addition to the basic functions of voice or musical recording for the purposes of record keeping or entertainment, the phonograph ushered in a new ideal of remembrance, which included the preservation of the human voice before death took a person away from loved ones.

[14] Gaby Wood, *Edison's Eve: A Magical History of the Quest for Mechanical Life*, (New York: Anchor Books, 2002), 128-129. Louis Kaplan, "Where the Paranoid Meets the Paranormal: Speculations on Spirit Photography," *Art Journal* 62, no. 3, (Autumn 2003), 18-29.

The detachment of the human voice from the body, although genuinely desired by those seeking to cheat death, encapsulated competing notions about the nature of human identity. The very separation of the voice from the body disrupted long-standing predilections regarding the deep and indissoluble connection between a human being and his or her voice. The phonograph brought into contact the 19th century ideals about the whole, rational and self-made individual of the romantic era with new modern notions about human beings, including ideas of behavioral determinism, fragmentation and the unconscious. The idea that human behavior could be reduced to a set of deterministic laws or that certain components of a person's identity remained separate from or inaccessible through one's own consciousness jeopardized traditional assumptions about the whole, rational individual able to exercise free will. These competing notions, explored both in literature and philosophy, generated questions and alternative perceptions about the nature and identity of human beings.

The phonograph inspired feelings of excitement, tension, ambivalence, and uncertainty as its supporters advanced the Edisonian marvel into different domains that directly affected an individual's identity. A variety of authors explored the mixed emotions surrounding the phonograph and a common theme that emerges in their stories is the frailty of human identity. Literary scholars have explored in detail the role of the phonograph or gramophone in novels and short stories as well as in the real lives of modernist intellectuals. Sebastian Knowles in, "Death by Gramophone," examines how writers associated with and responded to the phonograph. He explores the writings of T. S. Eliot, James Joyce, Thomas Mann, Theodor Adorno, Walter Benjamin, and Jacques Derrida and traces the mixed emotions triggered by phonographic recordings. In

particular, they expressed apprehension over disembodied voices and claims made to immortality by phonograph advocates, which they saw as both a serious threat to their writing as well as a cheap imitation of art that jeopardized the very sacredness of the "real." Even as they raised the phonograph upon a pedestal and saw it as "a Faustian wonder of modern technology," they also saw through the phonograph's theatrical process of preservation as merely imitative and thus, not a genuine re-creation or source of art.[15] This dual understanding of the phonograph, including feelings of anxiety, and even terror for some, as well as absurdity, captures the conflicted response to the phonograph. But, contrary to the idea that the phonograph alone was responsible for generating this feeling, this dissertation will survey the ways that the phonograph amplified underlying insecurities regarding identity for artists and intellectuals, who felt that the modern processes of mass production compromised the authenticity and legitimacy of their identities.[16]

A major part of the mixed response to the introduction of the phonograph in intellectual and popular culture can be located in the larger historical context of Anglo-American culture where secularism and spiritualism co-existed in a precarious balance during the 19th and into the early 20th centuries. Contrary to the idea that Anglo-American society underwent a focused process of pure secularization throughout the last

[15] Sebastian D. G. Knowles, "Death by Gramophone," *Journal of Modern Literature* 27, No.1/2, (Autumn, 2003): 5. John Picker, in "The Victorian Aura of the Recorded Voice," *New Literary History* 32, no. 3, (Summer 2001): 769-786, also examines authors, such as Mark Twain, and their conflicted response to the applications of the phonograph in the world of literary production.

[16] Even though this project explores both the United States and England, this is not a comparative project. The similarities in debates, themes, subject matter on both sides of the Atlantic makes this project a trans-national project. The primary source material supports this approach, as does the approach taken by a variety of historical and literary scholars, who have explored the culture of sound and sound technologies in the 19th and 20th centuries.

half of the 19th century, different groups in Anglo-American society found ways to redirect and "rematerialize" their fascination with folklore, spiritualism, and the other intangible elements of culture. T. J. Jackson Lears explores this cultural change in the American context and argues that the "antimodern impulse," detectable through different facets of American society, was not a simple rejection of secularism, materialism, or positivism, but rather "ambivalent" and "part of a much broader quest for intense experience."[17] This desire for a more genuine experience of life in an ever-increasing mechanical and anonymous society, to be found on both sides of the Atlantic, manifested itself in the creation of different social and intellectual organizations, which found ways to integrate the mysticism, religion, and occult into their management of modern life. The emergence of spiritualist celebrities such as the Fox sisters and the establishment of the Theosophical Society, the American Society for Psychical Research, and the Society for Psychical Research in England, demonstrate how the cultural and intellectual values of the ideal and the transcendent rooted in the Romantic period were mobilized and adapted to balance the fast-paced material changes of 20th century society.[18] This context of simultaneously holding on to or seeking a nostalgic past and embracing the consequences of material progress is important in understanding how technologies, such as the phonograph, embodied the enthusiasm and uncertainty regarding the liberal and secular elements in society.

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[17] T. J. Jackson Lears, *No Place of Grace: Antimodernism and the Transformation of American Culture, 1880-1920*, (New York: Pantheon Books, 1981), xiii. One of Lears's main intentions in his book is to re-examine the process of modernization and to argue that it occurred gradually over time with different classes advancing their interests at a time when ideals of the self-made man slowly gave way to rising bureaucratic and government institutions.

[18] For a comprehensive examination of the occult and esoteric currents in European society, see Joscelyn Godwin, *The Theosophical Enlightenment*, (Albany: State University of New York Press, 1994).

The scholarly examination of cultural tensions at the turn of the 20th century has shown how it permeated all aspects of daily life from the professional to the private. Friedrich Kittler, in *Gramophone, Film, Typewriter*, explores how different media technologies shifted and reshaped media discourse boundaries. Kittler focuses on the shift from the Symbolic to the Real and argues that the phonograph was a mediating technology, which broke away from the symbolism of the alphabet and diatonic musical scale and allowed for the real-time manipulation of sound recordings.[19] Sound was now physically contained, portable, and reproducible. And in contrast to symbolic representation of sound, the phonograph inscribed the aural effects of physical phenomena onto a tangible medium and reduced it to physical data, which could be interpreted and manipulated.[20]

For Kittler, the new tangible means of control over sonic phenomena contributed directly to shifts in the conceptualization of human identity, memory, and expression. The phonograph as a technology contributed to a new era of sound quantification.[21] Sound experts measured frequencies, tones, volume, and noise in a visually inscribed manner, conceptually reinforced by the phonograph's own inscriptive mechanism. This newly visible textuality of sound functioned as an alternative to the symbolic language of

[19] Friedrich Kittler, *Gramophone, Film, Typewriter* (Stanford: Stanford University Press, 1999), 73.

[20] For a similar postmodern approach to the phonograph, see Lisa Gitelman, *Scripts, Grooves, and Writing Machines: Representing Technology in the Edison Era*, (Stanford: Stanford University Press, 1999). Gitelman's thorough analysis of the phonograph as an inscriptive technology demonstrates the importance of the intellectual and cultural context of American society in identifying both the applications and imagined possibilities for the phonograph. She explores the reformulation of the relationship between textuality and symbolism and how it shaped notions about authorship, originality, and gender identity.

[21] Another comprehensive study of sound quantification and its materialization through developments in architectural and acoustic development can be found in Emily Thompson's *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1933*, (Cambridge: MIT Press, 2002).

the alphabet and of musical notation, forcing intellectuals, writers, and artists to engage this new inscriptive technology that appeared to correlate to reality better than the symbolic language utilized in their writings.[22] In conjunction with the new practices of sound analysis, serious questions regarding voice, identity, authorship, and authenticity emerged for writers and philosophers, including T. S. Eliot, Edgar Allen Poe, Henry Adams, and Friedrich Nietzsche. Written language and musical notation, both of which functioned as consciously controlled media of expression, could now be bypassed through the unfiltered recording of the subconscious and unconscious by a seemingly impartial mechanism. At a time when the new science of psychology was exploring the fragmented self and unexplored domains of the human psyche, sound recording was considered as a way of accessing and analyzing dreams, a process Freud hinted at with *The Interpretation of Dreams* in 1900, and then envisioned and popularized in 1912 with "The Handing of Dream-Interpretation in Psycho-Analysis."[23] The phonograph did not initiate this psychological uncertainty, but it certainly accelerated it, thereby posing questions about human nature and identity, and reflexively, about the definition or identity of the phonograph.

To frame the rich and contentious relationship between the phonograph and its human recipients, I will draw on the image of the automaton as an important reference point throughout the following chapters. The one characteristic consistently engaged in discourse was the capacity of the phonograph to preserve the affective and expressive

[22] For an examination of the avant-garde's response to sound mediation through technology from the phonograph to radio and its significance in re-shaping the experience and understanding of sound, see Douglas Kahn and Gregory Whitehead, *Wireless Imagination: Sound, Radio and the Avant-Garde*, (Cambridge: MIT Press, 1994).

[23] Friedrich Kittler, *Gramophone, Film Typewriter*, 90-93.

qualities of whatever it recorded. Proponents of the phonograph claimed that it captured intangible content which would have been lost "between the cracks" of written notation. In a variety of contexts, whether fictional, economic, scientific, or musical, the phonograph was treated as if imbued with life-like characteristics, as a machine that mimicked or re-created the abilities and characteristics of human beings. Attributes such as endurance, fidelity, honesty, musicality, and reliability, employed in the description of unique or ideal human behavior, generated sentiments of unease and discomfort for many who felt the phonograph acted too much like a human being or feared that it might replace real human beings in a variety of occupations. In this potential exchange of machine for human, the phonograph was cast as a double. People perceived it as able to copy or mimic human functions. It evoked feelings of the uncanny, a thing simultaneously alive and mechanical.[24]

I emphasize the uncanny and the notion of the double in a variety of episodes throughout this dissertation. As each of the following chapters demonstrate, ambivalence over the ability of the phonograph to double as a human being or in some way to undermine the uniqueness of its human users shaped the conversations regarding its proper role.[25] Moreover, claims regarding the phonograph's ability to re-create life-like

[24] The uncanny, in relation to the automaton, and the phonograph, has been well explored in a plethora of literature from the 19th and 20th centuries. Examples include E. T. A. Hoffman's "The Sandman" and "Automata," Jules Verne's *The Castle of the Carpathians*, Arthur Conan Doyle's "The Voice of Science," Villiers de I'Isle-Adam's *Tomorrow's Eve*, Bram Stoker's *Dracula*, and Thomas Mann's *The Magic Mountain* just to name a few.

[25] Linda Strauss, in "Reflections in a Mechanical Mirror: Automata as Doubles and Tools," explores the various ways in which automata, as conceptual tools, can aid the historian, social scientist, and literary scholar to think more clearly about how changes in material culture occur, especially at the sites of traditional boundaries or long-accepted modes of being. Automata, as doubles, constitute a threat to individuals and society due to their disruptive resemblance of their makers and viewers and thus serve as access points to the ambiguity of culture through material artifacts. Here, the phonograph, as a double, does the same. Its mechanical and physical manipulation of the human voice in conjunction with its

experiences through the mechanical reproductions of voice or music sparked agonized debates over whether something more than the mere physical trace of sound was inscribed on phonograph cylinders. As one contemporary scholar has stated the question: "How was this equipment and its activity to be comprehended, conceptualized? Was it an extension of telegraphy, or mechanical instruments…or was it some kind of automaton, a machine assuming human faculties?"[26]

The fear and excitement over the phonograph resulted from its ability to simultaneously occupy two distinct realms, that of the living and of the non-living. Other historical and literary scholarship about automata has emphasized that these mechanical quests for artificial life universally elicited uncertainty over the distinction between the animate and the animate.[27] Automata from the 18th to the 20th centuries, such as Pierre-Jaquet Droz's *Musical Lady*, Jacques de Vaucanson's *Flute Player*, Wolfgang von Kempelen's *Chess Player* ("the Turk") and Edison's *Talking Doll,* captured the imaginations of their audiences and simultaneously generated anxiety over the potential blurry distinction between the living and non-living. Whether in stenography, spirit communication, or ethnographic fieldwork, phonographic recordings of the human voice

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mimicry of human attributes exposes the precarious definition and identity ascribed to human beings, from the most basic and physiological to the more intangible phenomena of thought and spirituality.

[26] Dave Laing, "A Voice Without a Face: Popular Music and the Phonograph in the 1890s," *Popular Music* 10, no. 1, (January 1991): 3. The notion of the automaton has been suggested in recent historiography regarding sound technology and the phonograph (see Jonathan Sterne's *The Audible Past: Cultural Origins of Sound Reproduction*, (Durham: Duke University Press, 2003), but has never been fully developed. It is mentioned as a speculative and interesting idea.

[27] For more on the automata, see Minsoo Kang, *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, (Cambridge: Harvard University Press, 2011), Felicia McCarren, *Dancing Machines: Choreographies of the Age of Mechanical Reproduction*, (Stanford: Stanford University Press, 2003) Simon Schaffer, "Babbage's Dancer and the Impresarios of Mechanism," in *Cultural Babbage: Technology, Time, and Invention*, edited by Francis Spufford and Jennifer S. Unglow, (London: Faber & Faber, 1997), Thomas Hankins and Robert Silverman, *Instruments and the Imagination*, and Gaby Wood, *Edison's Eve: A Magical History of the Quest for Mechanical Life.*

and music, which seemed too real and lively for such a simple mechanism, generated similar emotional responses. The coexistence of the lifelike and the mechanical was never fully resolved but became a generative tension, which spoke to larger questions in an ever-increasing mechanized society.[28]

Recent scholarship has shown what insights can be found in the rich history of the relationship between culture, music, technology, and modernity, where people and technology constantly define each other, operating as active participants in the culture they inhabit. The work of recent media and historical scholars, which has invoked the automaton in relation to the phonograph and other technologies, has revealed a telling story of identity formation for both people and machines.[29] I build on this line of inquiry to show how the automaton-like characteristics attributed to the phonograph moved people to wrestle with fundamental questions regarding the unprecedented immediacy of technology and machines present in so many aspects of daily life. The penetration of the phonograph into public and private domains, especially because of its "talking" and "singing" capacities, begged a critical examination of the human voice and its distinctiveness in relation to its mechanical reproduction.

The phonograph became both a repository and a mouthpiece for the larger cultural and intellectual debate at the turn of the 20th century over modernization. With an already

[28] In terms of the American context, Howard Mumford Jones's *The Age of Energy: Varieties of American Experience, 1865-1925*, (New York: The Viking Press, 1971) charts the shift in American attitude towards the natural world, which began to employ a scientific language laden with measurement, output, and energy, much to the dismay of many turn of the century American naturalists.

[29] Examples include Jonathan Sterne's *The Audible Past,* Gaby Wood's *Edison's Eve*, and Thomas Hankins and Robert Silverman's *Instruments and the Imagination*. For an examination of how automata shaped the discourse surrounding gender identity, and in particular the ideal woman, see Gaby Wood's *Edison's Eve* and Felicia M. Frank, *The Mechanical Song: Women, Voice, and the Artificial in Nineteenth-Century French Narrative*, (Stanford: Stanford University Press, 1995).

visible increase in the reliance on technology in public and private lives, the development of the phonograph hinted at a new level of technological dependence, which threatened the boundary between people and machines. The insertion of the phonograph into different fields of activity brought to the foreground of various intellectual and cultural communities serious concerns over the phonograph's potential in work traditionally reserved for highly skilled individuals. The tension that the phonograph generated for its audience over the uniqueness of human identity combined with the equally important question over the difference between real human beings and machines was never fully resolved, but they do offer a glimpse into the rich cultural and social changes during the Machine Age of Anglo-American society. In the chapters that follow, I explore how the phonograph changed its users and their respective fields. In each of the chapters, reactions to the human-like characteristics of the phonograph will emerge, as will the categorical dichotomy of the mechanical and emotive that the phonograph challenged in unique settings.

Chapter 2 begins with the enthusiasm surrounding speculative pronouncements regarding the phonograph's applications in the fields of stenography, law, and music. Advocates of the phonograph pitched it as a new technology capable of improving different professional and educational practices due to its purported ability to record and re-create human expression with a high degree of fidelity. As this technology was tested in new domains, both advocates and detractors assessed it on the relationship between the phonograph and its human interface. In this way they raised questions that came from describing the phonograph as a double or as an automaton-like mechanism.

Several saw the new technology as exceeding the capacities of human beings, while others saw a complex recording mechanism that lacked the ability to discriminate and make decisions about information in comparison to a skilled human being. A lexicon of values – efficiency, productivity, and transparency – was married to a set of more human attributes like individuality and authenticity. This seemingly incompatible union of attributes is what made the phonograph seem threatening. Some emphasized the advantages of a reliable, automatic, mechanical recorder coupled with a super-human work ethic for social and material progress, while others, such as John Philip Sousa, described the phonograph as a machine devouring the very life and vitality of an overly mechanized and dehumanized society.[30]

Chapter 3 re-examines Edison through the actual recording operation of the phonograph. Already we see hints of the automaton in the way Edison consistently touted the phonograph as his favorite invention, his mechanical "baby." I suggest that a new and rich understanding of Edison emerges when he is analyzed specifically in relation to his favorite offspring. Although Edison embraced his scientific celebrity – especially following the patenting of the phonograph – he continued his phonograph experimentation and utilized the specific processes of sound recording to support grand pronouncements about science, human anatomy and behavior, technology, and social and

[30] The fear of an over-mechanized society permeated all aspects of social and cultural expression. Henry Adams's autobiography *The Education of Henry Adams* (1907) explores the shift to a post-Victorian culture dominated by machines and worldly achievements and his inability to cope with the fast changes of an industrial society, where the Dynamo had become the new focus and engine of modernity. On the popular front, articles such as "The Mechanical Peril" from the *Los Angeles Times* (August 31, 1905) shared a similar hesitation and distrust of the new modern society, which is captured in the following quote: "…it would appear that the man of the immediate future will be entirely dependent upon mechanical contrivances, organizations, and medical resources; that he will only have emerged from one form of slavery, after generations of struggling, to enter into another which is more absolute! Take away from the man of 2005 his typewriter, phonograph, pianola, Kodak, bicycle, motor car, train, sewing machine, spectacles, digestives, narcotics, and newspapers and he will be an utterly hopeless creature."

cultural development. From the structure of the atom, the composition of living and non-living substances, to the workings of the cosmos, Edison relied on the phonograph's mechanical operation as a way to structure and legitimize his theory of "life units," which reduced the visible and invisible experiences in the world to a unified theory of physics.

He formed his materialism out of a mechanical understanding of the human body, for which he made no apologies. He then extended his "life units" theory in order to portray a porous boundary between the material and the immaterial, culminating in an attempt to design and build a spirit communicator. A sensationalist celebrity who enjoyed making headlines, Edison – a religious man – also sincerely believed that his experimentation on the fundamental make-up of the universe would prove the existence of the spiritual realm on a physical basis. In this context, Edison used the phonograph to challenge the dichotomy between the human and mechanical or the material or immaterial/spiritual. The technology, for Edison, shaped a new way not only of exploring human behavior and development, but also of understanding the basic physiological processes of organic life, such as movement, thinking, bodily growth, and death. In this way, the phonograph was a mechanical mediator that bridged the most intangible, evanescent aspects of human life to the most rudimentary components of physical matter. It was precisely this mechanical ability both to model the basics of organic life and capture, preserve, and reproduce the human voice and expression – that tension between the mechanical and non-mechanical – where the phonograph exposed a potential blurring of long-accepted ideas about the uniqueness of human beings and the otherworldliness of religion and other spiritual practices.

In chapter 4, the use of the phonograph in American ethnographic work takes center stage. This chapter looks at debates over the anthropological claims about American Indian music from the 1890s to the 1910s. Ethnographers Benjamin Ives Gilman and John Fillmore each believed that they were practicing a proper scientific approach to ethnography. Whereas Gilman argued that scientific included the emotive and affective expressions of American Indian music – which could only be preserved and fully studied with phonograph recordings, Fillmore contended that phonograph recordings were there to aid, not supplant the authoritative ear of the ethnographer. What mattered to Fillmore was the precise placement of American Indian music in the long chain of overall musical development throughout the world, culminating with the musical art forms of Western Europe and the United States. Gilman, in contrast, rejected this project and saw the phonograph as exposing the likely ethnocentrism of the trained ethnomusicologist, and thus discovering the beauty and emotion in non-Western songs. In an paradoxical turn, Gilman, who was unhappy with the shortcomings of standard musical notation, relied on the phonograph mechanism to generate not only alternative and more precise forms of musical notation, but more importantly to capture and reproduce the affective elements in American Indian music, which he argued were critical to a more accurate and scientific assessment of non-Western music. Each ethnographer relied on his own distinctive notion of objectivity, but what united their efforts was the desire to be more precise and scientific with their work, especially as they attempted to bolster the legitimacy of the new field of anthropology.

Chapter 5 travels across the Atlantic and examines the use of the phonograph in the context of English Folk Song study at the turn of the century. I examine the

phonographic work of Percy Grainger from the 1890s to the 1960s in order to assess how it molded both his theoretical and practical notions about music. Even though Grainger's specific reliance on the phonograph can be limited to a few years in the first decade of the 20th century, the historical record suggests that the lessons he drew from these studies of English folk song significantly shaped his musical ideas and his practice of music, culminating with his creation of free-music machines in the middle decades of the 20th century.

Like American ethnographers at the turn of the 20th century, Grainger and the English Folk Dance and Song Society asked questions about the role of the phonograph in the study of music of culture. Specific to the English case, the discretion of the trained listener was contrasted with the indiscriminate behavior the phonograph, which begged the question if something was recorded by the phonograph, but might have been missed by the listener. Which agent, the phonograph or human listener, trumped the other? Grainger clearly sided with the phonograph and argued that it mirrored back the subconscious predilections of Western ethnomusicology and that it could be used in his grand project of rehabilitating musical traditions that he and others saw as having grown stagnant.

As he pursued his compositional work and music tours during the 1920s and 1930s, Grainger began conceptual work on a new type of automated music making machine that would transcend the constraints of standard written music and the limitations of the musical performer. In an ironic twist, Grainger's free-music project set out from the idea of the phonograph – a mechanical repository of unmediated music – and adapted it for a self-playing mechanism that would truly capture and re-create the

composer's freedom or expression. Unlimited by the physical constraints or artistic predilections of the musician, Grainger's free-music machines were supposed to empower the composer, ushering in a new phase of musical evolution for the 20th century. From the design of the machine to its theory, the phonograph served as inspiration and laid the groundwork for utilizing automatic machines to enter new territories of creativity and expression.

The intention of this dissertation is to explore more deeply how the phonograph was received, perceived, and employed by its users in different contexts. The excitement the device inspired in some and the trepidation of others were both rooted in deeper anxieties about the social and cultural changes of the new industrial age. In 1879, just two years after the phonograph emerged as a prevalent symbol of the modern age, to be turned into a fixture in public and private spaces across Europe and the United States, William James wrote his essay "Are We Automata?" in response to Thomas Huxley's Conscious-Automaton Theory of 1868.[31] James worked through the implications of thinking of human beings as conscious automata. On the one hand, he conceded Huxley's point about the mechanisms of human physiology and their deterministic implications for cognition and perception, and on the other, he did his best to preserve the idea of a free will that could not be overwritten by elaborate algorithms instructing how human beings would respond to any situation.

James's pragmatism shined through. His ability to hold seemingly contradictory ideas – law-like determinism and free will – on the same plane resonates with the larger cultural tension between the seduction of the modern age and the nostalgia for the

[31] William James, "Are We Automata?," *Mind* 4, no. 13, (January 1879): 1-22.

idealism, serenity, and free will of a vanishing world. The introduction of the phonograph into Anglo-American society bound it to those ubiquitous feelings of fear, anxiety and enthusiasm. The cultural characteristics of the phonograph were not fixed at the moment of its creation, but arose in history. It functioned as an audible mirror, reflecting back to its hearers their own feelings and thoughts about a modernizing society. And in so doing, the phonograph operated in a social web with its already-existing values and assumptions, which allowed it to engage the opportunities and challenges present in a more technological, autonomous, and fast-changing society. The sense of the uncanny evoked by the phonograph tested the sacred principles holding society together. John Philip Sousa epitomized this cultural tension with his question: "When a mother can turn on the phonograph with the same ease that she applies to the electric light, will she croon her baby to slumber with sweet lullabys, or will the infant be put to sleep by machinery?"[32]

[32] John Philip Sousa "Machine Songs IV: The Menace of the Mechanical Mother," *Computer Music Journal* 17, no. 1, (Spring 1993): 15.

Chapter Two

Phonographic Doubles: Fear, Enthusiasm, and Doubts Surrounding the Early Years of the Phonograph in Anglo-American Society at the turn of the 20th Century

In 1885, an article from the New York Times explored how two Western travelers in Central Africa were using the phonograph. Although the two travelers claimed to be capturing linguistic samples of African languages on phonograph cylinders for anthropological studies, the article implied that more sinister intentions lurked behind the veneer of dispassionate, objective scientific work. It seemed that the two travelers had a "purely selfish" motive, one that involved the subjugation of Central Africans by recording and reproducing the voice of an African King, which they had recorded earlier in their journey. Now, with a portable source of authority, the travelers could travel safely and avoid dangerous encounters, since "no African would venture to disobey the voice of his King," but also utilize the voice recorded onto the phonograph cylinder as an embodied deity.[33] The article continued and explained how this "king in a box" gave the two travelers the ability of "introducing a new religion…and of ruling the entire country in the character of high priests" by asserting their acquired spiritual authority over what they considered to be the alleged *primitive* character of African society and religion.[34]

The Times article supposed that the phonograph could seduce and inspire fear in the African population by creating a religious *double* that could not be distinguished from

[33] "The Phonograph in Africa," *The New York Times*, January 19, 1885, 4.

[34] Ibid.

an authentic, original source of authority located in a physically real human being. Westerners, who commanded the latest advances of science and technology, should not be so easily deceived. But, the historical record does not validate this assumption. We will see that American and British culture at the turn of the 20th century fell prey to a similar level of confusion, a deep anxiety regarding the relationship between the voice and human identity.

Lisa Gitelman has explored the inability to distinguish between the authentic and the inauthentic in relation to the phonograph and the passage of the 1909 Copyright Law. Gitelman finds an entanglement of "reality and mimetic action" as an anecdotal trope of Anglo-American culture in the early 1900s. She shows how issues of class and race at the turn of the 20th century were part of a larger social dialogue about culture and the ability or inability to differentiate the real from the fake.[35] The broad penetration of those anecdotes in debates of the period shows how the phonograph blurred the boundaries between the original and its reproduction(s) in English or American society. Those called fools were not the only ones being fooled.

The confusion created by a phonographic double was not limited to the uneducated. In the domains of advertising, the courtroom, and music education and appreciation, the double gave shape and identity to the phonograph and the human beings who used it. The historiography of the phonograph documents its impact on the recording industry and its subsequent role in the emergence of popular music culture

[35] Lisa Gitelman, "Reading Music, Reading Records, Reading Race: Musical Copyright and the U.S. Copyright Act of 1909," *The Musical Quarterly* 81, No. 2, (Summer 1997): 266-67.

beginning in the early 1900s.[36] The phonograph also challenged the boundaries of human activity and identity in the early 20th century.

I explore here the ways in which the phonograph was perceived like an automaton, as a mechanical device capable of appearing alive. Automata "are simultaneously lifelike in their animation and deathlike in their coldness, in their inflexibility and, frequently in their silence."[37] Whether it was its cold mechanical rigor or its faithful reproduction of the affective qualities inherent in the human voice, the phonograph generated both optimism and anxiety over its intrusion into long-standing domains of human activity and identity. The voice was now potentially losing its distinctiveness to the phonograph and was now subject to the machinations of a simple device that operated as an autonomous mechanism. The voice no longer belonged to its unique human source. It now could be secretly recorded and employed for a variety of purposes unbeknownst to its original owner.

The automaton, both as a real and literary device, has been documented in the historical record since Roman times. But, it was not until the creations of automata, such as Jacques De Vaucanson's virtuoso "Flute Player" or the "Defecating Duck" in the mid-18th century that it became the focus of debates over the boundaries of animate and inanimate beings. In the 19th century, the literary automata in E. T. A. Hoffman's romantic tales pushed the psychological discomfort as well as the fascination into the confusing boundary between automata and human beings. Both Vaucanson and Hoffman

[36] For a comprehensive history of the phonograph and its effects on the music industry, see Roland Gelatt, *The Fabulous Phonograph:* 1877-1977, (New York: MacMillan, 1977).

[37] Linda Strauss, "Reflections in a Mechanical Mirror: Automata as Doubles and as Tools," *Knowledge and Society: Research in Science and Technology Studies: Material Culture*, Volume 10, (JAI Press Inc., Greenwich, 1996), 101.

explored new avenues requiring a re-examination of human beings from the physical to the psychological.[38] Considering the phonograph as an automaton opens up a new avenue of interrogation of its cultural placement in a fast-paced modernizing society.[39]

About 1893, listeners at a phonograph exposition in South Wales could not believe what they heard emanating from the phonograph. A gentleman who was not satisfied with the mechanical explanation on the phonograph mechanism announced "I do not believe that the machine can speak at all. You have got a man under the table."[40] In an effort to win him over, William Lynd, the local expert on the phonograph, had another individual from the audience recite Welsh poetry, which was recorded and then reproduced for the audience. The skeptic, apparently, was so impressed that he "rushed to the platform and wanted to the hug the Phonograph…crying 'I am satisfied!'"[41] The dramatic telling of this pseudo-religious conversion of non-believer to a believer was employed by early marketing strategies to capture the imagination of the public and give the impression of the phonograph as a miraculous, animated mechanism that could capture, preserve, and reproduce the affective elements inherent in human expression.[42]

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[38] Literary scholarship has dedicated much energy and time to significance of the automaton in literature. For specific examinations of E. T. A. Hoffman's work and other romanticists, see Marie –Helene Huet, "Living Images: Monstrosity and Representation," *Representations*, No. 4, (Autumn 1983): 73-87 and Ross Chambers, "The Queer and the Creepy: Western Fictions of Artificial Life," *Pacific Coast Philology* 40, No. 1 (2005): 19-35. For more recent scholarship, see Minsoo Kang, *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, (Cambridge: Harvard University Press, 2011) and Minsoo Kang, "The Use of Dreaming for the Study of History," *Rethinking History* 5, no. 2, (2001): 275-283.

[39] For more on the significance of the automaton since the 18th century, look at Gaby Wood, *Edison's Eve: A Magical History of the Quest for Mechanical Life*, (New York: Anchor Books, 2002).

[40] *The Phonogram* 1, No. 1, (May 1893): 8.

[41] Ibid.

[42] There is another story told in the first issue of *The Phonograph*, which markets the phonograph through a conversion story. At a hotel party where the phonograph was part of the entertainment, an intruder to the

Considering the phonograph as an automaton reveals its different cultural meanings in its early years before it was commoditized by the recorded music industry and reduced to a mere playback mechanism in the 1910s and 20s. Conceptually, I am borrowing in this chapter from Linda Strauss's examination of the automaton. She argues that "faces of automata serve as reflections of human faces – like mirrors, they allow people to project themselves into them, and read themselves back from them."[43] The phonograph can thus be understood as an echo, an audible mirror permitting individuals to hear in playback mode what they projected into the phonograph. In this vein, the phonograph did not determine what was authentic or not, or human or mechanical, but rather reflected back to its advocates and critics the blurred boundaries of the human being. Thus, in listening to recordings, listeners could relate to the phonograph as a mechanism exhibiting automaton-like characteristics due to its seemingly faithful playback.

The Laboring Double

Anson Rabinbach, in *The Human Motor*, argues that the 19th century was a moment of dramatic mechanization and one of the consequences of this transformation was the deliberate conceptualization of the human being as a "human motor." According

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occasion got into an argument with the host. When the "unmerciful tongue-lashing" ceased, the host apparently had recorded the intruder's speech and replayed it to him "with startling distinctness." After listening to himself, the intruder of the party blushed and apologized for his behavior, indicating, "This has been a valuable lesson to me." Even though the plausibility of this story is small, it shows how marketers portrayed the phonograph as an amazing device.

[43] Linda Strauss, "Reflections in a Mechanical Mirror: Automata as Doubles and as Tools," 183.

to Rabinbach, the metaphor of the "human motor" reflected an equivalency between human and mechanized labor that could be studied, broken down, and rationalized just like the work and energy produced by an engine.[44] The development of self-recording instruments that measured the productivity and fatigue of human skills reinforced this framing of human beings as motors.

The broad machine culture of the mid- and late-nineteenth century embodied certain ideals, which scientific communities - intent on measuring the performance of the human body - advocated in order to understand the human body as a motor that could be analyzed and tweaked for purposes of improved performance. Machines would function as the new models and inspiration of what humans could aspire to be. As Lorraine Daston and Peter Galison, both historians of science, have argued, "it was a nineteenth-century commonplace that machines were paragons of certain human virtues" and that these virtues included patience, endurance, and vigilance.[45] Supporters of the industrial age injected this collection of virtues, which mixed seemingly exclusive human traits borne out of commitment and discipline, into mechanical implements as their new ideal manifestation. This early interchangeability and eventual usurpation of human ideals by machines emerged as a prevalent theme at the end of the nineteenth century. But, such an intellectual transaction did not require large industrial scale. In stenography, the

[44] Anson Rabinbach, *The Human Motor: Energy, Fatigue and the Origins of Modernity*, (Berkeley: University of California Press, 1992). The intense interest in analyzing the human body as a mechanism did not reside only in the technical fields. It also proved quite important in the work of visual artists as well. The photographic analysis of human movement by individuals such as Eadweard Muybridge and Étienne-Jules Marey broke down both human and animal movement, served as inspiration and guidance for late 19th century artists keen on capturing human movement through urban landscapes. For more on this, see Nancy Forgione, "Everyday Life in Motion: The Art of Walking in Late-Nineteenth-Century Paris," *The Art Bulletin* 87, No. 4, (December 2005).

[45] Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations*, No. 40, (Autumn 1992): 83.

comparison between machines and human virtues was made on an individualistic and quite personal level.

Beginning in the mid-19th century, competing forms of shorthand emerged in Anglo-American society. Isaac Pitman, who published his shorthand method *Stenographic Sound-Hand* in 1837, thought it was possible to create a graphic representation of phonetic sounds, rather than through the symbolic alphabet, thereby enhancing the process of writing through shorthand. The fierce competition between different modes of shorthand through the middle decades of the 19th century exposed "the physical limitations of stenographers' own bodies as inscriptive agents," creating the breeding ground for ever more efficient methods of shorthand.[46] The phonograph was offered up as a viable alternative due to its ability to inscribe onto a wax cylinder whatever sounds were introduced into its recording horn. Just as important were the comparisons made between the phonograph and the stenographer. This interchangeability between the phonograph and specialized human laborer, specifically the stenographer, shaped a marketing strategy in the late 19th century that highlighted the mechanical superiority of the phonograph mechanism through rhetoric infused with the values of a strong human work ethic.

In particular, *The Phonogram*, a journal devoted to the promotions and sales of the phonograph in England, adopted marketing strategies that highlighted all of the phonograph's potential benefits. Selections from *The Phonogram* articulated concerns over human fatigue and its relation to economic productivity. An advertisement stated,

[46] Lisa Gitelman, *Scripts, Grooves, and Writing Machines: Representing Technology in the Edison Era*, (Stanford: Stanford University Press, 1999), 24-25. Gitelman's account provides a wonderful examination of how recording technologies interacted with new forms of textuality at the turn of the 20th century.

"The Phonograph needs no vacation. Does not grumble at any amount of overwork."[47] These idealized traits of the phonograph illuminate values of productivity, unlimited mechanical innovation, and the advantage of substituting mechanical labor for human labor in an age of technological optimism. In this situation, the interchangeability between the phonograph and human labor became a major selling point, predicting the eventual usurpation of human labor by mechanical means. More specifically, the phonograph was cast as a better substitute to the human laborer not only because it worked faster, but because it also exhibited a human characteristic of unwavering dedication that most if not all human beings could only aspire to replicate. The replacement of the human stenographer by the phonograph, which began under the rubric of productivity and effectiveness, was really founded upon the ability of the phonograph to perfect valuable human traits, an impossibility with fallible human beings. Here, in these short promotions, marketers sold the phonograph as not only mimicking the essential attributes of a successful stenographer, but also transcending and improving upon those necessary human characteristics.

This comparability went both ways though. The tireless phonograph was not always contrasted to the limitations of the human stenographer. In an article entitled, "Real Human Phonograph," a stenographer, Kate Barthe, earned comparison to a phonograph by her ability keep up with the testimony of Mrs. Alice L. Lemen, who was suing her husband for divorce. According to the news column, Mrs. Lemen "began talking at 4 p.m. yesterday and at once found her vocal stride, at a speed which kept Miss Kate Barthe's trained fingers flying to keep up…. At 11 o'clock this morning the

[47] *The Phonogram* 1, No. 1, (May 1893), advertisement page.

stenographer threw up her hands in despair… She had filled two notebooks and started on a third, and shook her head feebly to indicate her inability to continue."[48] In this brief episode of courtroom drama, the news column chose to explain the speed and endurance of the stenographer by likening her to the much-promoted phonograph. The likeness made between the human stenographer and the phonograph testifies to the similarities that were made between human and machine labor. A common set of characteristics used to evaluate the ability to note down the spoken word blurred the boundaries between the phonograph and stenographers. And it is within this newly blurred boundary between human and machine that fears and anxieties – as well as possibilities – arose over mechanisms, such as the phonograph. Traditionally prescribed realms of human specialized labor now became vague as the phonograph's supporters and detractors entered into debates over the role of a new technology in human-centered professions.

The advertisements of the phonograph unabashedly promoted modern economic values like speed, tirelessness, and the division of labor. Another promotional piece from *The Phonogram* declared, "The talking machine takes the place of the shorthand writer, and eliminates the difficulties attending the transcription of notes and all the ills that the human stenographer is heir to."[49] Thus the phonograph was not merely replacing a human being, but demonstrating a capacity that exceeded the limitations of the stenographer.

Elsewhere in the same publication, promoters of the phonograph acknowledged its limitations. A column comparing shorthand writers and the phonograph emphasized

[48] Los Angeles Times, "Real Human Phonograph," February 8, 1911, 12.

[49] Ibid., 11.

the suitability of the phonograph for business owners who could not afford to pay for the services of a stenographer. The author continued, "Why not let the Phonograph itself record the speeches? … Those who possess that idea must be undeceived. The Phonograph cannot discriminate."[50] Even though the phonograph mechanically recorded everything, it could not perform the work of intelligent and skilled individuals. This author contrasted the discriminating stenographer from the non-discriminating phonograph emphasizing the phonograph's unavoidable disadvantage. Here, the phonograph's impartiality did not help the business owner, but rather slowed down the process of transcription since a skilled stenographer would still be required to report the proper content, and thus only double the labor actually needed.

The distinction made between intelligent and non-intelligent stenography was not always an issue though. In 1891, an unnamed lawyer from Missouri touted the laborsaving advantages and accuracy of using the phonograph, instead of a stenographer. The author admitted that transitioning from a stenographer to a phonograph would be difficult and that certain letters when recorded could not be easily distinguished from similar sounding letters. But, amidst these concerns, the lawyer reiterated similar selling points made by promoters of the phonograph arguing that the "phonograph is not subject to the ordinary infirmities of human flesh. It does not get sick, or get intoxicated, or go a fishing, or otherwise disappear and disappoint you when you want it most."[51] The focus on the potentially faulty stenographer rather than the superiority of the recording mechanism merely emphasized how this lawyer perceived the phonograph as immune

[50] *The Phonogram* 1, No. 2, (June, 1893): 25.

[51] "A Labor-Saving Machine for the Lawyer's Office," *American Law Review* 25, (1891): 436.

from human illness or temptations. What began as a focus on the similar skill of both the phonograph and the stenographer quickly transformed into a critique of the lack of character and responsibility in the average stenographer.

In most cases, salesmen compared the phonograph to the character and pitfalls of the human stenographer, not necessarily the superior skill of the phonograph. As another plug for the phonograph suggested, "When your stenographer goes sick, your work accumulates, your minutes become as valuable as hours, your hours are tedious and you have feverish periods of anxiety in which you are striving to think out some economical scheme to lighten your labors."[52] In this short piece of embellished desperation, the phonograph appears as a solution for the entrepreneur by exceeding the level of commitment of the human stenographer. In contrast to the living stenographer, the phonograph functions as the more committed employee allowing the business owner "in the calm of night [to] talk off all that which (you) would otherwise drudgingly write."[53] What is interesting about this short advertisement for the phonograph is not its skill level, but rather its ability to fill in as a listener. In this context, the distinction between the living and mechanical stenographer began to blur, with the phonograph emerging as the better listener in the end, not only because of its advertised better skill, but also because of its perceived embodiment of specific human values and lack of certain human weaknesses.

Thomas Edison believed in and emphasized the technical skill of the phonograph. He envisioned his favorite invention operating as the perfect stenographer, replacing

[52] *The Phonogram* 1, No. 1, 3.

[53] Ibid.

human labor with mechanical labor. As he stated, "A sheet of foil is placed in the phonograph, the clock-work set in motion, and the matter dictated into the mouth-piece without other effort than when dictating to a stenographer." Then, Edison proclaimed that it was now possible to "*dispense with the clerk*."[54] 10 years later, Edison considered the improvements he made to the phonograph to represent the *perfected* phonograph. He claimed that his improvements could capture "an unimpeachable transcript…, with every break and pause, every hesitation or confident affirmation, every partial suggestion or particular explanation, infallibly set down in the wax."[55] With these improvements, the phonograph could record up to 40,000 words quickly, and Edison claimed for his invention a clear economic advantage over the human stenographer.[56] Edison's assessment of the situation undermined the need for a shorthand system and posited that phonographic exactitude could capture and reproduce the subtle elements of speech that easily evaded shorthand notation.[57]

The debates over the phonograph's role did not only revolve around its potentially superior skill. Its character mattered. While Edison argued for the superior skill of the phonograph, the commentary from the protagonists explored in this chapter focused on the *character* of the phonograph and consequently compared it to the work ethic and responsibility of the human stenographer. These comparisons between the human and

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[54] Thomas Edison, "The Phonograph and Its Future," *American Review* 126, (May-June 1878): 531-532. From 1878 to 1888, Edison devoted most of his energies to improving the incandescent light blub, while still working on developing the phonograph. He replaced the tin-foil recording platform with a wax cylinder upon which a stylus, reacting to the vibrations generated by sound, would engrave indentations into the exam surface, capable of being retraced by the same stylus to reproduce the sound it recorded.

[55] Thomas Edison, "The Perfected Phonograph," *North American Review* 146, (January/June 1888): 648.

[56] Edison, "The Phonograph and Its Future," 532.

[57] Look at Lisa Gitelman for more details on shorthand and its relationship to sound recording instruments.

mechanical recorder blurred the boundaries between human and non-human laborers, by employing evaluative words traditionally relegated to human behavior. This meant both that human beings should be more like the phonograph and that the phonograph must be able to listen well to its human users. Here, communication was not a purely mechanical operation, but a relationship requiring human attributes and characteristics occasionally to be inscribed on the phonograph by its users. On the one hand, the phonograph was supposed to be an active technology, capable of demonstrating new levels of achievement. But, on the other hand, the phonograph was supposed to be passive and subservient to human beings. This paradoxical evaluation of the phonograph typifies the presumed relationship between the phonograph and its human operators.

The phonograph's similarity to the stenographer was not confined to the world of commerce or the law office in terms of saving on the costs of labor. An examination of the courtroom in an Anglo-American setting at the turn of the 20th century illuminates how the phonograph was increasingly called upon to provide testimony. The potential for a new type of witness, in particular, an impartial witness, which would help resolve problematic and/or conflicting testimony, intrigued practitioners of law. The "truthfulness" attributed to the phonograph recordings coupled with the aid of analogic reasoning, an argument for the inclusion of different types of mechanism-derived evidence in the courtroom, enabled the phonograph to enter the courtroom and provide a mode of testimony, which raised important questions about truth-telling, evidence, and the reliability of the human witness.

The Speaking Double

In the courtroom, the phonograph acted as a double. The phonograph participated as a witness and provided testimony that could challenge the reliability of human-delivered testimony. Its advocates claimed that its non-partisan and non-discriminating character, as well as its freedom from memory loss made it not only a suitable source of testimony, but even a better witness than an actual human being. The perceived truth-speaking characteristic of the phonograph created a dynamic "epistemological space" where the testimony of the human witness no longer was seen as a necessary reliable source of evidence.[58] Rather, the phonograph operated as demonstrative evidence and a witness that would not buckle under the pressure of legal interrogation, temporary slippages of memory, and embarrassment. As a consequence, it provided an opportunity to re-examine the problematic nature of human-delivered testimony, with a specific focus on the accuracy of human memory.

Legal review journals and court cases at the turn of the 20th century began debating the nature and reliability of the human witness. Certainly there had been discussions over the inherent problems of human-delivered testimony before the advent of the phonograph. But, towards the end of the 19th century, and especially in conjunction with the innovative use of photography and other mechanically produced evidence in the courtroom, the phonograph brought a new voice into legal dialogues

[58] Jennifer Mnookin, "Images of Truth: Evidence, Expertise, and Technologies of Knowledge in the American Courtroom," (Ph.D. dissertation, MIT, 1999).

regarding the veracity of new forms of mechanically rendered evidence.[59] Not only did legal scholars engage the reliability of such technologies as the phonograph, but also began a new investigation of a witness' character and behavior in the courtroom, which requires a brief exploration.

As a potentially new type of "witness" emerged as an actor in the courtroom, lawyers re-examined the relationship between a witness and his or her legal counselor. John Corcoran, a legal scholar, surmised, "[a]n actor of supreme importance in the courtroom," the human witness was subjected to the guidance of legal counsel who directed the witness "to the matters concerning which his evidence is desired; in a word, it is the privilege of counsel to aid the witness in telling the story."[60] Thus, a skillful lawyer could and should use his legal skills and rhetorical abilities to guide the testimony of the witness, but unless he was able to guarantee the statements of his witness, a skillful cross-examination by opposing counsel did not necessarily safeguard that testimony. The lawyer must "help the weak, calm the frightened, assure the timid, and by an orderly arrangement of questions enable the halting but truthful witness to tell his story with completeness and sequence."[61]

Corcoran described the potential unreliability of the human witness, who due to failure of memory or emotional instability, could fail to strengthen a legal counsel's case.

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[59] For more on the mechanical reproduction and the pursuit of objectivity, see Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations*, No. 40, (Autumn 1992): 81-128. A core element of Daston's and Galison's work includes an exploration of the notion of "mechanical objectivity," which will be explored in this section.

[60] John Corcoran, "Various Aspects of a Lawyer's Life," *Boston Law School Magazine* 1, (1896-1897): 20.

[61] Ibid.

Corcoran emphasized that the witness's should do no more "than to give a word-picture of what he has witness and a reproduction of what he has heard." He likened the perfect witness to a fusion of a photograph and a phonograph recording. The "Kodak and phonograph," could "perpetuate scene and sound," so that the jury, "without the intervention of the witness, could determine an accuracy hitherto unknown the merits of the disputes which find their settlement in the courtroom."[62] Here, Corcoran appealed to the ideal reproduction of the circumstances in question as justification for the legal use of new technological media, such as the phonograph. This technology, in conjunction with the argument of analogic reasoning, would be able to eliminate the inherent weaknesses of the human witness, avoiding unwelcomed obstacles in the courtroom setting.[63]

The increased use of different technologies, such as photograph and phonography, sustained the critique of the reliability of the human witness. Professor Claparède of Geneva University conducted experiments to demonstrate the unreliability of an eyewitness. As a psychologist, who contributed to separating the field of psychology from philosophy, Édouard Claparède concerned himself with issues of sensory awareness and the selectivity of human perception. One of his interests was the potential for agreement over courtroom testimony, even if the agreement included factual errors. He wrote an article, which included a psychological examination of human observation and recollection.[64] In an attempt to "prove the great deterioration in the powers of

[62] Ibid.

[63] For an in-depth analysis of analogic reasoning and its application to the use of technologies in court, see Jennifer Mnookin, "Images of Truth: Evidence, Expertise, and Technologies of Knowledge in the American Courtroom."

[64] Eugene Lerner, "Édouard Claparède: 1873-1940," *The American Journal of Psychology* 54, no. 2, (April 1941): 296-99.

observation due to the high pressure of modern life," he had a masked man enter his room for ten seconds, during one of his lectures, make some hand gestures, then depart. Several days later, the professor had his students pick out the mask from a line-up of different masks, and only four out of his twenty students picked the correct mask. Claparède argued for " how unreliable is the evidence of an eye-witness of an event, even in a law court and on his oath."[65] In this assessment of human observation and recollection, Claparède pointed out that even when the intention existed to accurately describe a past moment, human memory still remained unreliable.

In the same law journal, an article defended the inclusion of phonographic evidence into courtroom proceedings since similar recording technologies such as photography and the x-ray functioned as demonstrative evidence. The article continued that even if objections, of which none were specified, were raised against the admissibility of phonographic evidence, it would be accepted eventually over time as reputable evidence.[66] This expansion of what was considered demonstrative evidence fell under a larger shift in legal theory and practice both in the United States and England where scientific and technological achievements changed the types of evidence used in legal proceedings.

The transformative power of technology and science and its inclusion into the courtroom rested on the power of analogic reasoning, a conceptual tool examined by Jennifer Mnookin. Throughout the 19th century in both English and American courts, the

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[65] Édouard Claparède, "Eye-Witnesses Not Reliable," *American Law Review* 40, (1906): 606.

[66] Ibid., 607-608.

promises held out by new technological innovations and scientific work challenged traditional distinctions made between different types of evidence. The introduction of photography into the courtroom became a new form of evidence known as "demonstrative evidence," evidence that did not require for the most part any degree of interpretation, which would be provided by a relevant expert. Through the argument of analogy, the photograph was categorized as evidence because of its similarity to other visual representations such as diagrams and sketches. But, the higher degree of veracity attached to the photograph, due to the belief that it represented an untouched visual representation placed it atop a hierarchy of evidence. Subsequently, in a circular mode of reasoning, "maps, models, drawings, and diagrams were carried into the courtroom on the photograph's coattails," transforming them from "illustrative" evidence, which required a great deal of interpretation, to a more independent form of evidence.[67] The shifting of evidentiary classification revealed not only the emergence of new conceptual categories for evidence, but also contributed to an overall discussion about enhancing the quality of courtroom testimony.

A 1900 article "How Science Modifies Legal Principles" argued that the increasing utilization throughout the 19th century of scientific evidence and experts reformulated the doctrines governing the admissibility of physical hearsay evidence. Even though the article did not delve into the specific legal changes, the author emphasized the significant impact of new forms of scientific evidence and expertise,

[67] Mnookin, "Images of Truth: Evidence, Expertise, and Technologies of Knowledge in the American Courtroom" 123. To understand the photograph as purely demonstrative evidence overlooks the complex reactions to its use in court. The acknowledgement that photographs were still the creation of human hands supported the argument that they were nothing more than sophisticated illusions. However, in the end, photographs were readily admitted into courtrooms as strong forms of demonstrative evidence.

(whether it be x-rays, chemists, phonographs, recorded telephone conversations), on the theory and practice of law, suggesting that "the chapter upon hearsay in the treatises of Greenleaf and Taylor may have to be rewritten."[68] Here, the written or spoken evidence presented by a third party, which would have been considered hearsay, achieved a new degree of legitimacy when recorded and presented in the courtroom by mechanical contraptions, such as the phonograph.[69] And as a consequence, lawyers and judges began to see this repackaged hearsay evidence as now original and independent, as relevant testimony in the courtroom.[70]

Daston and Galison explore the introduction of new technologies into the courtroom. At the core of the debate over this new evidence was "the shifting border between judgment and mechanization, between the possibility (or necessity) of human intervention and the routinized, automatic functioning of the technology."[71] The phonograph's position in the courtroom definitely inhabited this border between human-shaped testimony and the impartial gathering of evidence. And even though I would agree with the argument that new mechanical techniques of observation "shifted rather than eliminated the suspected sources of subjectivity," the historical record for the phonograph suggests that the source(s) of the subjective did not merely shift, but also

[68] "How Science Modifies Legal Principles," *Green Bag* 12, (1900): 597.

[69] For more on the distinction between hearsay and original evidence, see Simon Greenleaf, *A Treatise on the Law of Evidence*, vol.1, (Boston: Little, Brown, and Company, 1876), 122.

[70] Joel Synder, "Res Ipsa Loquitur," in *Things that Talk: Object Lessons From Art and Science,* edited by Lorraine Daston, (New York: Zone Books, 2004), 216-218.

[71] Daston and Galison, "Image of Objectivity," 110.

inhabit locations – the phonograph – in a new objective, ostensibly truthful form.[72] Thus, the distinction between the subjective and objective, or "judgment and mechanization," was more blurry than clear because the phonograph was seen to be both an active and passive mechanism. It contained simultaneously both an objective and subjective identity.

A major part of Daston's and Galison's argument is that in the early 20th century, the practice of "trained judgment" became an additional criterion necessary for adjudicating the value of mechanically-rendered images. According to the argument, it became acceptable for scientists and other specialists to employ their own training to interpret photographic evidence and thus the skill of the scientist was held up as an essential piece of scientific practice "as a necessary supplement to objectivity."[73] When Daston's and Galison's argument is applied to the history of the phonograph in the courtroom at the turn of the 20th century, a different interpretation emerges. In some cases at least, supplemental testimony was not needed to clarify the audio evidence presented. Instead, the evidence provided by the phonograph was considered by its endorsers, as well as the courts to be objective and truthful enough for the criteria of legal practice. Yet, these very descriptions humanized the phonograph, investing a quality of subjectivity into the mechanical witness. And it in this context that the phonograph was simultaneously positioned as both a repository of "judgment and mechanization."

A court case, which involved a private citizen who owned a building in Boston sued the Boston Elevated Company, demonstrates just how new scientific instruments

[72] Ibid.

[73] Lorraine Daston and Peter Galison, *Objectivity*, (Cambridge: MIT Press, 2007), 320-321.

functioned as an almost personal arsenal for the plaintiff's legal counsel. The plaintiff was unhappy with the noise generated by passing train cars and decided to sue the Boston Elevated Company for $150,000 in damages. Instead of providing only human testimony, the plaintiff arranged a series of impartial witnesses. "A phonograph was brought into the court to reproduce the noise made by the trains as they passed; a photometer was used to show the diminution of light due to the erection of the elevated structure; and an oscillometer showed photographs of the air waves disturbed during the passing of the train."[74] The court case ended in the favor of the plaintiff, demonstrating that the new mechanical witnesses played a critical role in the case. "A verdict of $45,000 was given, with interest, the total making $58, 267." The concluding line to the short description of the case stated that "There is no personal equation in phonographs, photometers, and oscillometers, nor can they be embarrassed by cross-examination."[75] The described absence of the personal or otherwise human biases that could have jeopardized the plaintiff's case reveals how the phonograph, in its attributed truthful recording, along with the other measuring instruments, functioned as a viable alternative to human-delivered testimony because of its impartiality.

Even though the court found the phonograph and other mechanical devices as impartial and objective witnesses in terms of presenting the facts of the case, the line-up of mechanical testimony nevertheless masked the "personal equation" of the plaintiff who was able to present his case as more truthful than the defendant. Here, the subjectivity or the personal experience of the plaintiff was channeled and captured by

[74] *Bar* 13, (1906): 6.

[75] Ibid.

recording technologies, which was then presented as truly objective and impartial sources of un-tampered evidence.

In a similar vein to John Corcoran's thoughts on human witnesses, Robert M. Morse, a writer for the Los Angeles Times, explained, "[i]t is difficult to describe a noise or compare one noise with another. The best that can be done is to offer a record of it."[76] Morse acknowledge how the human evaluation of sound, without a reference to a permanent record such as that made by the phonograph, varied with different witnesses. In contrast to this inconsistent testimony, the phonograph was seen by its supporters to offer a scientifically precise and reliable reproduction of what it recorded, even though they clearly had personal reasons to win the case. Such an alternative source of evidence provided accurate and unbiased representations of an audible experience, which a law article titled: "Testimony by Phonograph" fully captured. These three words sum up how lawyers began to capitalize on mechanized testimony. Room was now made on the witness stand for a new type of witness, one that seemingly spoke with an air of authority and objectivity.

The case, tried in London, was another suit over noise disturbance. The plaintiff accused the rail line company of subjecting occupants of adjacent houses to intense vibrations. "In some instances families were shaken in their beds and prevented from sleeping, clocks were stopped, and noises were caused in the houses from the sympathetic vibrations of different objects."[77] To demonstrate the damages, the plaintiff

[76] Los Angeles Times, December 17, 1905, 116.

[77] "Testimony by Phonograph," *Counsellor* 4, (1894-1895): 239.

placed phonographs in different rooms of the affected homes to record the noise disturbance and then brought them into the courtroom to reproduce "the workings of the defendant's machinery," and "the phonograph cylinder indicated to the Judge, who listened to it, more than a whole army of witnesses."[78] The plaintiff's counsel presented "a whole army of witnesses" composed of phonographs as a set of disciplined and objective listeners and recorders, which could potentially deliver evidence capable of substantiating the plaintiff's case.

Lawyers also claimed impartiality in another court case that dealt with the noise disturbance created by workers at a stone quarry. They used the phonograph to record the noise levels and then brought the recordings into the courtroom to make a case for restricting the hours of operation at the stone quarry. The recordings of the phonograph "set in motion the records of the stone quarry, - the sounds of the sledges, the picks, drills, the shouts of the bosses to the men, - and one terrific blast that had been fired.[79] The collection of recordings presented data not in the sense of numbers and statistics, but as a re-created audible experience, which the judge deemed as an unacceptable sound environment for the tenants at the plaintiff's boarding house. A temporary injunction resulted.

The phonograph's testimony of the "testimony of the rocks" underscores the fidelity and veracity attached to the process of recording and playback for those individuals who relied on it for their case. In contrast to evaluating the phonograph recordings as merely circumstantial evidence, the judge was convinced by the

[78] Ibid., 240.

[79] Henry Burns Geer, "The Testimony of the Rocks," *Green Bag* 15, (1903): 589.

truthfulness embodied in the audio playback, which reinforced the willingness of phonograph users to rely on this new scientific mechanism of sound reproduction. Even though the plaintiff's attorney exploited the subjective and personal sympathy of the judge with a sound recording, he saw the phonograph as a way to achieve a higher degree of truth. He and other employers of the phonograph in the courtroom were in reality legitimizing the bias or personal feelings of their plaintiffs into seemingly reliable, truthful evidence with the use of a mechanical recording device. Those who relied on the phonographic evidence sought a way to turn personal preferences about a given circumstance into a substantial and legitimate case with the aid of evidence collected by an impartial mechanism. In these cases, the phonograph operated as a distant, objective agent, one that seemed to suppress and regulate the subjective impulses of its human users, while simultaneously conveying to those in the courtroom the facts of the case and the feelings of its user(s).

In this case, the testimony of the rocks was just as important as human testimony. But, the phonograph as witness, which had no personal loyalties to either the plaintiff of defendant, was positioned as an objective source of information. What is remarkable about these episodes of the phonograph as a witness in court is the dual-identity attributed to it. The phonograph was cast as a cold, impersonal, mechanical device not tied to self-preservation or any loyalties. Additionally, the phonograph was seen at times as the ideal witness to speak on behalf of a particular person or group – as though it was a reliable human witness - because of its ability to clearly express auditory evidence, which could not be captured with a linguistic description. The court cases analyzed here suggest that the impartial character of the phonograph, as well as its ability to speak on behalf of a

particular party as though it was a human witness did not appear to be a significant problem for American and English courtrooms. A survey of the historical record, including newspaper articles and legal journals, suggests that lawyers and judges successfully imported this new form of demonstrative evidence supplied by the phonograph into the canon and practice of law.

The Singing Double

The concern over the phonograph and its re-creation of the authentic or genuine figured prominently in other domains. The following examination of literature and of the burgeoning industry of recorded music at the turn of the 20th century reveals a more telling layer of the phonograph's undefined identity and the debate over what constituted someone or something to be real and genuine in the context of sound recording.

Before the phonograph became a staple of home entertainment by the 1910s and 1920s as a playback instrument concealed and hidden in furniture pieces, the impact of the phonograph on the world of music was up for debate. The Supreme Court decision in the copyright law of 1909 resolved many unanswered questions regarding the ownership of recorded music. But, even with this law, the cultural and social realms of music still exhibited unresolved tensions over the role of the phonograph in the dissemination and performance of music, as we will see in the writing of John Philip Sousa.

A major concern for phonograph skeptics was to what degree the phonograph would intrude into the world of music and take over aspects of music production that were traditionally associated with live human performances. In addition to the real world debates of the music industry and general music appreciation, Jules Verne's *The Castle of the Carpathians* shows a literary climate fascinated with the porous boundaries between the mechanical and the human experience of song. The blurring of this boundary between humans and phonograph raised questions about the autonomy of the human voice. The added ability of the phonograph to record and reproduce the voice even after the human being had passed on intensified the debate over the boundary between the living and the mechanical, a debate which occurred both in the literary context and the historical record.[80]

Published in 1892 and translated into English the following year, Jules Verne's *The Castle of the Carpathians* takes place in Transylvania during the late 19th century. The villain, Baron Rodolphe de Gortz, living an isolated existence in a remote castle, has fallen in love with a famous opera singer, La Stilla. Unable to win her love, he calls on his assistant, Orfanik, to construct a mechanism to capture Las Stilla's voice so that it may be permanently preserved. On the night of her big performance, La Stilla's final aria ends rather abruptly as she sees the Baron in the audience, immediately causing her to faint and die in the hands of her fiancée, Franz de Telek.

Months later, Franz passes through the Baron's residence and hears rumors from the local townspeople of a woman who sings beautiful opera from the Baron's castle. Intrigued by these rumors, Franz makes his way towards the castle and hears a familiar

[80] Strauss, " Reflections in a Mechanical Mirror," 195.

opera voice, and he is convinced that he hears La Stilla singing. Overwhelmed with the possibility that La Stilla is alive, Franz makes his way into the castle and walks through an elaborate labyrinth. He ascends to the top of the castle where he sees a glass figure of La Stilla singing the last aria of her final opera, *Orlando*, before her untimely death. Shocked, Franz realizes that instead of a live La Stilla standing before him, there is a phonograph recording of his beloved acting as her double. At the moment of Franz's disillusionment, the Baron, aware of Franz's presence, flees with the phonograph as the local police appear at the castle. The Baron attempts to escape, and in the process one of the policemen shoots at the Baron but misses him and instead hits the phonograph. With a sense of anguish, the Baron "uttered a terrible cry" and exclaimed "Her voice – her voice!.. Her soul – La Stilla's soul – it is ruined – ruined – ruined."[81]

Verne's story illustrates the uncanny relationship between the human voice and its mechanical reproduction at the turn of the 20th century. The phonograph operates as a literary pivot for the plot and emotional journey of the main character, Franz. A short review of the novel explained that Orfanik "brought into play for a wicked purpose a variety of ingenious inventions."[82] Verne's story points out the disruptive power of mimicry with the way in which the Baron and Franz both deceive themselves – consciously and unconsciously - into believing that what they hear emanating from the phonograph was the real La Stilla. The idea that somehow the authenticity of La Stilla was to be found in her voice, and not in her body, suggests that the phonograph recording sufficed as a complete recreation of a her unique identity in a newly preserved form.

[81] Jules Verne, *The Castle of the Carpathians*, (The Saalfield Publishing Company: New York, 1903), 204.

[82] "Jules Verne's Romance," *New York Times*, November 19, 1894, 3.

Franz, after making his way into the Baron's castle, cannot shake off the notion that La Stilla's dead. As the narrator tells us: "Had he been the sport of an illusion? No, a thousand times no! It was indeed La Stilla he had just heard, it was indeed her he had seen her on the castle bastion."[83] La Stilla's voice, more important than the apparition Franz sees of her on the balcony, persuades him beyond a shadow of a doubt that she still exists. What he hears, not what he sees, functions as the litmus test for his sense of reality. Similarly, the Baron believes that the phonograph contains the essential character of La Stilla's voice. As the Baron states, "her voice remains to me! Her voice is mine mine alone, and will never belong to another."[84] The enraptured and highly volatile character of the two men in the story reinforces their unwavering conviction that "her voice…had lost nothing of its inflections, of its inexpressible charm, of its caressing modulations" on the phonographic recordings."[85] From the reader's perspective then, the love obsession of Franz and the Baron represents a distortion of reality, which the phonograph, through its own clever ability to capture the essence of La Stilla's voice, facilitated "in a most plausible manner."[86]

John M. Picker, the author of *Victorian Soundscapes*, emphasizes the interchangeability of La Stilla and the phonograph by claiming that the Baron "literally transforms the woman singer into a machine."[87] This transformation occurs at the

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[83] Verne, *The Castle of the Carpathians*, 177.

[84] Ibid., 203.

[85] Ibid., 175.

[86] "Jules Verne's Romance," *New York Times*.

[87] John M. Picker, *Victorian Soundscapes*, (Oxford University Press: Oxford, 2003), 131.

moment of her transition from the living to the dead on stage when "[a]ll her soul seemed to distil itself through her lips." With a terrified response, she "put her hand to her mouth," symbolizing the fleeting loss of her identity.[88] Her voice passes through her hand and Orfanik, the Baron's assistant, captures and inscribes La Stilla's voice onto the phonograph. Franz, even realizing that La Stilla was dead, still could not reconcile his conflicting experiences over her death and the new *real* possibility that she now lived because of the reproduced voice he heard at the Baron's castle.

His inability to cope with these circumstances represents to a larger degree a breakdown in traditional notions about the human voice and identity. Franz's refusal to acknowledge the reality of La Stilla's death causes him to go mad at the end of the story. In other words, if the phonograph did not enter the story, Franz would not have been confused about La Stilla's status of existence. Thus, the phonograph functioned as an automaton in Verne's gothic tale by operating "at the margins of everyday existence…between two or more worlds or states of being."[89] It provided a dilemma for both its characters and potential readers who had to wrestle with the disembodiment and preservation of a woman's unique expression of her identity: the human voice.

The barrier between the living and the dead is important to the history of the phonograph and will be further explored in the next chapter. Here I explore the impact of the phonograph on the world of music from the perspective of John Philip Sousa and other musicians and critics who expressed contrasting perspectives on the place and importance of recorded music in the development of musical appreciation. We see here

[88] Verne, *The Castle of the Carpathians,* 131.

[89] Strauss, "Reflections in a Mechanical Mirror," 194.

how the musical world responded to the introduction of the phonograph into a world where live human performers had dominated the production (composition) and reproduction (performance) of music. They claimed that the mechanical reproduction of music did not represent the traditional experience of the musical arts.[90]

For the most part, concert halls and the classrooms of music education welcomed the phonograph. Many rural schools lacked the financial resources to pay for the expenses of musical instruments and the performances of musicians, so the phonograph was seen as a substitute for the great music centers of the east coast. The main interest in the phonograph sprang from the national cultural concern that Americans lacked musical taste and culture in comparison to European counterparts, who not only attended more concerts, but also composing the best art music. Music educators and critics saw the phonograph as a way to disseminate classical music. Mark Katz, author of "Making America More Musical through the Phonograph," sees this new focus in music education as providing scholars "a window into the ambitions and insecurities of a country struggling to find its musical identity."[91] The perceived advantages of "*portability*, *affordability*, and *repeatability*" eliminated "the roadblocks barring America's musical development."[92] It was now possible to listen not only to classical music, but also to operas - testaments to musical culture - which American cultural critics deemed lacking in the American repertoire.

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[90] For more on the general history of the phonograph and its legal and musical ramifications, see David L. Morton Jr., *Sound Recording: The Life Story of a Technology*, (Baltimore: Johns Hopkins University Press, 2004), 21-54.

[91] Mark Katz, "Making America More Musical through the Phonograph," *American Music* 16, no. 4, (1998): 449.

[92] Ibid., 450.

At home, music critics as well as promoters of the phonograph saw the phonograph as the best means of developing an American musical culture. An 1896 advertisement, which considered the challenges and costs of bringing a musician to one's home, suggested that "It's expensive to hire an artist to come to your home and play for you, or a famous singer to sing for you…But if you have a Gramophone…you can buy a 'record' of that artist's playing, or that singer's singing, for fifty cents, and you can listen to it and entertain your friends with it as often as you please."[93] The ease of substituting the phonograph for the real-live musician or singer emerged quickly and consequently transformed the definition of musical appreciation from one of learning how to perform a musical instrument to becoming cultured in the different genres of music. Rather than paying for the costs of bringing a live performer, it was now deemed "musical" by both phonograph merchants and the majority of music educators to purchase a phonograph to develop one's musical taste.

In the school context, educators quickly hailed the phonograph and its potential role in re-defining musicality. Edward Birge, professor of music education at Indiana University, defined the new ideal of music appreciation as "gaining a breadth of view." By this, he meant "that all children should be given an opportunity of learning to appreciate music beyond their own ability to perform."[94] With phonographs potentially scattered throughout the country in both rural and urban settings, a general musical taste could be developed through "careful and intelligent listening."[95] The music classroom

[93] Ibid., 453.

[94] Edward S. Birge, "Music Appreciation: The Education of the Listener," *Music Supervisors' Journal* 10, no. 4, (March 1924): 14.

[95] Ibid.

was to become the repository of world-class musical performances and thus usher in a new kind of museum capable of exposing new generations of musicians to music, which had previously only been accessible through live performances. A museum, for example, "might include not only samples of the best music of the world by the world's great artists, but samples of the music of various kinds of instruments, of various kinds of mankind, as for instance, of the Negro, the Eskimo, and the Chinaman, and of great oratory."[96] In the museum setting, the phonograph brought to one central location music from around the world that could be re-created at any instant and give listeners of all ages, "a chance to hear, free of charge, examples of classical and the best modern music."[97]

Across the ocean, Compton MacKenzie, a champion of the phonograph and founder of the *Gramophone* publication (1923), spoke at the Musical Association proceedings in England and explained the significance of the growing participation of phonograph/gramophone technologies in the musical world.[98] Right from the outset, MacKenzie pointed out that after he received the new sound reproduction device, he put on the first movement of the Schumann Quartet and "realised with a shock as sharp and sudden as the spiritual upheaval known as conversion that the gramophone could do

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[96] Harlan I. Smith, "Museum of Sounds," *Science*, New Series 40, no. 1025, (August 21, 1914): 274.

[97] Ibid.

[98] Compton MacKenzie was an English novelist, who in the early 1920s began listening to gramophone recordings away from London. He immediately acquired a generous collection of discs and proceeded to found a literary outlet for his newly found gramophone enthusiasm. For more on his biography, see D. L. LeMahieu, "The Gramophone: Recorded Music and the Cultivated Mind in Britain between the Wars," *Technology and Culture* 23, no. 3 (July 1982): 372-391.

something of which I had never dreamed that it was capable."[99] He admitted that some instruments were not reproduced as accurately as he would like, but he thought "that on the whole the human voice was still as formerly the most successful reproduction."[100] MacKenzie outlined the improvements made to the phonograph and stuck to his conviction that the phonograph could only improve in its mechanical operation, producing ever more faithful recordings of the human voice and music.

In the contexts of music appreciation and social development, MacKenzie argued that the phonograph would transform the world of music because "it is more capable of expressing the complications of the human soul" in comparison to other artistic venues.[101] As in the United States, English advocates of the phonograph, such as MacKenzie, also envisioned the dissemination of musical recordings to enhance the cultivation of musical taste throughout England. Fighting the phonograph and gramophone detractors who believed that such mechanisms were only disseminating poor quality popular music, MacKenzie used *The Gramophone* to appeal to a new middle-class audience, which "represented a new type of serious listener."[102] According to MacKenzie, this new listener would be discriminating and choose to listen to carefully selected musical pieces advertised by his publication. And though he acknowledged the temporary limitations of the gramophone/phonograph, he believed that the new listener's mind would be

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[99] Compton MacKenzie, "The Gramophone: Its Past: Its Present: Its Future," *Proceedings of the Musical Association*, 51st Session, (1924-1925): 102.

[100] Ibid., 103.

[101] Ibid., 108.

[102] D. L. LeMehieu, "The Gramophone: Recorded Music and the Cultivated Mind in Britain between the Wars," 381.

cultivated. In terms of the mechanism, MacKenzie correctly believed that the only barrier to more faithful reproductions was the technology itself, which could only improve over time. And as far as he was concerned, the actual process of recording worked well, for "the music is all on the record if one can only bring it out."[103]

Other members of the committee from the Musical Association in London agreed with MacKenzie. The committee acknowledged the fears of an over-commercialized music industry that would distribute music of "lowly origin," but believed that under their leadership and with journals, such as *The Gramophone*, "high-class music" would make its way into English home.[104] The Chairman, W. W. Cobbett, expanded upon the notion of the phonograph as a reproductive mechanism and to not think of it as a simple instrument. "One has to come to look on it not as an instrument, but as a performer – vicariously; as a sentient thing, with chords that are silent till wakened to life by the fingers of the performer or the voice of the vocalist."[105] This willingness to think of the phonograph as a living thing, awaiting an opportunity to perform, demonstrates the animating power individuals, such as the Chairman, projected into the phonograph. Even though he had some concerns over the quality of tone reproduction, he went ahead and stated that the phonograph "has this supreme merit: the emotion of the player is reproduced."[106] Whether created by the voice or an instrument, the phonograph

[103] Compton MacKenzie, "The Gramophone: Its Past: Its Present: Its Future," 111.

[104] Ibid., 113.

[105] Ibid.

[106] Ibid.

reproduced sound vibrations "as the original performance."[107] The members of the Musical Association in England elevated the simulation of previous live musical performance by the phonograph to a sophisticated instrument that captured and replayed the subtle emotional detail present in a musical performance. Their endorsement of the phonograph's faithful reproductions became an important element in their argument for the development of musical taste.[108]

But, not all music educators or critics endorsed the advantages of phonographic music without condition. J. Lawrence Erb, in "Musical Appreciation," applauded the ability of player-piano companies and phonograph companies to record good quality music, which could be reproduced to large public crowds. He argued that "An elaborate machinery exists which has done much to induce people to *listen* to music – but unless the listening is done with discriminating intelligence, music appreciation in any true sense cannot be said to have arrived."[109] For Erb, the phonograph or the piano player was not a complete solution to rectifying the perceived lack of musical taste and development in the United States. What was needed was music education, which explained the emotional and aesthetic elements that an undiscriminating listener might and would probably miss. As he put it, it was "not enough to be *exposed* to the *music*."[110] From Erb's perspective, the phonograph was not enough even though it resolved many of the

[107] Ibid.

[108] The issue of musical taste rose in importance in relation to the phonograph due its use in disreputable locales like amusement parks, such as Coney Island. Promoters of the phonograph – beginning in the 1890s – rehabilitated the reputation of the phonograph as a refined instrument of high-quality music in order to capture a more wealthy demographic on both sides of the Atlantic. William Kenney, *Recorded Music in American Life: The Phonograph and Popular Memory, 1890-1945,* (New York: Oxford University Press, 1999), 44-46.

[109] J. Lawrence Erb, "Musical Appreciation," *The Musical Quarterly* 11, no. 1, (January 1925): 6.

[110] Ibid.

challenges associated with developing musical appreciation. Genuine music education required a theoretical and intellectual orientation that shaped the listener's apprehension of recorded music. And more importantly, music education still required a knowledgeable human being (professor, not performer) interfacing between an audience and mechanism to transmit the true understanding/interpretation of a piece of music.

In light of the doubts over "canned" music, commentators such as Garry Joel August extended the advantages of the phonograph's impact on music appreciation, but did so in a qualitatively different way than Compton MacKenzie and the members of the Musical Association or music commentators such as J. Lawrence Erb. August agreed on the phonograph's importance in disseminating good quality music, but he argued that a live performance did not necessarily guarantee a more authentic performance. For August, the physical stage or concert hall could be seen as an impediment, a physical obstruction that literally blocked the transmission of a musical piece's essential and aesthetic message. He insisted in his article, "In Defense of Canned Music," that with the phonograph at one's side, "Nothing breaks the link between himself and the music, no scraping or creaking, no sight of perspiring flautist or gawky bull-fiddler. It is music undefiled…It is the true fashion in which melody should be enjoyed, informally, carelessly, with at most a friend or two by one's side."[111] August's idealization of phonographic playback emphasized the fidelity attributed to a musical recording with its ability to capture more than just the written notation on a sheet of music. It captured the musical ideal that could not be wholly represented on a written medium. Simultaneously,

[111] Garry Joel August, "In Defense of Canned Music," *The Musical Quarterly* 17, no. 1, (January 1931): 148.

the phonograph bypassed in its playback the potential physical distractions of an actual performance, which could contaminate and remove a musical experience from the idealized aesthetic realm that August sought out for the perfect experience of music free from human-induced distortions, interruptions, or distractions. There was an irony though in August's endorsement of the phonograph, that being the need for a mechanical device to capture the immaterial, affective qualities of music, which he saw as subject to the physical errors and distractions of the human performer.

John Philip Sousa, the well-known march composer at the turn of the 20th century in the United States, seriously challenged the intrusion of the phonograph into the music world. Unlike MacKenzie or August, Sousa saw the phonograph as an agent of musical degeneration.[112] Sousa maintained his commitment to the more traditional definition of music education, which was compromised with the new emphasis on music appreciation as opposed to instrumental education. He saw a musical future pervaded by phonographs, a future at odds with his concern over the musical taste and development of American society. It is likely that Sousa's biggest complaint with the phonograph was the potential economic loss that he would incur with the lack of copyright for his musical compositions and performances.

[112] Sousa was part of a concentrated group of musicians and cultural critics who expressed serious concerns over the phonograph and the type of music distributed. In particular, there was a fear of cultural degeneration, which had its roots in a perceived over-mechanization of society. One such cultural critic, Constant Lambert, argued in *Music Ho!: A study of Music in Decline* (1937) that mechanical recordings of popular music were responsible for an "age of tonal debauch." Quoted in Sebastian D. G. Knowles, "Death by Gramophone," *Journal of Modern Literature* 27, No. ½, (Autumn 2003): 9. Max Nordau, author of *Degeneration* (1895 – English translation) advanced broader cultural and intellectual arguments regarding what he perceived to be the cultural decline of Western culture. The American reception of Nordau's work was mixed, but there did exist a strong contingent of critics and intellectuals who agreed with his prognosis. For more on the American reception of Nordau's *Degeneration*, see Linda L. Maik's "Nordau's Degeneration: The American Controversy," *Journal of the History of Ideas* 50, no. 4, (Oct. – Dec. 1989).

Sousa and other composers who relied on the sale of sheet music royalties for part of their income decried how the record music industry undercut their copyright protection. For example, both phonograph and player piano companies would buy one copy of a composer's sheet music and then mass-produce records and player piano rolls from that one copy of sheet music. The outrage over copyright violations grew to such a roar that in 1906 congressional hearings were necessary to arbitrate the contestation, which were not resolved until the copyright law of 1909, protecting composers from unlawful mechanical reproductions of their music.[113]

At this time, Sousa continued his critique of the phonograph and the negative effect that it would have on the development of musical taste in the United States. He went so far as to hyperbolically foresee the demise of the human vocal chords, since they would no longer be used for singing, an activity now relegated to the phonograph. Victor Herbert, another popular composer, expanded upon Sousa's extreme argument and argued that phonograph records were "reproducing part of our brain."[114] In their paranoia, Sousa and Herbert took the animating capacity of the phonograph to an extreme at a time when their economic interests were in jeopardy. And by doing so, they escalated fears that perpetuated the idea of the phonograph as a dehumanizing and unnecessary technology for society.

Sousa insisted on continuing his critique, which he published in 1906. Entitled "The Menace of the Mechanical Mother," Sousa expressed an unwavering concern over

[113] Lisa Gitelman, "Reading Music, Reading Records, Reading Race: Musical Copyright and the U.S. Copyright Act of 1909," *The Musical Quarterly* 81, No. 2, (1997): 274.

[114] Quoted in Ibid.

the impact of dehumanized and overly mechanical music on the fabric of American society. Instead of articulating an argument focused on the legalities of musical recording, which was an important debate at the Supreme Court level in 1909, Sousa tackled the phonograph from a socio-cultural perspective. At worst, Sousa foresaw a breakdown of family dynamics with the phonograph, since for example a mother could coo her child to sleep with a phonograph, not her own singing. This was just one of many simple, yet essential human exchanges where Sousa saw the phonograph intruding itself and undermining not only century-old patterns, but also intrinsically natural elements of human connection and communication.

Psychologist Elmer Gates wrote a lengthy article in the *Chicago Tribune* entitled: "How a Psychologist Trains his Babies by Scientific Rules." In this article, Dr. Gates advocated the educational and child-rearing methods of what he considered to be a modern, educated father. The children were to "be nourished by science, developed by science, taught by science, and schooled by science."[115] The phonograph would function as merely one scientific instrument within an array of mechanisms for the education of the psychologist's four children. Specifically, through recorded speech, the child was to learn how to speak by "correcting deficiencies as it progresses" through a series of pre-recorded sentences, which bypassed the unscientific methods of the average schoolteacher.[116] The father, intent on utilizing scientific rules, replaced the team of human educators with an array of scientific instruments in his attempt to rationalize the

[115] "How A Psychologist Trains his Babies by Scientific Rules," *Chicago Daily Tribune*, November 16, 1902, 39.

[116] Ibid.

educational and overall developmental process, a method that Sousa would have clearly rejected.

In "The Menace of the Mechanical Mother," Sousa expounded upon the many disadvantages of the phonograph. From the rearing of children, to the instruction of music, and the expression of love, Sousa saw the phonograph entrenching itself in all aspects of life. He challenged the reception of the autonomous phonograph in order to demonstrate how the musician, not the phonograph, was essential to musical creativity. He asked, "Is the machine a free agent? Does it go about to seek whom it may devour?"[117] Sousa's questions show his desire to generate a degree of fear in the general public, which had warmly received the phonograph into their homes. And in order to reveal the problems inherent in this new domestic arrangement, Sousa dramatized the destabilizing effect of the phonograph on everyday life. He suggested that "the very traditions of babyhood are threatened" because it would not take long for the phonograph to replace a baby's mother by singing the infant to sleep. To further his argument, Sousa then added his overall concern of child development into the mix. He stated, "[c]hildren are naturally imitative, and if, in their infancy, they hear only the phonograph, will they not sing, if they sing at all, in imitation and finally become simply human phonographs – without soul or expression?"[118] Here, Sousa focused in on a supposed cold, mechanical aspect of the phonograph and foreshadowed how its "soulless" reproductions threatened humans with the loss of their very humanity.

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[117] John Philip Sousa, "The Menace of the Mechanical Mother," *Appleton's Magazine* 3, (September 1906): 281.

[118] Ibid.

The phonograph as a musical double was no mere rhetorical ploy for enemies such as John P. Sousa. As part of his promotional campaign for the new, low surface noise Edison Diamond Disks, Edison toured the new system and several contracted singers beginning in 1915 throughout the United States in what became known as the tone tests. Several thousand tests were conducted in both urban metropolitan cultural centers such as New York and in small towns.[119] On March 10, 1920, Anna Case sang in Carnegie Hall standing next to an Edison Diamond Disk phonograph. As she sang, the phonograph began to play the same song at the precise moment she stopped singing. She recounted, "They didn't know when I was singing and when I wasn't. They couldn't tell by the voice. Of course, they could see my lips go, but by the tone quality, they couldn't tell the difference."[120] The tone tests, which traveled to remote places such as Fargo, North Dakota, created a sensation and the impression that the phonograph could match a singer's voice completely. These and other tone tests generated similar audience results in comparison to Anna Case.

The 1921 tone test of Helen Clark was described in a dramatic fashion as the phonograph record first re-created her singing, which Clark then followed from the back of the concert hall with her own singing. A newspaper recalled, "Helen Clark had arrived and was singing in unison with her RE-CREATED self."[121] Even though it is difficult to assess accurately the audience's reception of recorded music in place of the actual artist,

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[119] Emily Thompson, "Machines, Music and the Quest for Fidelity: Marketing The Edison Phonograph in America, 1877-1925," *The Musical Quarterly* 79, no. 1, (Spring 1995): 153.

[120] John Harvith and Susan Edwards Harvith, *Edison, Musicians, and the Phonograph: A Century in Retrospect*, (New York: Greenwood Press, 1987), 44.

[121] Quoted in Thompson's "Machines, Music, and the Quest for Fidelity," 158.

the tone tests, in their attempt to market recorded music as "real music" portrayed the phonograph as a simulacrum of the real artist.[122] And in order to achieve this genuine recreation of singers like Helen Clark, the phonograph had to be understood as both a passive and active device, capable of fully surrendering and absorbing the vocal renditions of singers and then completely reproducing them with the flip of a switch.

As authentic as the tone tests appeared, there was an element of deception. Anna Case herself confessed that she gave her "voice the same quality as the machine so they couldn't tell."[123] Even though Case modified her voice to match the phonograph record, what mattered was the perception by the general public that the phonograph could be accepted as a machine capable of re-creating the essence of a singer's performance. Marketers used the interchangeability of artist and machine in a promotional piece for Edison's new Diamond Disc phonograph. The advertisement had Anna Case standing next to the Diamond Disc phonograph with the intention of claiming the interchangeability between her and the phonograph. In this twist to Sousa's fear of a country riddled with phonographs, recording companies did not hesitate to create phonograph doubles of different musical artists with the aim of spreading musical appreciation across the United States, an end that Sousa agreed with, but a means he blatantly rejected.

[122] Ibid, 160.

[123] Harvith, *Edison, Musicians, and the Phonograph*, 44.

Conclusion

In its infancy, the phonograph shared boundaries with human beings in the fields of labor, law and music. The phonograph as a stenographer, witness, and singer faced porous boundaries in those respective domains, demonstrating a degree of fluidity in the definition of different occupations at a time of great technological change in Anglo-American society. It quickly became a doubling agent due to the ease with which its users and observers projected it into fields of activity traditionally reserved for real human beings. The recent historiography of the phonograph has begun to explore the cultural landscape onto which the phonograph projected its recordings and the subsequent shift in how music was classified due to the new medium of recorded sound.

The period before the saturation of the market by the Victor Talking Machine Company or Edison Diamond Discs, the period in which the cylinder phonograph was both a recording and playback device, contained a less limited categorization of the phonograph and its suitable applications. In contrast to the Victrola and Gramophone (and variations of them by competing companies) as the fixture of American and English middle class home entertainment, the openness and experimentation with the cylinder phonograph's application brings to light the ambivalent reception of a technology that had not properly adjudicated on how the phonograph was to participate in daily life.

At the turn of the 20th century, the worlds of stenography, law, and music experienced a potential shift in their practices due to the new possibilities created by sound recording technology. These new possibilities challenged the roles and attributes

of human beings when the phonograph users created new temporary spaces for the new technology to replace the human worker and artist. But underneath the surface of outright enthusiasm or explicit fear, a complex dynamic emerged intent on wrestling with what it meant for someone or something to be real. In its perceived ability to remember, speak, and sing, the phonograph was forced to demonstrate both its mechanical and life-giving attributes. As a consequence the new technology forced its human users to question their own uniqueness. Humanity itself often failed to pass the "tone test."

Who the real automaton was remained unanswered.

Chapter Three

Thomas Edison, the Phonograph, and the Sacred: Phonographic Musings on Life and Death

In early October of 1910, *New York Times* contributor Edward Marshall conducted an interview with Thomas Edison to discuss immortality and the human soul. The then recent death of Professor William James served as the impetus for the conversation, especially because of "the alleged reappearance or "manifestation" of Prof. James's soul on earth."[124] Marshall summed up Edison's point of view from this lengthy interview as "in fact, he doesn't believe there is a soul --- human beings only an aggregate of cells and the brain only a wonderful machine, says wizard of electricity."[125]

The interview became a sensation. A collection of irate and admiring readers expressed their reaction in letters to the editor of the *New York Times*. One was offended by Edison's statement that the brain can be likened to "a piece of meat-mechanism." Another criticized Edison's overriding "materialistic Utilitarianism" as a dangerous philosophy that threatened the growth of a healthy nationalism amongst the American people.[126] The thorn, which spurred these reactions, was Edison's repeated comparison of the brain to a phonograph cylinder. As he put it, the "brain, like the phonographic cylinder, is a mere record, not of sounds alone, but of other things which have been

[124] ""No Immortality of the Soul" Says Thomas A. Edison," *New York Times*, October 2, 1910, SM1.

[125] Ibid.

[126] Letters to the Editor, *New York Times,* October 9, 1910, SM6.

impressed upon it by the mysterious power which actuates it."[127] In this simplistic and mechanical description, Edison reduced human identity and behavior to material terms. Following through with the logic of his argument, Edison maintained that any intellectual progress made in regards to the fundamental questions about human life required an explanation "along material lines" in contrast with the far-reaching enthusiasm for spiritualism and other supernatural interests then sweeping the country.[128]

Edison's likening of brain operations to a phonograph was not an isolated or one-time remark. When questioned about his favorite inventions, Edison consistently replied that it was the phonograph.[129] Although historians have noted Edison's choice of his beloved "baby," the public response to the phonograph at the end of the 19th century, demonstrating a deep fascination with a technology able to preserve – ideally indefinitely – the fleeting human voice, deserves additional attention.[130] And part of that fascination stemmed from the somewhat magical identity attributed to the phonograph in being able to capture and reproduce precisely those delicate and intangible characteristics of human expression, which could not be translated into written form. In this respect, the phonograph was seen as technology that challenged the established barriers erected between the material and immaterial realms. As this chapter will show, various claims that the phonograph bridged the divide between the physical-mechanical domain and the

[127] ""No Immortality of the Soul" Says Thomas A. Edison," SM6.

[128] Ibid.

[129] David Morton, *Off the Record: The Technology and Culture of Sound Recording in America*, (Piscataway:Rutgers University Press, 2000), 2.

[130] Martin Woodside, *Thomas A. Edison: The Man Who Lit Up the World*, (New York: Sterling Publishing Co., 2007), 101. Francis T. Miller, *Thomas A. Edison, Benefactor of Mankind: The Romantic Life Story of the Worlds Greatest Inventor*, (Philadelphia: John C. Winston Co., 1931), 166-171.

evanescent realm of voice and personality stimulated and sharpened the debates about the place of humanity in relation to the physical and immaterial worlds.

This public identity of Edison's phonograph allows us to listen anew to the issues faced by modern America at the outset of the 20th century. We find an enthusiasm for technological progress and an obsession with speed coexisting with a romantic sensibility that guarded the sacredness of the immaterial and spiritual.[131] Spiritualist interest groups, such as the Theosophical Society, to which Edison belonged, and the American Society for Psychical Research represented a major part of the resurgence of the sacred in American society in the last half of the 19th century.[132] The 19th-century wave of interest in spirituality was more than a sideshow in American popular culture. Spiritualist organizations wielded scientific and intellectual capital due to their high-profile membership, which helped make 19th-century spiritualism a mainstream current in American society at the same time that a new faith was emerging in the technological possibilities of a modernizing society.

Edison embodied this modern American tension between a mechanical utilitarianism and romantic immaterialism, without necessarily seeing it as problematic.

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[131] Howard Jones, *The Age of Energy: Varieties of American Experience (1865-1915)*, (New York: The Viking Express), 1970, 309-310. This book explores with a great detail the transformation of science writing after the Civil War, with a transition from observation to practices of manipulation and experimentation. Also, Jones's examination of George Perkins Marsh's *Man and Nature* (1864) discusses the confrontation of modernity and romanticism through science writing that sought to preserve the romantic experience of nature within a modernizing American society. For a comprehensive look at the cultural response to modernization of American society at the turn of the 20th century, see T. J Jackson Lears, *No Place of Grace: Antimodernism and the Transformation of American Culture 1880-1920*, (New York: Pantheon Books), 1981.

[132] The Russian mystic, Helena Blavatsky, and the American military officer, Henry Steel Olcott, founded the Theosophical Society in 1875. The Theosophical Society sought to scientifically establish the existence of the supernatural realm, which initially intrigued Thomas Edison to become a member. The American Society for Psychical Research was founded in 1885 by a group of scholars and intellectuals, of which William James played an important leadership role.

For him, it was not a struggle to maintain balance between the accelerated mechanization of society and the preservation of a pristine, untouched nature. Rather, Edison saw the manipulation of nature through technology and electrification as the means to improve many aspects of human life. Edison believed in a productive dynamic between nature and society, which precluded any strict separation or antagonism between the two. A fundamentally mechanical understanding brought the natural and the human domains together and it is this union which made Edison, an uncanny master of the mechanical, a hero for the American public.[133] This co-existence of seemingly incompatible values - the mechanical and the romantic – challenged the sacredness of the immaterial and spiritual realms of human experience. Edison embraced this tension and the phonograph became a perfect mouthpiece for his vision of the world and the role of human beings in it.

More precisely, I argue that the phonograph in its construction and operation provided a framework for Edison and his contemporaries to engage issues such as human behavior, the composition of matter, religion and immortality – all topics that boiled down to questions of human identity and the relations of society to nature.[134] In addition

[133] The heroic image of Edison was an important element of American culture at the end of the 19th century. The struggle between the modern and the romanticism of the frontier experience was a cultural phenomenon that expressed itself throughout popular culture, such as novels. The consumption of these short stories and novels explored the tension between the advantages and disadvantages of unbridled industrialization. This can be further explored in Alan Trachtenberg, *The Incorporation of America: Culture and Society in the Gilded Age*, (New York: Hill and Wang), 1982, pp. 38-60. Thomas Edison represented for certain constituencies the effective harnessing of technology and modernization, while still preserving the sacred spiritualism of American culture.

[134] The historically documented social change in the late 19th century, ushered in by the "Second Industrial Revolution," a transformation based on the use and manipulation of electricity and chemical knowledge, created new experiential phenomena for people in terms of communication, production, and transportation technologies. New questions regarding the individual, from the psychological to the social to the biological, stemmed from the new socio-economic and technological changes, which challenged previous modes of understanding the human organism, both as an isolated being and in a social collective.

to the fertile symbolism of the phonograph as a technology emblematic of progress, the actual mechanical operation of the phonograph became a model for understanding the mental and physiological capacities of human beings. Armed with the phonograph, Edison and others shifted the intellectual and cultural dialogues regarding the fundamentals of nature and existence. This shift allowed for a deeper and uncomfortable exploration of human identity. Thus, in an interesting turn, Edison and others positioned the mechanical phonograph as a potential mirror in revealing the mysterious and organic processes of what it meant to be human.

Personal *Matters*

In 1886, on the momentum of the success with the phonograph, Edison announced a new application. This one built on his 1878 patent for a doll mechanism for the amusement of children. With a "body made of tin and the interior… filled with a mechanism very much like that of the commercial phonograph, but of course much more simple and inexpensive," Edison's talking doll was programmed to reproduce familiar tunes such as "Mary had a little lamb" and "Jack and Jill."[135] Toy distribution companies jumped at the novelty and saw a new profitable venture with the talking dolls, which were manufactured initially in Germany and then shipped to the United States for the final assembly of the phonograph doll. Amidst the excitement of both toy stores and

[135] "Edison's Phonographic Doll," *Scientific American*, April 26, 1890. Quoted in Theresa M. Collins and Lisa Gitelman, eds., *Thomas Edison and Modern America: A Brief History with Documents*, (New York: Bedford/St. Martin's, 2002), 129.

young girls who desired the new phonographic doll, many of the dolls failed to deliver their lines due to the damages caused by the transatlantic voyage from Europe to the United States. The dolls were too fragile and news reporters assessed that "[h]andling and transportation almost invariably disarranged the delicate needle from the almost invisible paraffin grooves."[136]

Even though the *Edison Phonograph Toy Manufacturing Company* doll business venture flopped and Edison moved on with other projects, the public remained enamored with the uncanny talking dolls. A news article in the *New York Times* explained: "As each doll reaches the proper age it is turned over to a governess specially employed to train its phonographic ideas."[137] The language of the article provides an animating and uncanny description of the phonograph doll, suggesting that the doll was alive and growing up, awaiting the proper education and training. Statements such as the "doll pupils are required to repeat her words until every accent and inflection is satisfactory" or the "dolls have such wonderful memories that not only do they repeat their old lessons with accuracy, but they even 'hold the voice,'" created a mysterious aura around the dolls by collapsing the boundary between the animate and inanimate.[138] The newspaper coverage of the phonograph doll aimed to allure the public and create a sensationalist headline. But, Edison himself adopted a similar attitude regarding the dissolution of the boundary between the animate and inanimate. He was not motivated purely by profit in

[136] Ibid., 131.

[137] "The Talking Doll," *New York Times*, February 17, 1889, 13.

[138] Ibid.

embracing this ambiguity. Rather, a more fundamental issue regarding the identity of women – and human beings in general - was at play.

Gaby Wood in *Edison's Eve: A Magical History of the Quest for Mechanical Life* argues that Edison's talking doll was facilitated by his belief that women could be both metaphorically and mechanically understood as machines. In contrast to a romanticized understanding of women, which emphasized an inherent emotionality and irrationality, Edison believed such characteristics to be mere obstacles in a larger evolutionary process at work in society for both men and women. As he stated in his diary in 1885, it was only a matter of "fifty or hundred thousand centuries" when humanity would "become perfect by evolution."[139] The lower level of social and intellectual development of women in comparison to men would be overcome with education, technology and evolution.

Fundamental to this mechanical understanding of human biology were Edison's own physiological limitations. As a young teenager working the telegraph lines on railroads, Edison suffered severe hearing loss in one ear from a nearby chemical explosion.[140] In order to overcome his hearing deficiency, Edison focused on accessing and amplifying the physical vibrations produced by sounds. Edison listened to his phonograph by attaching a wooden rod to a table, which would have a phonograph reproducing sounds at a very loud level. The vibrations from the phonograph would pass into the table to the wooden rod, which he bit on throughout the process, sending the vibrations straight into his jaw and skull. The development of the phonograph thus

[139] Thomas Edison, *The Diary of Thomas A. Edison*, (Old Greenwich: The Chatham Press, Inc., 1970), 21.

[140] *Thomas Edison and Modern America: A Brief History with Documents*, 42. Edison recounts the accident in his diary, suggesting that the deafness that resulted from the accident played a major role in his physical engagement with the technologies, such as the telegraph, that he had to interact with on a sensory as opposed to an aural level.

required a conceptual shift to an empirically based method for Edison to capture, preserve, and manipulate the vibrations produced with the transmission for sound. Even for an aural phenomenon that was not normally experienced in such a physical manner, but rather as aesthetic or emotional, the physical vibrations of sound production and transmission were essential to his processing of a sonic occurrence. This very physical experience of sound played a significant role in Edison's improvements of the telegraph system and of the phonograph.[141] And it is such experiences as these, which reinforced Edison's mechanized understanding of human development and human interaction.

Although this mechanical conception of human beings did not exclude men or children, Edison emphasized its application to women. In July of 1885, while vacationing in Boston, Edison wrote in his diary: "awakened at 7am thought of Mina, Daisy, and Mamma G [the wife of a colleague] – put all 3 in my mental kaleidoscope to obtain a new combination a la Galton. Took Mina as basis, and tried to improve her beauty by discarding and adding certain features borrowed from Daisy and Mamma G. A sort of Raphaelized beauty."[142]

Edison's attempt to imaginatively construct the ideal type of woman was not a mere coincidence. Right after his mental creation of the perfect woman, Edison

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[141] The unique aural experience for Edison, as I will argue later in this chapter, contributed to Edison's positive take on increasing the utilization of machines in both public and private life. By integrating machines into the everyday lives of people, Edison felt that their experiences would be enhanced just the way he had improved his experience of sounds by redirecting it through vibrations straight into the bones of his head.

[142] *The Diary of Thomas A. Edison,* 1. Francis Galton read "Combined Portraits, and the Combination of Sense Impressions Generally" before the *Philosophical Society of Birmingham* in 1879. In this paper, Galton utilizes Gustav Fechner's law of sense impressions to explore the possibility of identifying ideal types of individuals, i.e. criminals, the mentally ill, etc., in modern life. This paper was officially published Francis Galton as "Composite Portraits, Made by Combining Those of Many Different Persons into Single Resultant Figure," *The Journal of Anthropological Institute of Great Britain and Ireland* 8, (1879): 132-144.

referenced in his diary entry a recently published paper by Francis Galton, which argued for the idea of generating composite portraits by overlaying photographs and extracting "typical characteristics" that each photographed individual possessed. Even though the bulk of the paper dealt with establishing a criminal typology based off facial analysis of convicted criminals, Edison clearly found the idea of generating "an imaginary figure," which contained "a surprising air of reality" applicable to his analysis of women and beauty.[143] Edison did not find it odd to extract the most beautiful traits of women and synthesize them into his ideal woman. Furthermore, his imaginative creation of the perfect women was not merely superficial.

According to Wood's assessment of Edison's phonograph doll venture, his "journey to the perfect woman" manifested itself in the automaton-like phonographic doll, an attempt to manufacture the perfect woman.[144] An interesting component to Wood's interpretation of Edison's failed venture with the phonograph doll is the actual phonograph in the doll. Her focus on the symbolic features of doll is important and highlights the gendered aspect to Edison's predilections. But underneath the doll, in its shell, lay the mechanism that made the doll so unique and desirable: the phonograph. It was after all the recorded voices on the phonograph cylinders, which drove the interest and purchase of so many dolls. What made Edison's dolls important was their fascinating ability to communicate a disembodied and then re-embodied human voice. The voice generated by the phonograph gave the doll its lively and animated character.

[143] Galton, "Composite Portraits," 132-133. The reception and discussion of Galton's paper suggests that the idea of generating *types* of people was not considered a crackpot theory at the time, but rather was a part of mainstream scientific theory and practice.

[144] Gaby Wood, *Edison's Eve*, (New York: Anchor Books, 2002), 145-6.

To get a clear sense of what the animated phonograph meant for someone like Edison and the general public, an examination of *fiction*, the other side of *fact*, can provide a rich understanding of how the phonograph functioned in an imaginary world not far removed from the historical reality. One of those created worlds can be found in an imaginative account of Edison and his phonograph written by Villiers de I'Isle-Adam.[145]

Villiers de I'Isle-Adam, a conservative French aristocrat who questioned the liberal and progressive values of modern society, published *Tomorrow's Eve (L'Eve future)* in 1886. The novel explores the liveliness embedded in the phonograph and simultaneously warns of the dangers of a technological optimism that Edison embraced in his real life efforts and projects. Concerned more with the legend and myth of Edison than the "plain-talking, hard-working ex-railroad telegrapher," Villiers de I'Isle-Adam gives an impression of Edison that resonates with the mythical image Wyn Wachhorst analyzes in his biography of Edison, while simultaneously criticizing the human appropriation of God's powers.[146] Even though the account created in *Tomorrow's Eve* is fictional, the novel resonated with the real Edison in his daily life and work. According to the *Chicago Daily Tribune*, the novel "caused much astonishment among the critics,

[145] To get another explanation as to how the realms of fact and fiction inter-relate, look at Lisa Gitelman, *Scripts, Grooves, and Writing Machines: Representing Technologies in the Edison Era*, (Stanford: Stanford University Press, 1999), 70-71. Another interesting, yet brief exploration of the intimate relationship between fact and fiction can be found in Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science*, (New York: Routledge, 1989), 3-4. Both of these works provide a different and richer analysis of the relationship between fact and fiction in comparison to Gaby Wood.

[146] Gaby Wood, *Edison's Eve*, 132. Wyn Wachhorst, in *Thomas Alva Edison: An American Myth* (2003), establishes a direct correlation between the myth of Thomas Edison and the self-image of a young modern American culture, enmeshed in a struggle of balancing a 19th century rugged romanticism with the technological changes accompanying the modernization of society. As seductive as this perspective may be, Wachhorst focuses mainly on how the popular perception of Edison reflected the tendencies and contradictions of a young modern American nation. Wachhorst's interpretation does not engage how Edison's own non-public image or rather his private persona directly engaged an early 20th century American identity.

for they did not know how to regard" a book that "deals with the wonders of electricity."[147] The novel was brought to Edison's attention a few years later at the Paris Exposition in 1889. When asked about the novel, "the wizard is reported to have said: "That man is greater than I. I can only invent. He creates!""[148] In this short assessment of his fictional self, Edison expressed a clear approval for *Tomorrow's Eve* and the image it projected of him.

Felicia M. Frank points to Villiers de I'Isle Adam's ambivalence surrounding the phonograph as an important context to understand the phonograph as an "instrument of technological and social transformation."[149] As Frank interprets the novel, Villiers de I'Isle Adam explored the phonograph at a time of boundary blurring. During a time of "credulous beliefs in such "scientific" experiments as spirit photography," the boundaries between "science and scientism" were blurred due to a combination of public interest and fringe scientific attention.[150] *Tomorrow's Eve* provides an imaginative portrayal of Edison in the context of an Anglo-American culture that was willing, even eager, to blur the boundaries between the material and the immaterial, to make "the unseen seen."[151] This desire in turn generated a set of anxieties and questions regarding the fundamental understanding of human beings. The fictional Edison is at ease in this anxiety and the

[147] "Villiers de I'Isle Adam," *Chicago Daily Tribune*, December 22, 1894, 10 and 13.

[148] Ibid.

[149] Felicia Miller Frank, *The Mechanical Song: Women, Voice, and the Artificial in Nineteenth-Century French Narrative*, (Stanford: Stanford University Press, 1995), 142.

[150] Ibid., 149.

[151] Ibid.

historical record suggests that the non-fictional Edison also was not plagued by metaphysical anxiety.

The first part of the book focuses on Edison's personal ruminations. Villiers de I'Isle-Adam has Edison in the opening of the novel talking to himself in an underground lab that resembles an alchemical or wizardly lair, potent with animate powers. Discharges of electricity light up the underground lab with Edison talking to himself in mysterious ways that depict him more as sorcerer than as mechanical genius. Wondering why no one else was able to think of the phonograph before him, the fictional Edison laments the lost words of the great historical figures, such as Moses, which all of humanity would have liked or needed to hear. And for Edison, the greatest words of all to record were God's. Similar to the real Edison, who believed the Bible to be a reliable source of Christian theological knowledge, the novelistic one takes nothing to be more convincing than the recorded words of God's voice. Such a recording would provide more immediate and visceral proof of the existence of God than any written word – words that were mere creations of a fallible human being.

Villiers's Edison halts his "inner" and "outer" dialogue due to a telegram announcing the arrival of a dear old friend of his, Lord Celian Ewald. Ewald, an English aristocrat, has fallen deeply in love with Miss Alicia Clary because of her physical beauty and her singing ability, but he seeks out Edison to help deal with her uncultured disposition and unrefined soul. Edison proposes to create an android (known as Hadaly), which will not only resemble Alicia in her physical beauty, but also improve on her through its capacity to carry on refined conversations in an aristocratic culture.

Constructed with the most exquisite resources and materials, the "new" woman became woman perfected, both internally and externally. The secret to Edison's Hadaly was not in the body at all; it was the two golden phonographs, which contained the power to *animate* that body and make her believably alive. The phonographs contained over seven hours of recorded conversation, which could be re-combined into an infinite array of combinations, giving the "new" Alicia, according to Edison, the capacity to discuss just about any subject, and thus form a more intimate connection to Lord Ewald. The only differences between the original Alicia and the newly created one were the phonographs and their newly inscribed content. They provided the spark to an idealized relationship for Lord Ewald and the power to transform the "old" Alicia into an idealized and flawless "angel." Instead of being an overly emotional person lacking culture and sophistication, the "new" Alicia Clary becomes the perfect partner for Lord Ewald with the phonographs functioning as the key to an intellectual and soulful transformation.

The creation of a perfect person – in this case, the perfect woman – through technological means represented for the author of *Tomorrow's Eve* the replacement of an old aristocratic world by one that could now be easily created with the aid of technology. But, the democratizing effect of technologies, such as the phonograph, threatened to destroy cherished hierarchies and privileges. The fear for aristocrats, such as Villiers de I'Isle-Adam, was that people could mechanically *improve* themselves and break down class barriers, something the fictional and real Edison would have encouraged. By reducing *culture* into decomposable verbal units, which could be manipulated and recombined, the phonograph, in Villiers de I'Isle-Adam's eyes, threatened to potentially level the social hierarchy through mechanical means.

The inscribed content on the phonographs was not mere phrases, but a mechanical organization of language critical to the development and expression of thought. It contained words "invented by the greatest poets, the most subtle metaphysicians, the most profound novelists of this century – geniuses to whom I applied…these hitherto unpublished marvels of their thought."[152] Through a complex re-combination of those words, Edison claimed that the perfected Alicia - Hadaly - "replaces *an* intelligence with Intelligence itself."[153] In a physical form, the fictional Edison had achieved the impossible: to connect the immaterial world, the world of ideas and thought, to the physical world. This new android made possible "the production of Ideals!"[154] No longer limited by the physical resources that surrounded him or encumbered with a merely human character and intelligence, Villiers de I'Isle-Adam's Edison could channel the animating powers of thought to transform an ordinary piece of matter into perfection. The realm of cultural perfection was now brought down and manufactured from the lofty realm of ideas and manufactured.

Even though the Edison of *Tomorrow's Eve* was quite sexist, Edison maintained in real life – at least in public – a degree of restrained liberalism regarding women. From his point of view, improvements in electrical technologies would finally create a more balanced power dynamic between men and women, and thus usher in an era "where she can think straight."[155] However, in his private life, he and his second wife, Mina, quickly

[152] Villiers de I'Isle-Adam, *Tomorrow's Eve*, (Chicago: University of Illinois Press, 1982), 131.

[153] Ibid.

[154] Ibid., 147.

[155] Quoted in Robert Conot, *A Streak of Luck*, (New York: Seaview Books, 1979), 399.

established a routine and set of responsibilities that belied his public position on gender roles.[156] Villiers de I'Isle-Adam's novel may be more accurate than Edison's public statements. An entry from Edison's diary demonstrates that while in New York he:

> saw a wom[a]n get into car that was so tall and frightfully thin as well as dried up that my mechanical mind at once conceived the idea that it would be the proper thing to run a lancet into her arm and knee joints and insert automatic self feeding oil cups to diminish the creaking when she walked.[157]

Yet he viewed women, and even himself, mechanically as evidenced by his "mechanical mind" phrase. On the scale of human development, he placed men ahead of women and children because men possessed a more refined rational development. As for women, he opined in his diary that "[y]ou can't do anything or predict anything about a woman, either, because she is all instinct and emotion."[158] And it is this unpredictability in women and in all people to some degree that Edison sought to root out of human existence through his inventions. Similar to the Edison portrayed in *Tomorrow's Eve*, *woman* was a mysterious creature, but in the end, something that could be improved upon mechanically through a purposeful process of rational development.

Edison's understanding of women and children, as well as men, was part of his larger assessment of what he perceived to be social ills, including but not limited to such characteristics as laziness, greed, and pride. To remedy these ills, Edison suggested a two-pronged solution, which included education and, a more intriguing solution, brain-

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[156] For more information on Edison's married life, look at Robert Conot's *Streak of Luck,* Chapter 37: "The Faustian Soul."

[157] *The Diary of Thomas A. Edison*, 9.

[158] Dagobert Runes, ed., *The Diary and Sundry Observations of Thomas Alva Edison*, (New York: Philosophical Library, 1948), 163.

improvement. As for education, it was imperative to remedy the problem early on during childhood. Education, which encompassed moral, intellectual, practical, and religious aspects, meant filling the heads of little children, quite literally. You "can take a child four years old and its mind is plastic, and whatever you put in there will always stay."[159] Edison insisted "[i]t is necessary to take them young and teach morality and character, to fix ideas in those plastic minds so that it will be impossible for them to think wrong or do wrong."[160] Here, Edison reflected on the reform of education, but an education that focused on the practical effects it would have on society. And technology was one way to realize such benefits. David Nye, a scholar of Edison, drives home this point of practicality by arguing that Edison saw his mechanical contrivances as "transformative" technologies capable of enhancing educational experiences.[161] In all aspects of life, public as well as private, machinery and technology were to play critical roles in promoting the development of society.

Edison wished to see ideas manifested in the world in a very physical and empirical sense. For example, he was not fully satisfied by the intellectual points of socialist dogma. What mattered to him were the actual manifestations of ideas in society. As he succinctly put it in regards to socialism, "they'll have to improve their ideas to

[159] Ibid.

[160] Ibid.

[161] David Nye, *The Invented Self*, (Odense: Odense University Press, 1983), 149. David Nye, a biographer of Thomas Edison, insists that there was not a uniquely whole individual identity named Thomas Edison, but rather a confluence of contradictory and seemingly incompatible Edisons, which paralleled "the divided condition of late nineteenth century Americans." Through an examination of Edison's own personal reflections, correspondence and diary entries, Nye seeks to undo any cohesive unified public image of Edison and suggests that a parallel narrative existed for the United States at the end of the 19th century.

make them practical."[162] Every solution to a problem had to be realized in a very practical sense that could be empirically evaluated. Ideas were meaningless until they were materialized. The phonograph, a key technology in Edison's arsenal of improvement, physically anchored his idealism as an instrument that could be used to comprehend physiologically the active processes in the brain.

Thought – What Does it 'Matter'?

Like any mechanism that could be tested and improved upon, Edison saw the human body, specifically the brain, as a mechanism needing further development, marked by an increase in its "convolutions." We need "to develop the convolutions in man's brain, those coils inside with which he does his thinking. We have gradually developed what we have in there, and if we could develop about two convolutions more we would be able to grasp and solve our social problems."[163] Although he was not specific about what would be contained or developed within these two additional convolutions in a physiological sense, what is clear is his unambiguous mechanical conception of the human body and the brain.

[162] *Diary and Sundry Observations*, 164.

[163] Ibid., 163. Even though Edison did not mention which specific brain anatomy literature he read, publications such as Alexander Ecker, *The Convolutions of the Human Brain,* trans. John C. Galton, (London: Smith, Elder & Co., 1873) and Jacob F. Burkholder, *The Anatomy of the Brain*, (Chicago: G. P. Engelhard & Co., 1904) represent the ideas and descriptions of brain anatomy circulating throughout the United States and Europe that Edison would have encountered.

The physical literalism of Edison's conception of brain development mimics a wax cylinder's inscribed *convolutions* to be played by a phonograph. For Edison, thinking was something performed in the brain, not in a lofty abstract world divorced from the physical or physiological environment. He succinctly described the brain as "nothing more than a meat mechanism," as "a recording office, where records are made and stored."[164] More precisely, a brain with added convolutions would be able to express or playback the knowledge it contained just like a wax cylinder filled with different versions and pieces of human expression and knowledge.

Regardless of their source or context, all problems and their solutions had to boil down to a material and physical basis. As Francis T. Miller, an early biographer of Edison argued, "Edison… was always a practical man who reduced ideas, theories, and even visionary speculations into material forms which could be utilized for the benefit of mankind."[165] Edison put his faith in the ever-advancing mechanization of labor and manufacturing. "Machinery has changed things in our society and it will change them a great deal more. The man and the machine interact."[166] Edison saw this interaction as beneficial to the progress of humankind and rejected any criticism of it. Even though the increased application of mechanical knowledge would reduce the need for human labor, Edison envisioned such change as enhancing the development of the human organs and generative of modern capitalistic society.

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[164] "No Immortality of the Soul," 1.

[165] Francis T. Miller, *Thomas A. Edison: Benefactor of Mankind*, (Philadelphia: John C. Winston Company, 1931), 290.

[166] *Diary and Sundry Observations*, 165.

Ironically though, the reduction in human labor would not stifle the human experience with the material world. Rather, the augmented utilization of technology would enhance the sensory and rational abilities of the human organism. We are not mechanical enough," he proclaimed.[167] Allen Weiss argues in *Breathless* that the use of sound reproduction technologies such as the phonograph not only enhanced, but also transformed how human beings experienced the world around them. The real no longer existed by itself. Copies of the real, whether audio or visual, coexisted with other imitations, which necessarily commingled reproductions of the past with the present. This necessarily created new experiential conditions, especially the confluence of past and present where "human perception is inextricably intertwined with artificial prosthetics."[168] Edison believed that the ever-more-intimate connection between human and mechanical machines correlated directly to the improvement of the human organism. Machines would necessarily alter human perception and as a consequence, new ways of viewing the world would allow for new solutions and better circumstances for humanity. Critical though to this argument was the physicality of the interaction between human and machine. Even for seemingly abstract and non-physical processes such as thinking, Edison insisted on understanding every dynamic phenomenon in the world as a material process, which did not exclude the brain: "The brain that isn't used rusts."[169]

Edison was not alone in this mechanized model of the brain. Jean-Marie Guyau, a French philosopher of the late 19th century, argued in 1880 for a dynamic view of the

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[167] Ibid., 171.

[168] Allen Weiss, *Breathless: Sound Recording, Disembodiment, and the Transformation of Lyrical Nostalgia*, (Connecticut: Wesleyan University Press, 2002), 101.

[169] *Diary and Sundry Observations*., 167.

brain. Before science can *know* something as fact, he argued, the scientist must *imagine*. The brain had been compared to several different mechanisms, such as a piano by Herbert Spencer, but they had been "sketchy" in their comparison because they did not represent an active brain as a dynamic processing mechanism. "We are in need of a comparative term that will allow us to see not only how an object receives and stores an imprint, but also how this imprint at a given time is reactivated and produces new vibrations within the object."[170] Now, he declared, such a mechanism was available: the phonograph. For Guyau, the phonograph not only recorded and preserved information, it also had the ability to recall and reproduce that information, similar to the function of memory. "From this point of view it would be neither very imprecise nor very discontinuous to define the brain as an infinitely perfected phonograph – a conscious phonograph."[171]

Edison also understood human recollection in material terms, and he was precise about the workings of the brain as a recording device, as Edward Marshall's 1910 interview clearly demonstrated. He speculated that even though the eyes may see many things, "the average brain records very few of them."[172] Edison extended his mechanical view of the human body by making an analogy between the division of labor in the

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[170] From Jean-Marie Guyau, "Memory and Phonograph," 1880. Reprinted in Friedrich A. Kittler, *Gramophone, Film, Typewriter*, (Stanford: Stanford University Press: 1999), 30.

[171] Ibid., 33. The similarities between Guyau and Edison, although intellectually interesting, are raised to suggest that Edison was not alone in his understanding of the brain through the structure and operations of the phonograph. Even though this chapter does focus on Thomas Edison, it is still important to demonstrate the existence of a larger cultural lexicon that accepted and/or debated the interchangeability of the human being and technology. Friedrich A. Kittler in *Gramophone, Film, and Typewriter* unpacks this rich relationship between technology and people to highlight not only their interdependency, but also the degree to which mimetic or representational technologies can profoundly alter human experiences.

[172] *Diary and Sundry Observations*, 168.

factory - which he knew so well from his inventive and manufacturing activities – and the mechanism of human memory. In the act of remembering, he explained, "there may be twelve or fifteen shifts that change about and are on duty at different times like men in a factory."[173] Edison imagined that human memory consisted of many records, to be retrieved, as he put it, by "little peoples." Perhaps "billions of little peoples" congregate to make up one individual. For the human being to grow and prosper, they must be disciplined and work well together. Otherwise, disease will set in and cause the human body to sicken and perish. Like the factory, a body was a highly socialized interaction of a billion parts, which to operate optimally, must be organized and efficient.

In an essay of 1888, Edison lamented those who did not grasp how important machinery was for the improvement of the human condition.

> It is terrible stupidity that some laboring men oppose that machinery as their foe. It is the thing that gives them independence and even freedom. Without machinery society would drift into the condition of master and slave. The multiplication of machinery means for every worker more food, better clothes, better house, less work.[174]

Edison, unlike the daily laborer who could not see the larger picture of industry, firmly believed that society could only prosper, materially or morally, with the continued integration of machines into society. For Edison, this symbiotic relationship between machines and humans was critical to directing evolution towards perfection.

The conflation of machine and human reflected a general view of intellectuals in the United States and Western Europe. There were dissenters, such as Ezra Pound,

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[173] Ibid., 212.

[174] Thomas Edison Archives, SC88, Unbound Clippings Series: 1888, TAEM 146:272.

Georges Sorel, and Henry Adams, but their critique did not dominate the cultural debate over the modernist impulse.[175] Mark Seltzer, a literary scholar, investigates the fusion in American literature of machine and nature in *Bodies and Machines*. He sees his project as "redrawing of what Thorstein Veblen called the 'vague and shifting' line between 'the animate and the inanimate' and between the natural and the unnatural in turn-of-the-century American culture."[176] By looking at the works of such authors as Henry James, Frank Norris, Stephen Crane, Seltzer examines how American naturalist novels documented the coupling of the machine to nature, and in particular the machine-like aspects of novelistic characters. For example, in his analysis of Henry James's *The American*, Seltzer argues that the American culture of consumerism and consumption exquisitely described in the novel by its protagonist Christopher Newman reflected a market dynamic of uniting bodies and machines, which was crystallized in the economic manufacture of Americans as products.[177]

Friedrich Kittler demonstrates the disposition of European intellectuals to challenge the barriers between the realms of the machine and human. In particular, his examination of the typewriter and its effect on the resituating of writing and thinking shows how a new historical moment of body-machine coupling in the late 19th century shaped how artists and intellectuals thought of language and thinking. Nietzsche, on the purchase of a new typewriter, began to re-conceptualize the analytical and expressive

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[175] For more on the cultural debate over modernism in America, see Lears, *No Place of Grace*, 4-7.

[176] Mark Seltzer, *Bodies and Machines*, (New York: Routledge, 1992), 3.

[177] Ibid., 49-59. For an additional exploration of the union between the animate and inanimate, *The Education of Henry Adams*, which documents the young Adams's adventure at the Great Exhibition of Paris (1900) in the Gallery of Machines, illuminates this fusion in his writing, *The Virgin and the Dynamo*.

nature of human beings as merely input and output mechanisms. The mechanical assessment of the human being reflected, according to Kittler, a new interpretation of the human-machine relationship that – in Lacanian terms – shifted from the Symbolic to the Real.[178] A major part of this shift included a mechanical investigation of the body, which took different disciplinary forms, such as biology, physiology, medicine, and psychology.

This late-nineteenth century re-conceptualization of the brain's/mind's activities of rationality and language as mechanism equated it to other organic and inorganic entities. The activities of the brain were no longer seen as mysterious. Simple applications of machine metaphors would suffice in understanding the processes of brain behavior. Tracing how some of Edison's contemporaries imagined the functioning of the brain and of the body in similar ways to Edison demonstrates a broader cultural willingness to adopt and critically examine a mechanical view of organic beings.

Edison's identification of machines and human beings is evident also in his metaphysical assumptions about matter. He assumed that all matter was ultimately composed of life units. In a little-discussed publication *The Diary and Sundry Observations of Thomas Alva Edison*, he boldly proclaimed that life is indestructible.

> Frankly, I do not accept the present theories about life and death. I believe, rightly or wrongly that life is undestructible, it is true, and I also believe that there has always been a fixed quantity of life on this planet, and that this quantity can neither be increased nor decreased.[179]

From this statement, most of Edison's views on the material world can be teased out. First, he rejected life as a distinct state of being from death. "Everything that pertains to

[178] Kittler, *Gramophone, Film, Typewriter*, 73.

[179] *Diary and Sundry Observations*, 206.

life is still living, and cannot be destroyed."[180] Second, since the separation between the living and the dead was an illusion, all matter merely cycled between different material states that did not reduce to a simplistic duality between life and death. But what was actually living when a living being appeared to die? For Edison, what enabled this incessant material transformation were the life units that made up all of the animate and inanimate matter in the universe. In regards to the human body, these Edisonian life units were much smaller than the body itself. As a consequence, Edison argued that "Our body is not itself *the* unit of life or *a* unit of life."[181] Fundamental to this assumption was the belief that life units were the smallest material entities, undetectable with even the aid of the most powerful microscope. Even though Edison did not make a clear connection between the life units and the operations of the phonograph, the language he used to describe the life units and his understanding of the workings of phonographic recording share the same characteristics of memory – which he correlated to personality – and processes of recording and preserving. This correlation suggests that the phonograph helped him clarify his own position on the issues of immortality and the makeup of personality, which he articulated with his theory of life units.

Edison believed that life units formed the basic composition material of all living beings. They inhabited the body's cells and as autonomous entities, the life units harbored an inherent memory and intelligence capable of repairing any part of the body that may be injured.[182] Therefore, for Edison, the death of an individual could not be

[180] Ibid.

[181] Ibid.

[182] Ibid., 206-7.

understood in a traditional way. "The life-units which have formed that man do not die. They merely pass out of an unimportant mechanism which they inhabited, which has been called a man and has been mistaken for an individual, and select some other habitat or habitats."[183] Death, then, was a transformational process where the life units left the "mechanism" of the dead physical body and reassembled with other life units to build and sustain other animal, plant, or inorganic life. Edison denied that human beings, as organisms, should be seen as a completely independent unit of life, and on this basis he challenged traditional doctrines of immortality. The notion that "man" or a "cat" or an "elephant" represented a discrete unit was mere illusion.[184] Man was nothing more than the sum total of all the life units present in the body. But, it was exactly these life units that gave intelligence and consciousness to human beings.

In an article entitled, "What is this State Called Life," published in November of 1891 in the New York Herald, Edison argued that at the atomic level, all matter is alive and full of consciousness. Thus, the life units comprising the human organism were responsible for the intelligence that humankind possessed. "It is my belief, however, that every atom of matter is intelligent, deriving energy from the primordial germ. The intelligence of man is, I take it, the sum of the intelligences of the atoms of which he is composed."[185] Edison understood the human organism to be a summation of parts, but of highly independent autonomous life units. The life-units can move on and become "corn,

[183] Ibid., 217.

[184] Ibid., 215-17.

[185] Thomas Edison Archives, SC91 Unbound Clippings Series: 1891, TAEM 146: 728.

a tree, grass."[186] Edison's philosophy challenged any clear demarcation between animate and inanimate matter. "The more we learn the more we realize that there is life in things which we used to regard as inanimate, as lifeless."[187]

Though this chapter does not deal with Darwinian debates, Edison kept abreast of the debates of the writings on mutation and evolution, utilizing them in his conception of the fundamental processes of nature in the physical world. Moreover, his opinion regarding the basic building blocks and operations of life dovetails quite interestingly into his overarching mechanical worldview. The autonomous nature of life-units coupled with the divisibility of animate and inanimate matter suggests that Edison saw the body as compilation of divisible and discrete units, characterized by a strict physiological division of labor. When Charles Darwin published *The Variation of Animals and Plants Under Domestication* in 1868, he advanced his Provisional Hypothesis of Pangenesis as an explanation for variation and as a source of new species. One of the main observations that Darwin emphasized concerned the "view of the independent life of each minute element of the body."[188] Drawing on his own observations and those of Rudolph Virchow, the German pathologist, Darwin endorsed the functional independence of the different elements of the body, which encouraged thinking of the body as operating on the basis of a physiological division of labor. Individual components of an organism

[186] *Diary and Sundry Observations*, 217, 221.

[187] Ibid., 236.

[188] Charles Darwin, *The Variation of Animals and Plants Under Domestication*, Vol.2, (Orange Judd & Co.: New York, 1868), 441-443.

functioning independently from its other physiological parts made divergence and specialization possible, contributing to the process of speciation.[189]

Edison did not specify what ideas he drew on, but he did note that he found the ideas of Hugo de Vries, the German plant physiologist, to be a better alternative to some of Charles Darwin's arguments regarding the speed of evolution and, consequently, the origin of species.[190] He thought that the intracellular pangenesis hypothesis and mutation theory, put forth respectively by de Vries in 1889 and again in 1901-1903, more satisfying than Darwin's version of pangenesis. And what he found especially interesting was de Vries's argument for the emergence of immediate mutations, producing new species more quickly than Darwin's theory, and resulting in accelerated evolution.

Edison found quite useful in de Vries's theory the immediate emergence of new characteristics contained in independent hereditary particles that could lead to the creation of a new species.[191] De Vries summed up this process of evolution in his experimental work with plants as how "new species originate suddenly, without preparation or intermediate forms," which was dependent on his experimental work with plants and hybridization and subsequent re-definition of the makeup of hereditary characteristics.[192]

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[189] William Tammone, "Competition, The Division of Labor, and Darwin's Principle of Divergence," *Journal of the History of Biology* 28, no. 1, (Spring 1995): 109-131.

[190] Thomas Edison, unpublished essay, (TAED B037C).

[191] Peter J. Bowler, "The Mutation Theory and the Spirit of Darwinism," *Annals of Science* 35, (1978): 60. For more on the Neo-Darwinian context that de Vries was a part of, see Peter Bowler's *Charles Darwin: The Man and his Influence* (Oxford: Blackwell Publishers, 1990), 213-15.

[192] Hugo de Vries, "The Origin of Species by Mutation," *Science*, Vol. 15, No. 384, (1902): 723.

One of the core elements of de Vries's position on speciation resided in his concept of the *pangenes*, which bears a striking similarity to the rhetoric and concepts expounded by Thomas Edison. Laid out in his *Intracellular Pangenesis*, de Vries defined the *pangen* as the smallest particle within in a cell that corresponds to a highly independent hereditary characteristic.[193] In contrast to the notion that each hereditary particle individually "represent the entire individual," which Hebert Spencer's physiological units and August Weismann's *Ahnenplasmen* posited, de Vries claimed that hereditary characters of species are independent of each other, not containing identical characteristics. Thus, hereditary particles, the *pangenes*, must be independent as well.[194] One of the main problems for de Vries, regarding Darwin's theory of intracellular pangenesis, was the gradual rate of change in the process of evolution and the potential blending or disappearance of hereditary characteristics. Even though Darwin and de Vries did not disagree on the independent nature of hereditary traits, de Vries attempted with his definition of *pangenes* to make more precise the physical movement of uniquely different hereditary characteristics in the process of reproduction and the subsequent emergence of new hereditary traits, which allowed for a faster process of evolutionary change.[195]

Edison utilized de Vries's ideas and incorporated them into his scientific worldview. His life-units contained his own version of these highly independent hereditary particles. Edison interpreted the independent and autonomous quality of

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[193] Hugo de Vries, *Intracellular Pangenesis*, (Chicago: The Open Court Publishing Co., 1910), 7.

[194] Ida H. Stamhuis, Onno G. Meijer, and Erik J. A. Zevenhuizen, "Hugo de Vries on Heredity, 1889-1903: Statistics, Mendelian Laws, Pangenes, Mutations," *Isis* 2 (Jun. 1999): 241.

[195] J. W. Moll, "Intracellular Pangenesis," *Botanical Gazette*, Vol. 14, No. 3, (March 1889): 54-66.

hereditary particles as a sign of intelligence and consequently he imbued his life-units with intelligence and memory capable of organizing together to form both simple matter and highly complex beings. According to Edison, one way the inherent intelligence of the life units manifested itself was with fingerprints. In his unpublished essay, he described how the healing process would regenerate the same prints if they were destroyed through the process of burning. As he stated, "when the skin forms anew, ink it again and press it upon paper. You will find that it will record whirls precisely like the original ones."[196] For Edison, this simple process of regeneration provided evidence for his life unit theory, suggesting that all physical and mental attributes of human beings were designed and activated by life units.

Regardless of the degree of complexity, all matter was made up of these life-units, which Edison compared to the size of an electron. According to him, he had a mathematician, whom he did not name, perform a set of calculations at the end of which, Edison concluded that the human body could be organized and developed by "millions and billions" of life-units.[197] Edison extended his life units to capture more of the operations of the world than de Vries's *pangenes*. For Edison, life units were the core elements of matter, which included both animate and inanimate matter. As a consequence, his life units erased any clear demarcation between the world of the living and the non-living. Edison's life-units, replete with memory, were the autonomous units of life that comprise all forms of matter, from a rock to a human being. Edison remarked,

[196] Thomas Edison, unpublished essay, (TAED B037C).

[197] *The Diary and Sundry Observations,* 207.

"I am sure that a highly organized entity, consisting of millions of electrons yet still remaining too small to be visible through any existing microscope, is possible."[198]

This blurred distinction between living and non-living objects echoed Thomas Huxley's views on biology. Huxley presented his ideas in a collection of essays published in 1876, of which Edison must have been aware, since he claimed to have been a voracious reader and admirer of Charles Darwin and his evolutionary writings. Exploring the boundary between animal and plant life, Huxley challenged Georges Cuvier's notion that animal life was physiologically more complicated than plant life by utilizing contemporary physiological concepts. This new biological knowledge, according to Huxley demonstrated that the line between plant and animal life was virtually non-existent. Noting how forms of plant and animal life interchanged, Huxley concluded, "the problem whether, in a given case, an organism is an animal or a plant, may be essentially insoluble."[199] Huxley's challenge to a hierarchical complexity of organisms functioned as a basis for Edison's views. As Edison extended the logic of this analysis and stated, "there remains for determination the line between "live" and "dead" matter and between movable and fixed life."[200] Even though the historical record does not indicate a direct link here between Huxley and Edison, the similarity in their claims

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[198] *The Diary and Sundry Observations,* 241. Though what follows is speculation, picturing the human body as a factory with its individual units and then transporting this concept to the phonograph may allow us to better understand the phonograph and its significance. If the body can be understood as containing individual, self-autonomous life units, then the voice of an individual can potentially represent an individual, self-supporting entity. Thus, the voice, which is recorded onto the wax cylinder of the phonograph, is an independent element or unit of the singer, who contains a myriad of life-units. Keeping in mind de Vries's independent hereditary particles, these physiological life-units convey the affective qualities or the 'living' characters of the voice to the phonograph in a similar manner.

[199] Thomas Huxley, "On the Border Territory Between the Animal and Vegetable Kingdoms," in *Discourses: Biological and Geological Essays*, Vol. 8, (New York: Macmillan, 1894), 195.

[200] *Diary and Sundry Observations*, 225.

regarding the problematic boundaries between animate and inanimate matter indicate that very specific debates regarding the processes of reproduction, evolutionary change, and the basic definition of life were taken up by cultural and intellectual critics and then applied to larger social questions and concerns, upon which Edison did not refrain from having an opinion.

The prevalence of the notion in the intellectual and cultural circles of turn-of-the-century Europe and America that the body was composed of minutely small independent and autonomous entities provided Edison with an appropriate context to create a conceptual bridge between the makeup and behavior of people and the world of mechanism and invention. The phonograph, the recorder of human expression and personality, became the perfect instrument to better understand the relationship between the seemingly cold mechanical physical world and the world of the living, where the miracles of life never ceased to generate questions about the afterlife. Edison did not stop with the correlations between the operations of the phonograph and basic human physiology. He continued to push the possible applications of the phonograph, which ushered in a new phase of experimentation. The phonographic project was now to engage and better understand the connections between the physical and spiritual realms, adding another dimension to the phonograph's ability to be used in the study of less tangible phenomena.

God and Spiritual 'Matters'

Edward Marshall's interview with Thomas Edison would suggest Edison was more of an atheist than a devout Christian.[201] But certain aspects of Edison's work suggest that he had a more complicated relationship with religion. In several interviews, Edison optimistically hoped for the day that mystical religion would be eradicated through the contributions made by technological and scientific advancements. Still though, in old age he praised Christianity as the best among the religions, not necessarily because it was more truthful, but because it instilled through its teachings a moral education that accommodated rather nicely the progressive social structure of the ideal society.[202] But the elements of moral education did not reside only in canonical texts like the Bible, but also in technological devices like as the phonograph, which also embodied the values necessary to a prosperous and peaceful society.

While Edison did not associate himself with any mainstream Christian denomination or other religions institutions, he did join the Theosophical Society in 1878. He sent in his application for membership on April 5th.[203] Established in 1875 by the

[201] Edison's rejection of the notion of immortality angered both the clergy and academia. In both cases, individuals such as the Reverend Dr. Charles F. Aked and the psychologist, Dr. W. H. Thomson – author of *Brain and Personality* – found Edison's critique of immortality as morally dangerous and potentially abnormal or pathological. And even though Edison was more than likely aware of those criticizing him in the published media, he did not respond to the criticism and rather maintained his focus on his work. For more details regarding the critique generated by Edison's opinions on immortality, see "Author of "Brain and Personality" Replies to Edison," *New York Times*, Oct. 9, 1910 and "Dr. Aked Derides Edison's Theory," *New York Times*, Oct. 17, 1910.

[202] "Has Man an Immortal Soul?," interviewed by Edward Marshall, *The Forum* 76, no. 5, (November 1926).

[203] Henry Steel Olcott, *Old Diary Leaves*, (Adyar: Theosophical Publishing House, 1895), 466.

Russian mystic Madame Blavatsky and the American Henry S. Olcott, the Theosophical Society saw its mission as establishing through scientific means the existence of God and the spiritual world, both so delicate that they could not be normally detected by human beings or instruments. It endorsed a nuanced materialism, which posited that all spiritual-like phenomena could eventually be explained along material lines. At a fundamental level, Olcott, speaking for the Theosophical Society, claimed that it was possible to reconcile religion and science and to prove the existence of an "unseen universe." He borrowed this phrase from Peter G. Tait, the mathematical physicist who co-wrote the seminal work, *The Unseen Universe: Or Physical Speculations on a Future State* (1868), with Balfour Stewart, a Scottish physicist who challenged the perceived incompatibility between science and religion. With this scientific imprimatur, the Theosophical Society held that the definition of matter should be extended to include undetectable matter, and as a consequence, "unexplained laws of nature and the psychic powers of man."[204] Such an extension of matter's definition would allow spiritual phenomena to be firmly studied and explained with the aid of the physical sciences.

Despite the lack of documented interaction between Edison and members of the Theosophical Society, there is a rich overlap between the work of the Society and Edison's phonograph. One of the most interesting aspects of this work was the discovery of the so-called *odic force,* first identified by the German psycho-physicist Karl Reichenbach in the 1840s and 1850s. Reichenbach suggested that there existed a magnetic force in the body that could be expressed though thoughts, which he defined as

[204] Madame Blavatsky and H. P. Blavatsky, "Recent Progress in Theosophy," *The North American Review* 151, no. 405, (Aug. 1890): 181.

the *Od*. Thus, thought was reduced to a force that could be detected through material means. It is this psychophysical phenomenon that interested Olcott, but it also brought him into communication with Edison who at the time was trying to measure through the movement of a pendulum the force of thought and the physical power of the mind.[205]

Edison did not participate directly in the affairs of the Theosophical Society. For him, the society became an outlet to explore unexplained phenomena and the mysteries of the universe. He was wary of the grand schemes of Madame Blavatsky and in a letter he sent Henry Olcott in April of 1878 confirming his membership into the society, Edison stated that he would "read between the lines!"[206] It is quite possible that he ceased to engage with the Theosophical Society because of its overly mystical reputation. As Molly McGarry argues in *Ghosts of Futures Past*, well-known Spiritualists, such as William Emmette Coleman, thought of Blavatsky's Theosophy as a "mongrel mixture" of different religions and philosophies, which did not embody the "philosophical system" necessary for the scientific study of spiritual phenomena.[207]

Edison was clearly interested in unexplained phenomena such as telepathy and spirituality, but only on grounds that they could be understood scientifically at some point in the future. In interviews when asked about anything spiritual, Edison would reply with "I do not know what the word 'spiritual' means … I am not interested in matters of spirit.

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[205] Olcott, *Old Diary Leaves*, 467. According to Olcott, Edison did attempt thought transference with himself as part of the experiment, but to no avail. In terms of Edison's own records, he did document one such experiment in 1903 entitled "My experiments on the sixth sense." Quoted in *The Invented Self*, 151.

[206] TAE to Henry Olcott, 4 April 1878, (TAED D8912ABQ).

[207] Quoted in Molly McGarry, *Ghosts of Futures Past: Spiritualism and the Cultural Politics of Nineteenth-Century America*, (Los Angeles: University of California Press, 2008), 164. William Emmette Coleman was a strong critic of Blavatsky's Theosophy and delivered his critique in a pamphlet entitled "Blavatsky Unveiled," which was published in India in 1892.

I am conducting a laboratory experiment."[208] The Theosophical Society provided him with a starting point to explore the unexplained, but the historical record indicates that he did not maintain a close connection with the Theosophical Society, even though Blavatsky and Olcott wanted the credibility offered by an association with an iconic figure, such as Edison.

As early as 1885, Edison occupied himself with the possible of telepathy. In his own diary, Edison on more than one occasion wrote about mind reading. One afternoon following the performance of a Strauss waltz, Edison described how he "learned the girls how to make shadow pictures by use of crumpled paper = we tried some experiments in mind reading which were not very successful."[209] Not discouraged, he explained how "mind reading [was] contrary to common sense, wise provision of the Bon Dieu that we cannot read each others minds."[210] It would only be a matter of human evolution, according to Edison, for mind reading to be possible and safe for the human race. The development that Edison envisioned would take place in what he called his "No. 2 mind." His "No. 1 mind," also known as the "primal mind or heart," was the core instinctual mind that all human beings possessed and had to be controlled with the "acquired mind" or "No. 2 mind" through the act of rational thought and eventual self-control.[211] As the "acquired mind" evolved, it would create new intellectual and metaphysical possibilities for humanity to explore, which for Edison included the possibility of clairvoyance.

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[208] "Mr. Edison's "Life Units"," *New York Times,* January 23, 1921, 1.

[209] *The Diary of Thomas A. Edison*, 21.

[210] Ibid.

[211] Ibid., 39.

In particular, he was intrigued by the work of Bert Reese, a sensational clairvoyant who captured the public throughout the 1910s and 20s. Beginning in 1910 and not concluding until the early 1920s, Edison involved himself both publicly and privately with Reese's telepathy. In letters to his mother, Nancy Elliott, Edison frequently mentioned Reese's mind reading experiments. In February of 1921, Edison asked her "[d]id not Riese,(?) the mind reader, claim to be able to tell what was in drawers, etc?"[212]

In an effort to justify his own belief in immortality through scientific means, he attempted to improve his own phonograph in order to facilitate communication between the living and the dead. Edison did not indicate where or when he initially thought of improving such a mechanism, but there is a strong possibility that the idea was brought to him by a New York psychic. According to a anonymous journalist, a certain Mrs. M. E. Williams, a "Spiritualist Medium," showed up at Edison's door sometime in mid-1888 and requested that he build an instrument, based off the phonograph with an "extra large funnel" because the "spirits have their own style of speaking."[213] Though the article contained a very sarcastic attitude, Edison was not skeptical. As his documented work indicates, he proceeded to develop an instrument to communicate with the spirits of the dead. Discounting any immaterial explanation of life after death, Edison thought that the material spirit or "personality" of a person could affect an extremely delicate instrument

[212] TAE to Nancy Elliott, 21 Feb. 1921, (TAED X018A8AY4).

[213] Thomas Edison Archives, SC88 Unbound Clippings Series: 1888, TAEM 146:245.

and be recorded just like the sound waves of a singer onto a wax cylinder from a singer's voice or musical instrument.[214]

The basis for this belief can be seen in a document that appears to be the basis of an interview around 1920 that was never published. In drawing out the implications for his life units, Edison suggested that "[i]t may be that if a man dies the group consisting of individual units desert the mechanism" and "this group remembers all things which occurred – during their occupancy and completely preserves the personality."[215] The mechanical composition of personality and memory that Edison described parallels with the operation of the phonograph, mechanically registering finite perturbations in the air to be physically inscribed and remembered through the playback process.

The similarity between the basic mechanics of phonograph operation and Edison's attempt to create a new instrument to communicate with the dead showed up in different publications. The *Chicago Daily Tribune* in October of 1920 picked up B. C. Forbes's story in the *American Magazine* about Edison's new project. It quoted Edison: "in the very nature of things, the degree of material or physical power possessed by those in the next life must be extremely slight, and that, therefore, any instrument designed to communicate with us must be superdelicate."[216] At the basis of his experimental work was the idea that personality, because of its physical basis, had the ability to "affect

[214] Ibid., 235. Edison constantly refers to "personality" as that which survives death. It is probable that he did not use the word 'soul' because it carried too strong of an immaterial connation.

[215] Thomas Edison, unpublished essay, (TAED B037C).

[216] "Edison Working on Instrument to Talk to Dead," *Chicago Daily Tribune*, October 1, 1920, 1.

matter."[217] Another article that interviewed Edison about death stated: "Mr. Edison thinks that our personality "units" do not die, but continue to exist as substantial material things."[218]

In addition to the excitement that surrounded Edison's work, at least one religious figure went on record about Edison's ambitious project. In an article from the *New York Times* published right after Edison's attempts to communicate with spirits was made public, the Reverend Charles de Heredia expressed his doubt whether Edison would succeed. Reverend Heredia, who had dedicated a substantial amount of time and energy to exposing spiritual quacks to protect the integrity of the Church, felt that Edison would more likely "turn up some new wonder of science in the undertaking."[219] Heredia, in the end, was not critical of Edison's work and rather saw it as potentially helpful for science, not religion.

It is not clear if Edison ever gave up his experimental spiritual work, but the final words regarding this line of inquiry were published in 1933, well over 10 years after the initial publicity. Entitled, "Edison's Own Secret Spirit Experiments," the article in *Modern Mechanix and Inventions* declared that "[f]or thirteen years results of Edison's astounding attempt to penetrate that wall that lies beyond mortality have been withheld from the world, but now the amazing story can be told."[220] In an effort to provide a sensationalist article for its readership, *Modern Mechanix* did not reference the original

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[217] Ibid.

[218] "Mr. Edison's "Life Units"," *New York Times,* January 23, 1921, 1.

[219] "Priest Exposes Spiritism," *New York Times*, October 18, 1920, 16.

[220] "Edison's Own Secret Experiments," *Modern Mechanix and Inventions*, (October 1933): 34.

newspaper and magazine articles publicizing Edison's spiritual experiments in 1920. What is important from the *Modern Mechanix* article is the reinforcement of the assumptions Edison made in the experimental phase of his work. Just as in the 1920s and earlier, Edison's life units, replete with intelligence and autonomy, were still identified in the article as the detectable units of deceased personalities with which Edison sought to communicate with his delicate recording mechanism.[221] Even while claiming that Edison failed in his attempt to communicate with the dead, the article captured the magical aura of Edison – now himself a denizen of the "spirit world" – intent on detecting and preserving communication with the personalities of deceased individuals.

Edison's new instrument to communicate with the afterlife was an extension and development of the phonograph as well as an embodiment of the ideas embedded in it. Relying on similar principles of the phonograph and the argument that all matter is alive, the new instrument was to establish contact with the "personalities" and bring to life those people who were at one time thought to be dead. As Edison matured, there was an amazing fusion between his technological vision and personal beliefs, which was expressed in the form of the phonograph, and accentuated with his spirit communicator. There is no better incarnation of an automaton-like mechanism than Edison's ultimately unsuccessful machine; but the successful phonograph does not fall far behind.

Edison posited that with the aid of scientific and technological advancements, the universal assumptions of religion would be corroborated while the dogmatic elements of the world's major religions would be disproved and eventually abandoned. Only a thorough scientific engagement of the spiritual phenomena, in particular, communication

[221] Ibid., 35-36.

with the voices and/or spirits of the dead would yield irrefutable evidence of the physical existence of the spirit world. Edison was not alone in this metaphysical position. Leading psychologists, such as William James and G. Stanley Hall, as well as proponents of philosophies identical or similar to the teachings of the Theosophical Society, committed themselves to a genuine investigation of scientifically establishing the artificial boundary between the material and immaterial realms.[222] Edison, true to his wizard-like aura, worked alone in his attempts to establish scientific proof of the existence of an afterlife. After the early 1930s, he did not mention publicly or privately anything regarding his spirit communicator.

Conclusion

Edison's favorite invention the phonograph played an important role in facilitating his exploration of the fundamental processes of nature. The phonograph served as an instrument of amusement for Edison and others, and yet the ability for the operation of the phonograph to serve as aid in speculating about the composition of matter, people, and the mysteries of the universe shaped Thomas Edison's understanding of the world around him. The actual physical operation of the phonograph represented a

[222] For a comprehensive sample of this work by James and Hall, the *Proceedings of the American Society for Psychical Research*, Volume 1, (1885-1889) contains a great diversity of psychical investigations conducted at the end of the 19th century, of which thought transference was a significant area of interest. Edison, in an effort to keep up with the work of his contemporaries, possessed a copy of one of the *Proceedings for Psychical Research* in his library, although it is not clear as to how he used it.

concrete mechanical understanding of material phenomena, which dovetailed seamlessly into Edison's over-arching understanding of the forces that he believed to operate in the structure of the universe. At its core, the phonograph provided this conceptual understanding and enabled Edison to articulate a simple, yet far-reaching theory that was integrally connected to his phonograph. The capacity of a mechanism to capture from the air the ethereal sounds and voices onto a physical medium hinted of the miraculous. And this uncanny feature of a simple mechanism composed of a stylus, recording medium and a sound funnel opened up a vista of questions and ideas that the contemporaries of Edison were both excited and hesitant to engage. At the center of these investigations was the phonograph mechanism as analogy to unexplained phenomena regarding human behavior, and essentially human identity.

Edison was not alone in fashioning the phonograph as an instrument that represented the physical and biological operations of living organisms. For some, this mechanical reductionism smacked of materialism and/or atheism, but Edison himself saw the phonograph as an avenue to a deeper understanding of the workings of human beings and their environment. This popularity and anxiety surrounding the phonograph shows the significant role that his favorite invention played not only in Edison's conceptual understanding, but also in intellectual and cultural circles at the turn of the 20th century.

Samuel Butler, an English novelist and essayist wrote in 1863 an essay entitled "Darwin Among the Machines." Describing the ubiquitous presence of machines in daily life, Butler recognized the intricate and dependent relationship between man and machine. Suggesting that the inevitable result would be the perfection of machines, making humans an "inferior race," Butler offered a cautious and pessimistic appraisal of

the future of mankind's subservience to "mechanical life."[223] Ultimately, for Butler, the machines would possess "no evil passions, no jealousy, no avarice, no impure desires."[224] Such an evaluation of technology would not have bothered Edison. Disagreeing with critics of the over-mechanized and overly secular society, Edison firmly believed that machines, from the telegraph to the phonograph, played a crucial role in uniting humankind and recapturing a sense of humanity, which had somehow been lost. Edison was very precise about this and envisioned the phonograph as improving all aspects of daily life, from the physically mundane to the ethereal realms of spirituality and the afterlife.

Edison engaged the phonograph as a critical instrument and model for the protection and ultimate perfection of the human race. Perhaps the portrayal of Edison in *Tomorrow's Eve* rings truer than one might imagine. The fictional Edison's desire to record the voice of God via a mechanical device, a desire to improve the lives of human beings, coincides with the actual Edison's ambition to make society simultaneously more mechanical and moral through his inventions. Yet, at the core of humanity's evolution was a simple analogy made between the brain and the phonograph, which he captured in his 1910 *New York Times* interview with the words: "[m]achinery, pure and simple."[225]

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[223] Samuel Butler, *A First Year in Canterbury Settlement and other Early Essays* (New York: E. P. Dutton & Company, 1923), 210-212.

[224] Ibid., 210.

[225] "No Immortality of the Soul," 1.

Chapter Four

The Objective Preservation of Subjective Expression:

The Use of the Phonograph in American Ethnographic Fieldwork at the Turn of the 20th Century

On March 6th of 1889, Jesse Walter Fewkes embarked on a three-day ethnographic fieldwork trip to the interior of Maine, in an area known as Calais. Along with his notebooks, writing implements, and other equipment essential for the fieldwork, Fewkes brought a treadle-operated phonograph. He anticipated that with the phonograph, he could record the stories, legends, myths, and other linguistic and musical expressions of the Passamaquoddy Indians, which would be recorded and permanently preserved on phonograph wax cylinders for circulation and study amongst fellow anthropologists.

That same year, Franz Boas published an important paper: "On Alternating Sounds." Boas had just completed his extensive anthropological study of the Kwakiutl Indians in Northwestern Canada, with a particular focus on a linguistic analysis of the Kwakiutl language. His focus reflected his belief that the usual modes of observation and translation of non-Western languages were rife with errors rooted in the observer's unchecked listening. As Boas argued, "it is clear that all such misspellings are due to a wrong apperception, which is due to the phonetic system of our language. For this reason I maintain that there is no such phenomenon as synthetic or alternating sounds, and that their occurrence is in no way a sign of primitiveness of the speech in which they are said

to occur."[226] In pointing out that conflicting spellings for the same word were errors committed by the observer, Boas challenged the predominant notion of the time that perceived variations in pronunciation of non-western languages reflected the undeveloped nature of primitive humankind, where "the phonetic elements of primitive speech probably had no fixedness."[227] Rather, the imprecise and undisciplined Western observer was responsible for the perceived fluidity in non-Western language.

This challenge to the traditional linguistic study of indigenous cultures was part of a much larger re-orientation in American anthropology under Boas's direction. His publication of *The Mind of Primitive Man* in 1911 challenged the argument that society evolved from "simple beginnings" to the "complex type of modern civilization," an argument expressed by earlier scholars, such as Edward Tylor and Herbert Spencer.[228] With his critique of the connection between race and cultural development, Boas dissolved the singular notion of *culture* associated with civilization into a plethora of cultures, establishing the "relative autonomy of cultural phenomena."[229]

It is no coincidence that the publication of Boas's paper occurred simultaneously with Fewkes's ethnographic trip to Maine. Fewkes's experimental effort to establish the reliability of the phonograph in recording non-western languages as a potential tool in linguistic and cultural study dovetails nicely with Boas's undoing of traditional

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[226] Franz Boas, "On Alternating Sounds," *American Anthropologist* 2, No. 1, (January 1889): 52.

[227] Daniel Brinton, *Essays of an Americanist*, (New York: Johnson Reprint Corporation, 1970), copyright 1890, 399. One can also look at George Stocking, *Race, Culture, and Evolution,* (The Free Press, New York: 1968), 158-159 for further elaboration.

[228] Franz Boas, *The Mind of Primitive Man*, (Norwood: Norwood Press, 1911), 175-176.

[229] Sidney W. Mintz, ed., *History, Evolution, and the Concept of Culture: Selected Papers by Alexander Lesser*, (Cambridge: Cambridge University Press, 1985), 16.

anthropological theory and method. The actual ethnographic practice of phonograph recording and the subsequent study of wax cylinders, an important element of the methodological and epistemological values of a young American anthropology, reveals a burgeoning, yet unstable relationship between practice and theory and the subsequent production of new knowledge claims generated about indigenous culture and society. In contrast to the social evolutionary scheme of development advocated by Tylor and Spencer, Boasian anthropology aimed at a complete knowledge of a particular primitive culture where if "it is our serious purpose to understand the thoughts of a people, the whole analysis of experience must be based on their concepts, not ours."[230]

The phonograph became an indispensable scientific instrument for ethnographers by the mid-1890s; a close examination of the initial employment of the phonograph and of the arguments crafted from the recorded wax cylinders themselves illuminates disputes over methodologies and claims regarding non-western music, which themselves reflect the various ways that the phonograph was utilized and understood. The phonograph, in concert with the recorded sounds on the wax cylinders, was both utilized either to challenge or reinforce epistemological claims about the study of American Indian music. More precisely, the phonograph brought to the foreground biases and competing claims to scientific accuracy – an ethnomusicological accuracy dependent on the value attributed to the phonograph's recording of the emotions expressed in the unique performance of a song.

[230] Quote in Walter Goldschmidt., ed. *The Anthropology of Franz Boas*, (The American Anthropological Association, 1959), Marian Smith, "Boas's "Natural History" Approach to Field Method," 50.

An examination of the phonograph in the early work of Jesse Fewkes, his colleague, Benjamin Ives Gilman, John Comfort Fillmore, and the anthropological work of Franz Boas, exposes competing notions of scientific accuracy as well as different ideas about the definitions of objectivity and the appropriateness of subjectivity in the practice of ethnomusicology. The utilization of a mechanical medium hardly embodied a new and unified form of objectivity; for all of the users of the phonograph, their handling of the new mechanism highlights how they allowed their own personal impulses to shape their ethnographic work. This might have gone unnoticed if not for the debate over the appropriate role of the phonograph in ethnomusicology. As ethnographers worked with a new technology, disagreements arose over objective scientific practice, and by contrast, over the value of subjectivity in anthropological work.

We can situate the work of Jesse Walter Fewkes, Benjamin Ives Gilman, and Franz Boas in relation to the intellectual work of the 18th century German Romantic, Johann Herder, who rejected "the idea of human history as a linear process of constant perfection."[231] Instead of classifying human history along a developmental path, Herder aimed "to feel *the whole nature* of the soul that *pervades* all, … to feel all of this, … transport yourself into the age, into the region of the compass, into the entire history."[232] Accounting for the affective, or, we might say, the subjective expressions that constitute different cultures, anthropologists, such as Fewkes, Gilman, and Boas used the phonograph to problematize a detached rationalization of human culture. They criticized an applied universal history for all of humankind, the dominant anthropological theory of

[231] *On World History: Johann Gottfried Herder, An Anthology*, Hans Adler and Ernest A. Menze, eds., (Armonk: M. E. Sharpe, 1997), 35.

[232] Ibid., 36.

the 19th century, and they refused to dismiss the importance of unique cultural expressions as integral components of genuine ethnographic work. They incorporated into their studies the cultural perspectives of the societies they studied, which reflected the larger methodological shift in the discipline of anthropology at the turn of the 20th century to a Boasian historicist orientation intent on *fully* understanding a different culture through its own language and customs. At times, this Boasian attitude resulted in anthropologists immersing themselves as much as possible into the cultures that they studied in order to fully experience the linguistic, cultural, and social elements an unfamiliar social environment.

Other studies that have addressed the relationship between the use of scientific instruments and claims to knowledge have also investigated the notion of objectivity. Lorraine Daston and Peter Galison trace the changing conceptualizations of objectivity from the 18th century to the present, arguing that a new form of objectivity, which they identify as "mechanical objectivity," emerged in the last half of the 19th century with the increased use of self-recording mechanisms, such as the kymograph and photograph. Their main thesis is that with the rise of automatic recording mechanisms, the scientist practiced a moralized self-restraint as a way to emulate the mechanism's perseverance and accuracy in order to prevent the infusion of subjective interpretations, aesthetic and moral judgments that could distort the study of various phenomena.[233] Even though Daston and Galison rightly recognize changing conceptions of objectivity over time, their general notion of "mechanical objectivity," which emphasizes a stark distinction between subjectivity and objectivity, fails to capture the fluidity of the relationship between

[233] Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations*, No. 40, Special Issue: Seeing Science, (Autumn, 1992): 82-83.

objectivity and subjectivity operating in early 20th century phonographic work, and how social scientists knowingly put their own preferences into their work in an effort to make it more objective, or truthful. Contrary to the practice of mechanical objectivity as "the insistent drive to repress the willful intervention of the artist-author," the different ethnomusicologists explored in this chapter did not exercise such restraint.[234] They either willingly imposed their own theory of aesthetics onto the music recorded by the phonograph or interpreted the mechanical recordings of music as containing a key to the *subjective* expressions critical to an *objective* engagement with unfamiliar culture(s). In neither case was the phonograph seen as a purely objective recording mechanism in favor of which ethnographic or artistic interpretations of culture could simply be purged.

This complicated relationship between the objective and subjective also raised important questions about the argument that the phonograph outperformed the human observer in its ability to record and preserve the affective, emotional, personal, and elusive qualities of linguistic and musical expression. This "affective impulse" necessary for the study of human culture meant different things to different ethnographers. In the name of objectivity, certain ethnographers valued this phonographic capacity as a key to a more authentic understanding of a non-western culture, while others argued that the phonograph compromised a scientific study of non-western music because it did not have the ability to get beneath the music and expose the universal elements of music, which permeated different cultures across the world. Either way, phonographic recordings of non-western language and music no longer allowed human expression to dissipate into the air. Rather, they captured and embodied in physical form on wax cylinders those

[234] Lorraine Daston and Peter Galison, *Objectivity*, (Cambridge: MIT Press, 2007), 121.

"affective impulses," which would function prominently in the epistemological claims regarding the scientific study of culture by those who worked with the phonograph.[235]

Jesse Fewkes and the Arrival of a "New Observer"

In 1888, the American Folk-Lore Society was founded with the intent of collecting and analyzing the folklore and mythic traditions of indigenous communities. The awareness that indigenous populations were on the decline, which was further compounded by the assimilation of native groups into Western society, motivated ethnographers and anthropologists to collect quickly yet systematically as much cultural material as possible. It was anticipated that the documentation of non-Western legends and stories would provide insight into the development of culture and more specifically how particular myths, which were "now on the point of perishing forever," were formed and related to other legends of other indigenous societies.[236]

[235] Franz Boas used the phrase "affective impulse" in his "Study of Geography," *Science* 9, No. 210, (February 11, 1887): 139. Although he does not speak of the phonograph, his discussion of cosmography and the "affective impulse" demonstrates a very early methodological and theoretical orientation that recognizes the role subjectivity should play in anthropological work.

[236] W. W. Newell, "Folk-Lore Study and Folk-Lore Societies," *The Journal of American Folklore* 8, no. 30, (1895): 237. The debate over transcription was not relegated solely to the field of anthropology, but also reflected the larger national debate in the United States (as well as England) over the then perceived cumbersome, inefficient and inaccurate characteristics of written English. As a solution, competing methods of shorthand were proposed, most notably the Pitman method, which was popularized through the 1860 *Manual of Phonography*. Underlying the proposition of new symbolic forms of writing was the goal of creating symbols that better captured the meaning of English words. For more information, see *Scripts, Grooves, and Writing Machines: Representing Technology in the Edison Era* (1999) by Lisa Gitelman.

The impulse to collect native folklore quickly in an accurate and scientific manner generated questions regarding the efficacy of phonetic methods of transcription. Concerns arose over the state of traditional transcription practices and the systematic organization of languages, which had commonly categorized non-western languages under the grammatical structures of Indo-European linguistic foundations. The predominant mode of linguistic analysis is best illustrated with Daniel Brinton's *Races and Peoples* of 1890 and A. H. Keane's *Ethnology* of 1895. These authors argued for a psychic unity in the cultural evolution of humankind, where "the same inward and mental nature is to be recognized in all the races of men," and thus for a developmental model of language where "barbaric" languages lacked the abstract, rational, and refined qualities of more "civilized" languages.[237] In the transition from theory to practice, this developmental model of linguistic evolution established the framework for the misinterpretation and oversimplification of non-western cultures.

Boas rejected the evolutionary view of non-western languages. His pioneering *Introduction to the Handbook of American Indian Languages*, published in 1911, completely transformed the foundations of ethno-linguistic work, and additionally, the general anthropological attitude by arguing that "every classification of mankind must be more or less artificial."[238] The transition from the evolutionary view of language of the

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[237] Quoted in A. H. Keane's *Ethnology* (Cambridge: The University Press, 1901), 160. George W. Stocking, Jr., *The Ethnographer's Magic and Other Essays in the History of Anthropology*, (Madison: University of Wisconsin Press, 1992), 77-78.

[238] Franz Boas, *Introduction to the Handbook of American Indian Languages*, (Washington: Georgetown University Press, 1963), 9. One of the preliminary analysis of American Indian languages, to whom Boas was challenging, was written by John Wesley Powell, a major figure in the administration of the U. S. Geological Survey and the Bureau of American Ethnology, who casted an evolutionary model onto the categorization and interpretation of non-western languages in his *Introduction to the study of Indian languages* of 1877.

19th century to the relativistic and holistic attitude that sought to comprehend a language through its own structure and expression required a re-evaluation of transcription methods that were based on a European alphabet and subsequently, the inherent bias of the observer.

Although there were many American Indian tribes that he could have studied, what attracted Fewkes to the Passamaquoddy in mid-March of 1890 was their relative geographic and cultural isolation. He believed them to be a relatively untouched society whose language and culture had not been transformed or contaminated by contact with Westerners. Fewkes saw this as an opportunity to experiment with the recently-improved phonograph by recording and analyzing the language of the New England tribe, which was made explicit on the title page of his field notebook: "A Trip to Calais Maine for the purpose of experimenting with the phonograph as an instrument to preserve the ancient Language of that tribe. March 16-19."[239]

Jesse Fewkes, in order to assess the effectiveness or accuracy of the phonograph in recording cultural expressions, recorded 27 wax cylinders in the three days that he spent with the Passamaquoddy. He recorded songs, stories, and legends, as well as the words for the days of the week, numbers, and nicknames.[240] In less than two months after his first ethnographic fieldwork in Maine, Fewkes published a short article in *Science* recounting his experience with the phonograph as a new linguistic tool. Convinced of the

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[239] Jesse Walter Fewkes Papers, MS 4408, Box 3, Notebook 9, National Anthropological Archives (NAA), Smithsonian Institution, Washington, D.C.

[240] At this time, the total amount of time available on an average wax cylinder was about 3 minutes, dependent on the speed of rotation, bringing the total recording time to about 80 minutes.

inherent pitfalls of the then current phonetic methods for the translation of American Indian languages, Fewkes wrote that:

> Even with the assistance of the admirable system of letters and conventional signs… there are many difficulties besetting the path of one who would accurately record the aboriginal languages, which are imperfectly met by this method. There are inflections, gutturals, accents, and sounds in aboriginal dialects which elude the possibilities of phonetic methods of expression.[241]

It was the phonograph's potential of capturing those elements of speech that "elude" the symbolic and written form of phonetic translation, which encouraged Fewkes to endorse the phonograph and record as many wax cylinders as possible. At the level of practice, the recorded cylinders allowed whatever was recorded, not considering wear and tear, to be ideally repeated a countless number of times ensuring that the translation approximated as closely and accurately as possible the meaning and purpose of any particular linguistic expression. As Fewkes furthered explained: "The phonograph records the story exactly as the Indian tells it; and although free translation of it may, and probably must, be made…we can always preserve the phonograph record as a check on exaggeration."[242] Here, the recording was seen as an artifact, which could be referenced at any time in the future to double-check subsequent interpretations.

For him, the act of preservation provided both an *original* experience from which not only accurate translations, but also a more thorough grounding for the understanding

[241] Jesse W. Fewkes, "On the Use of the Phonograph in the Study of the Languages of American Indians," *Science* 15, No. 378, (May 2, 1890): 267.

[242] Ibid., 268. In the field of anthropology and other ethnographic work, a "free translation" is a translation of a song, legend, story, phrase, or sentence into understandable prose of the observer's language, which contains the meaning and significance inherent in the foreign language. What is significant about this observation by Fewkes is that for the first time in history, a means exist by which all aspects of translation can checked and corrected due to the "exact" preservation done by the phonograph.

of non-western languages, which, replete with the "gutturals" and "inflections," needed to be re-experienced by re-creating a cultural experience infused with the personalized expressions of one unique moment. Symbolic and other phonetic tools were not enough; the phonograph's ability to record and re-present a whole linguistic and cultural expression that was not bound up and strained through the grammatical and phonetic concepts of English provided Fewkes with a more authentic source of information to study, improving the analysis of non-western languages.

Fewkes was not alone in his position on the failings of traditional methods of translation. Alexander M. Stephen, a colleague of Fewkes, undertook ethnographic work with the Hopi Indians from 1890 to 1893 with the Mary Hemenway Expedition (1886-1894) and expressed similar observations in his study of the Hopi language. His letters to Fewkes clearly demonstrate this as well as an increasing degree of frustration. Stephen described his own translations of Hopi mythology and folklore as unreliable, leading him to conclude that "The more I think of the phonograph – the more am I impressed with its values in these researches," due to his own muddling of different songs and prayers.[243]

Alexander Stephen serves as a prime example of the methodological difficulties facing ethnographers. His awareness of Fewkes's success with the phonograph in Maine and the Southwestern United States magnified his misgivings about the traditional phonetic method. He begged Fewkes repeatedly to bring along a phonograph to Ream's Canyon in New Mexico, but to no avail. His concern over linguistic matters was also present in his other observational work of Hopi ceremonies. In a letter to Fewkes on March 28, 1893, a letter that deserves considerable attention, Stephen wrote:

[243] Fewkes Papers, MS 4408, Box 2, Folder 4, NAA.

> I wish I could write that I feel satisfied with what I have done since you left – on the contrary. I feel sorely discontented when I consider what I have to offer you. No single subject anything like complete – no ceremony worked out – just a muddle of books and eyes that I can't fasten together. And I suppose you think I ought to be fluent in Hopi – and so did I hope to be after a winter spent mostly in the Kiva(s) - but I still find myself most abominably incompetent. The devilish language is a will o' the wisp. [A]nd at times I think I will never learn it. I have seen all of the ceremonies – that is I have seen parts of all of them – for as we both discovered when beginning to make precise notes of these ceremonies, two observers can scarce hope to cover all the occurrences far less one.[244]

In his work on the Snake Dance, a secret Hopi religious ceremony (the subject of the above-quoted letter), which was accompanied by dancing and singing, Stephen exposed the limitations inherent in having only one observer document a complex ceremony. Even two observers would not suffice; the intangible linguistic and musical glue that held the religious ceremony escaped the fallible eye of the Western observer. Stephen was not satisfied with documenting a single strand of a particular experience, which would then be simply added to other observations of the same ceremony to generate an understanding of an unfamiliar ceremony. Such a limited and inchoate observation would fail to tap into the fleeting affective impulses holding the ceremony together.

Rather, by idealizing and celebrating the phonograph's ability to document and preserve whatever it recorded, Stephen demonstrated his ambition to understand the culture he was observing from the inside through their language, thus advocating a methodology that embodied a conscious pursuit of experiencing and preserving unique cultural expressions. For him, these affective elements could not be separated from the mechanics and language of the ritual and it was only through an immersive accounting of a local and indigenous experience that he could achieve a *complete* and *full* knowledge of

[244] Ibid., letter from Stephen to Fewkes, 1893.

the Hopis. Even though he felt "not physically but inwardly – depressed – almost hopeless of ever winning daylight through these mazes," it was his own ethnographic experience coupled with his enthusiasm over the phonograph that encouraged him to examine both his conception of accurate and worthy ethnographic work and the general human experience by seeking after the elusive and subjective elements permeating non-western cultures.[245]

For both Fewkes and Stephen, the phonograph functioned as a potential solution to the problems inherent in the unaided phonetic methods of translations through its seeming ability to record linguistic and cultural elements which could not be translated and symbolized into written form. Even though Fewkes claimed that the wax cylinders and the inscriptions on them contained those affective qualities, the phonograph was undoubtedly cast as a scientific instrument. And just as important, the wax cylinders were understood to be scientific specimens. Fewkes was not new to the employment of such an analogy or scientific language, and its source can be traced back to his earlier scientific work in the 1860s and 70s as a marine zoologist where his professional work encouraged him to conceptualize the cylinders as specimens.[246] His microscopic analysis of marine invertebrates required detailed and precise observations to be generated quickly over short time-spans.[247] His reliance on the microscope to magnify the process of

[245] Ibid. It is unclear as to whether or not Stephen ever got to use a phonograph in his work in New Mexico. It appears that his repeated requests of both May and October of 1893 were not fulfilled.

[246] Other anthropologists and ethnomusicologists, such as Franz Boas, Benjamin I. Gilman, Washington Matthews, Alice Fletcher, and Frances Densmore, whom were all important collectors of American Indian songs, used the term "specimen" as a label for the phonograph wax cylinders.

[247] Jesse Fewkes notebook, undated, Smithsonian Institution Archives, Record Unit 7350. In this undated notebook from circa 1886, Fewkes sketched out detailed diagrams of *Astrophyton* eggs undergoing cellular

cellular division, invisible to the naked eye, demonstrated the utilization of a scientific instrument in aiding the human senses. "What specimens are to the naturalist in describing genera and species, or what sections are to the histologist in the study of cellular structure, the cylinders made on the phonograph are to the student of language."[248] The phonograph, like the microscope, exposed a world of sound that could now be captured in its specificity and studied in detail and not be misinterpreted due to unaided human observation, allowing "these records ... to be repeated over and over again at the wish of the student [who can] study the music and words with great precision."[249]

In addition to his published works, Fewkes's field notebooks from Calais reinforced the phonograph's role in ethnographic work. His notebook was not exclusively devoted to translations of Passamaquoddy words, songs, myths, etc. Half of his notebook contained such free translations and the other half was dedicated to brief physical descriptions of everyday Passamaquoddy life, and more importantly, to lists of numbered wax cylinders, correlated to what was recorded onto them. For example, on Sunday, March 16th, 1890, he noted that cylinder 15 contained "A Story of Lux and Hesfen [the Raccoon] a story of old time," cylinder 17, "Ancient war song – Mohawk say very ancient," and cylinder 19, "Pronunciation of names of mythological characters – half

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division, which he collected in Massachusetts. His sketches reveal a painstaking documentation of a very quick process over the span of a day.

[248] Fewkes, "On the Use of the Phonograph," 268.

[249] Jesse Fewkes, "A Few Summer Ceremonials at Zuñi Pueblo," *A Journal of American Ethnology and Archaeology* 1, (1891): 56.

cylinders."[250] With the introduction of the phonograph and wax cylinder, the function of the ethnographer's field notebook transitioned from being the main source of data, which could be consulted and referred to in the future, to merely being a general guide to the wax cylinders inscribed with the genuine source material. This embodiment of cultural expressions in a physical object, in this case the wax cylinder, re-defined the anthropologist's role in the field from an unaided to an aided observer who could immerse him-/herself in the cultural moment, relying on the phonograph to record and preserve the complexities of folklore in a more complete manner.[251]

The methodological shift in the collection of mythologies at the turn of the 20th century by specialists such as Fewkes contributed to an important re-conceptualization of mythologies and their importance in the study of culture. The 19th century scholar traditionally viewed religious ceremonies and beliefs developing along a single line of development as a part of the larger evolutionary view of society. The underlying assumption of this theory maintained that the mental construction of the individual, regardless of historical time period or local conditions, operated on fundamental laws representing a general unity of humankind's mental and cultural development. Differences between religions were only superficial factors that covered up the unity and universal operation of the human mind. Daniel Brinton, a noted 19th-ct. American

[250] Fewkes Papers, MS 4408, Box 3, Notebook 9, NAA, 22, 29, 32.

[251] J. Fewkes emphasized his methodological position in his article "A Contribution to Passamaquoddy Folk-Lore," published in late 1890. (*The Journal of American Folklore* 3, No. 11.) Calling for the scientific preservation and study of aboriginal folklore, Fewkes echoed Boas's argument concerning alternating sounds by arguing that traditional phonetic symbols "failed to convey the sound of the word" (p. 277). It was the phonograph, Fewkes argued, that resolved this dilemma and fostered the accurate collection of mythological material. Also, much of the folklore recounted by Fewkes in this article is done so without any interpretations or explanations, representing a significant departure from traditional ethnography.

anthropologist, claimed in his examination of indigenous religions and the human mind that "these laws of human thought are frightfully rigid, and are indeed automatic and inflexible. The human mind seems to be a machine; give it the same materials, and it will infallibly grind out the same product."[252] This approach to the mind and to the religious/mythological beliefs of non-Western societies, which de-emphasized the unique characteristics of a particular culture, universalized and categorized religions into a hierarchical developmental scheme with primitive peoples at the bottom and Western European culture at the apex of cultural evolution.

Fewkes's presentation of Passamaquoddy folklore and mythology, which was based on the recorded wax cylinders without interpretation and devoid of any comparison to other American Indian religious culture, contrasted starkly with the prevalent 19th century ethnographic methodology. Even though his methods can be tightly linked to Boas, the foundations of the new "culturalist" anthropological approach manifested in Fewkes's work extend back to Herder, who challenged the rational ordering of society and culture. According to Marshall Sahlins, Herder believed that "reason is entangled with feeling and bound to imagination," a truth that undermined any strictly logical ordering of society and rather emphasized the role of local mythological elements in various conceptualizations of reality.[253] Taking this analysis into account, Fewkes's recordings of both sung and spoken myths onto wax cylinders, without unadorned translations of the mythologies, represents a deliberate attempt *not* to engage in the

[252] Daniel Brinton, *Religions of Primitive Peoples*, (New York: G. P. Putnam's Sons, 1897), 6.

[253] Marshall Sahlins, ""Sentimental Pessimism" and Ethnographic Experience: or, Why Culture is not a Disappearing "Object"" in *Biographies of Scientific Objects*, ed. Lorraine Daston (Chicago: University of Chicago Press, 2000), 165.

comparative method of anthropology, so prevalent during the 19th century, which diminished the significance of emotional and subjective cultural expressions of various non-Western societies at the expense of identifying a universal hierarchy of societal development.[254] In his Passamaquoddy work, as well as his subsequent ethnographic fieldwork, Fewkes did not invoke the comparative method or situate indigenous societies within an evolutionary social hierarchy.

Frances Densmore, an insightful contemporary and fellow anthropologist, endorsed Fewkes's work and argued that non-western music was "an expression of feelings" transmitted "by sound from one mind to another recognized by subjective consciousness." In addition, "It is more than a mechanical phenomenon, it is likewise emotional."[255] The phonograph and its recordings provided a new foundation, an alternative method for a more holistic and conceptual understanding of American Indian mythology by presenting different cultures as a self-contained unity not based on the values of Western culture, ultimately augmenting the value of unique affective expressions in social scientific work.

The positive reception of Fewkes's work encouraged him to experiment further with the phonograph in the field.[256] By June of 1890, under the auspices of the Hemenway Archaeological Expedition, he traveled to the Southwest US to study Zuñi

[254] Daniel Brinton, in his *Religions of Primitive Peoples*, captures this distinction quite nicely. "The Comparative Method notes the similarities and differences between the religions of different tribes or groups, and, gradually extending its field to embrace the whole species, endeavors, by excluding what is local or temporal, to define those forms of religious thought and expression which are common to humanity at large." p. 5.

[255] Jesse Fewkes Papers, Series MS 4408, Box 11, Items 84-87.

[256] Before the American Academy of Arts and Sciences in April of 1890, Fewkes presented his work and noted in his diary he was pleased with the attendance of over 200 people, where "almost every seat in the auditorium was filled." Fewkes Papers, MS 4408, Box 3, Notebook 9, NAA, un-numbered page.

culture. He performed his fieldwork just as he did with the Passamaquoddy and filled his notebooks with both general descriptions of Zuñi life and artifacts, and a guide to what was recorded onto different wax cylinders, using as a guiding concept during his fieldwork the notion of capturing expressions straight "from the lips of the Zuñians."[257] But the phonograph was not the only *observer* assigned the task of preserving unmediated ethnographic sources through the simultaneous process of analytical and experiential fieldwork.

The human observer, in this case Jesse W. Fewkes, echoed the phonograph, but not as one that would suppress in a mechanical fashion any aesthetic or subjective impulses, which could be stimulated by the observed phenomena. Rather, the stimulation or activation of subjective impulses through the observation and *participation* in non-western cultures was something to be encouraged. During his fieldwork with the Zuñi people in 1891, Fewkes and his assistant, J. Owens, wanted to observe the secret religious ceremonies of the Tusayan Pueblo Indians. In order to win the confidence of the religious leaders, Fewkes and Owens resolved to make their "home with the Tusayan people for a considerable time" in particular to experience the rare Snake Dance ritual. In other words, detached observation would not do. Instead, they participated significantly in the daily life of the Tusayan whereby Owens became an honorary Antelope priest and Fewkes, an honorary Flute priest. Having been admitted to the religious order, Fewkes and Owens "became well acquainted with the people, and shared their festivities and their

[257] Jesse Fewkes, "Archaeology and Ethnology," *The American Naturalist* 24, no. 83, (July 1890): 688. The actual contents of the cylinders can be found in: Fewkes Papers, MS 4408, Box 3, Notebook 10, NAA.

sorrows."[258] The immersion into Tusayan culture was an effort to genuinely experience the rare and special religious ceremony without inadvertently casting the Snake Dance as an exotic and unrefined primitive ceremony.

As *insiders* to the Tusayan culture, it was their intent "to consider the acts in religious ceremonials, and not the reasons for their performance."[259] It was important for Fewkes and his assistant to document the Snake Dance in a manner that would not inevitably compare it to other non-western religious ceremonies from the outset. To accomplish this, the ceremonies of the Tusayan had to be experienced where the aesthetic and intangible cultural elements of language, music, and folklore converged. Only from this vantage could a Western observer approximate a genuine and more objective understanding through a self-imposed indoctrination into the social and cultural customs. As Fewkes recounted, "We went through their initiations, following their directions, and attended kib-va (estufa) ceremonies to which the uninitiated were debarred entrance."[260]

In addition to learning the language of the Hopi and becoming a member of the religious community, Fewkes recorded many religious ceremonial songs of the Snake Dance with the phonograph. Fewkes recounted one of the recording sessions with Há-ha-we, one of the main singers recorded, and through his re-telling of the incident he emphasized how the phonograph was there to record emotional and affective sentiments as authentically as possible. Há-ha-we "sang the song one by one, and after each song had been recorded, he desired to hear it. When he had listened to it he was overcome

[258] Jesse W. Fewkes, ed., "A Few Summer Ceremonials at the Tusayan Pueblos," *A Journal of American Ethnology and Archaeology* 2, (1892): 1-3.

[259] Ibid., 5.

[260] Ibid., 3.

with surprise. Há-ha-we smoked after each song, and puffed whiffs of smoke upon the cylinder, "stating: it is well."[261] The ceremonial blessing of the cylinders by Há-ha-we from Fewkes's account suggests that what he and Fewkes heard on the playback of the wax cylinders was more than just the notes of a religious melody, which would have been the case with the standard transcription of non-western music into an Western notation. Rather, the emotional content inscribed onto the recorded phonograph cylinder was re-*created* and the complete musical expression of Há-ha-we, both in its tangible and intangible contours, was preserved for Fewkes and future listeners.[262] In this brief episode of communication and recording, Fewkes identified the phonograph as a genuine repository of American Indian culture because it did not reduce non-Western music and expression to a set of loose and potentially inaccurate written symbols.

The interaction between Fewkes and Há-ha-we acknowledged the importance of subjectivity in both linguistic and musical expressions and the ability of the phonograph to record and re-play them. The emphasis on the preservation of the affective is elevated even more with other specialists, such as Charles K. Wead, a noted American physicist, who criticized such notions. Wead believed that it was possible to train the observer to limit and eliminate the subjective and erroneous interpretation of American Indian music. By working off of mathematically precise musical interval constants, it would be possible to scientifically study non-western music and rationalize it through the application of Western theories and practices of music. Thus, the method advocated by Wead would

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[261] Jesse Fewkes, "The Snake Ceremonials at Walpi," *A Journal of American Ethnology and Archaeology* 4, (1894): 99.

[262] For more on the reaction of American Indian singers and their reaction to the phonograph, see Erika Brady, *A Spiral Way: How the Phonograph Changed Ethnography*, (Jackson: University Press of Mississippi, 1999).

"strive to always obtain and to report the objective truth, free from all subjective interpretations."[263] The dismissal of the affective expressions of the singer or musician and the suppression of the subjective experience of the observer reflected in Wead a mechanical and rational attitude towards the study of music. Music was to be decomposed, broken apart, and reassembled into a form based off of the aesthetic theory of Western music. In short, Wead advocated a different methodology that argued for a very different notion of objectivity in comparison to Fewkes. Wead suggested that objectivity could only be achieved with a willful dismissal of subjectivity in terms of the musician's artistry or the musicologist's aesthetic interpretation.

Rather than advocate a thorough immersion into an unfamiliar culture, Wead preferred to distance himself from the human element and instead study the physical artifacts of musical instruments. His methodology, consisting of the thorough analytical study of music, and in particular, the inference of scales from the form of fixed-note instruments, culminated in his *Contributions to the History of Musical Scales*, where he divided the development of musical scales along "four cultural stages, namely: the savage, barbarous, civilized, and enlightened."[264] This categorization of scale development focused on identifying theoretical and practical lines of continuity between

[263] Charles K. Wead, "The Study of Primitive Music," *American Anthropologist* 2, No. 1,(1900): 79. Wead's position on the use of the phonograph in the study of primitive music emphasizes his concern with precise measurements of musical intervals and rhythms, which are to be diligently correlated to Western musical standards. He did not consider anything beyond the notes and rhythm, such as the affective qualities, as critical in the study of American Indian music. Also, Wead used Boas's article "On Alternating Sounds" and its arguments concerning the misperceptions of non-western languages as a way to advocate a much more precise and mathematical method of transcribing foreign music. The re-definition of culture by Boas, which recognized the universal autonomy of all cultures, appears to have been too much of a relativistic position for Wead to identify with, due to Wead expressing his disagreement with the full implications of Boas's argument.

[264] Charles K. Wead, *Contributions to the History of Musical Scales*, from the Report of the Unites States National Museum for 1900, (Washington: Government Printing Press, 1902), 421.

the "four cultural stages," looking for universal processes of musical evolution, while simultaneously de-emphasizing the local folklore and other cultural forces of different societies. Contrary to Wead's work, it would be the work of Benjamin Ives Gilman, an associate of Fewkes, and his use of the phonograph that would bring to the foreground the critical integration of affective expressions to the analytical study of music.

Awakening the Passions through the Phonograph

Fewkes sought out Benjamin Ives Gilman, a student of William James, to analyze and write-up a report on both Zuñi and Hopi Indian music. Impressed with the phonograph and interested in the psychological responses to art within the context of aesthetic ideals of beauty, Gilman diligently explored the intersection of emotion with both the visual and auditory arts. Gilman's emphasis on emotion necessarily strayed away from developing a rational and logical conception of beauty and art. In contrast to a purely intellectual approach to art that relied on Platonic ideals of beauty, Gilman sought out the irrational and the source of pure feeling, elements that resisted the confines of theoretical abstractions of beauty. He wanted the understanding of art to be rooted in experience, and ultimately in physical sensations. It is this emphasis on the material and visceral experience of art that contours Gilman's aesthetic orientation. From his study of American Indian music to his role as docent at the Boston Museum of Fine Arts, his approach to the objects he studied refused to see physical specimens as showcasing factual and dry knowledge about the world; the objects he studied were testaments to the

powerful roles of emotions and experiences had in the active conceptualization of the world.

The union of the emotional and subjective with the physical world of facts reflected his strong interest with the radical empiricism of William James and the aesthetic theory of George Santayana. For Gilman, James's critique of Cartesian dualism and rebuttal that "subjectivity and objectivity are affairs not of what an experience is aboriginally made of, but of its classification" formed the basis of his analysis of non-western music.[265] His blurring of the boundary between subjectivity and objectivity was also reinforced by Santayana's theory that the "subjective and human department of imagination and emotion" play an important role in the concept of beauty, for "from these despised feelings of ours the great world of perception derives all of its values."[266] The fundamental philosophical and psychological examination of experience by James and Santayana, which emphasized the importance of the subjective and emotional in all aspects of life, provided Gilman with critical tools to reassess ethnographic arguments over the relationship between Western and non-Western music. Arguing that "[t]hrough the invention of the phonograph the actual impression of sense is henceforth in a measure open to exact – if still – exacting investigation," Gilman sought to unravel a tightly-woven theoretical straightjacket that defined non-Western music as fundamentally undeveloped and primitive by literally grounding his work in the cylinders themselves.[267]

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[265] Fredson Bowers, ed., *The Works of William James: Essays in Radical Empiricism*, (Cambridge: Harvard University Press, 1976), 71.

[266] George Santayana, *The Sense of Beauty: Being the Outline of Aesthetic Theory*, (New York: Dover Publications), 1955, first published in 1896, 3.

[267] Benjamin Ives Gilman, "Hopi Songs," *A Journal of American Ethnology and Archaeology* 5, (1908): vii.

In an ironic turn, Gilman interpreted the phonograph's unrelenting attention to detail and precision as the access point to a genuine understanding of artistic expression.

Gilman completed his fieldwork with Jesse Fewkes and the Hemenway Expedition during the early 1890s and he published his complete report on American Indian music in 1908. Gilman published a short piece on the Zuñi in 1891, which would not be expanded upon until his 1908 report on Hopi songs, and in the meantime he analyzed Chinese music and performed experiments that examined the emotional responses to various classical music selections. A thread running through his work was his attention to the psychological and emotional forces at play in music, which was further developed through his work with the phonograph. Based on his work with the Zuñi, Gilman saw the phonograph as an aid in eliminating the biases of the traditional study of non-Western music imposed by western notation. With the phonograph, "the actual sound itself of which a music consists may, even in many of its more *delicate* characteristics, be stored up by the traveler in a form permanently accessible to observation."[268]

For the first time in history, music could be recorded and "interrupted at any point, repeated indefinitely, and within certain limits magnified, as it were, for more accurate appreciation of changes in pitch, by increasing the duration of the notes."[269] The ability of the phonograph to not only preserve music, but also stretch out notes easily missed by the unaided human ear illuminated those affective qualities missed by the

[268] Benjamin Gilman, "Zuñi Melodies," *A Journal of American Ethnology and Archaeology* 1, (1891): 68. (The *italics* are my emphasis.)

[269] Ibid.

standard musical notation, which were crucial to the analysis of the recorded song. Here, Gilman intentionally used a mechanical device for the accurate preservation of non-Western songs and for the highlighting of subjective and subtle musical qualities. Alexander Rehding has argued that Gilman's methods of musical transcription with the phonograph represented an extreme objectivity, purely concerned with dissecting rhythmic and tonal aspects.[270] But this argument fails to integrate the psychological underpinnings Gilman infused into his work. It was the perceived dual identity of the phonograph as a scientific and musical instrument that enabled Gilman to bridge the subjective experience of a musical performance and the objective world of accurate observation. Although present in his work during the early 1890s, it would not be until 1908 that Gilman fully explored this problematization of the accepted boundary between subjectivity and objectivity.

In January of 1892, Gilman published an article entitled: "On Some Psychological Aspects of the Chinese Musical System." Continuing the work of Hermann von Helmholtz, author of the 1862 *Lehre von den Tonempfindungen*, Gilman stated that it was his purpose to the study Chinese music from "the psychological point of view."[271] In an effort to challenge the then important discussion surrounding the universal foundations of music, such as the diatonic scale, Gilman studied phonographic cylinders of Chinese music obtained in New York with the aim of revealing how psychological reactions to unfamiliar music could quickly dismiss the inherent musicality and sophistication in non-

[270] Alexander Rehding, "Wax Cylinder Revolutions," *The Musical Quarterly*, Advanced Access Publication, (December 2005): 28.

[271] Benjamin Gilman, "On Some Psychological Aspects of the Chinese Musical System," *The Philosophical Review* 1, No. 1, (January 1892): 54.

western music. He observed that on his first listening, the intervals of Chinese music sounded "very strange and half-barbaric," which was most evident in the interval of the minor and major third, two major intervals used in the diatonic scale of Western music. With further listening though, the "intermediate third neither charms the ear like the major nor touches the heart like a minor, but stands between them with a character of gravity, 'like middle life between youth and old age,' to use the expression of a friend who has listened to this music."[272] Gilman's qualitative description of the Chinese intermediate third and explicit psychological positioning was an attempt to question a trained Westerner's initial response to unfamiliar intervals. And he achieved this by replaying wax cylinders in order to display the Western bias operating in late 19th century ethnomusicology.

The significant reliance on the phonograph encouraged Gilman to doubt the authority of the written transcription and relocate that authority to the actual musical performance inscribed onto a wax cylinder. Unfamiliar music was no longer forced into the standards of Western notation, but rather *objectified* into the wax cylinder as a faithful preservation of a musical performance, complete with the rhythm, notes, and most importantly, the texture of tone that illustrated the "movements of the human mind in hearing, imagining, and reflecting upon tones and their combinations."[273] The methodological shift by Gilman was also a criticism of the view advanced by Carl Stumpf, a leading comparative musicologist from Germany, that all music rested on universal principles that logically progressed from the primitive to the sophistication of

[272] Ibid., 67-68.

[273] Ibid., 55.

Western European music. In contrast, Gilman asserted the need to integrate local, unique, and personal qualities into musicological studies.[274] Through repeated listening and a manipulation of cylinder rotation speed, Gilman exposed a "deviation of practice from the theoretical intervals" of Chinese music, which emphasized the significant role of the performer's psychology in their interpretative musical practice.[275]

The need to de-emphasize the rationalization of music and integrate the subjective was evident in Gilman's experiments on emotional and spiritual responses to classical music.[276] In these psychological experiments, it was important to explore the impact of music on a listener; Gilman felt that "those who *feel* rather than *understand* music are to be considered to be the best audience."[277] In tracing the correlation between music and the awakening of emotions, Gilman argued that "music is a form of language, a vehicle by which thoughts and feelings may be transmitted from one mind to another … In other words, a piece of music has, according to this view, a power to engender a more or less specific frame of mind and heart: this being its burden, message, import, or what it expresses."[278] Gilman's conception of music as a language coupled with his preference for a listener who *feels* rather than *understands* reinforced his idea that there was more to

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[274] For more information on the debate over the origins and development of music, see Alexander Rehding, "The Quest for the Origins of Music in Germany Circa 1900," *Journal of the American Musicological Society* 53, No. 2, (Summer 2000): 345-385.

[275] Gilman, "On Some Psychological Aspects of the Chinese Musical System," 68.

[276] On the 29th of April, 1892, Gilman gathered about thirty people in Cambridge, Massachusetts, and had two musicians, a pianist and violinist, perform 13 selections of music. The subjects were provided with notebooks to answer 14 questions corresponding to the musical selections. The general direction of the questions strove to get at the impressions, both emotional and spiritual, of the different compositions.

[277] Benjamin Gilman, "Report on an Experimental Test of Musical Expressiveness," *The American Journal of Psychology* 4, No. 4, (August 1892): 558.

[278] Benjamin Gilman, "Report on an Experimental Test of Musical Expressiveness (Continued)," *The American Journal of Psychology* 5, No. 1, (October 1892): 42.

music than musical standards expressed through written notation that could be better captured with the phonograph. This potential for error forced Gilman to question traditional transcription methods and simultaneously offer an alternative form of notation with his phonographic recordings of Hopi and Zuñi music that had significant implications for the study of non-Western music.

Gilman made bold claims about the relationship between Western and non-Western music. He challenged the notion that indigenous music was inherently primitive and developmentally inferior to Western music. Gilman argued metaphorically that with the aid of the phonograph, the musical characteristics of the American Indian "exchange the aspects of transplanted weeds for that of native fauna."[279] The *transplantation* of non-Western music into the notation of Western music had prohibited the appreciation of American Indian music on its own ground. Aware of the "essentially fugitive" character of music due to the over-reliance on a "difficult and always imperfect symbolism that tends to reduce the most passionate form of artistic expression to a datum for abstract inquiry," Gilman argued for the phonograph as a remedy to the incompleteness and inaccuracy of standard notation.[280] His insistence that musical works "must be recalled to life out of dead signs" was an evocative claim for not only the preservation of indigenous music, but more importantly for the phonograph to preserve and activate affective and emotional expressions, which inaccurate written notations based on the equal tempered scale ignored or stifled.[281] As he argued in his analysis of the phonographic cylinder

[279] Benjamin Gilman, "Hopi Songs," *A Journal of American Ethnology and Archaeology* 5, (1908): 21.

[280] Ibid., vii.

[281] Quoted in Ibid.

which contained *Snake Song No. 1*, "It is possible that in other renditions the same singer or others would betray other intentions within a recognized identity of musical structure."[282] Thus, the only way to prevent future misrepresentations was for the singer to rely on the phonograph as a way to avoid the prescribed structures of music, which did not accurately correlate to the musical expressions of non-Western music.

The relocation of authority from the Western infused transcription to the inscribed phonographic cylinder enabled Gilman to re-open questions regarding the origins of music by exploring whether or not non-Western music operated within the tempered diatonic scale, one of the main foundations of interval and melody in Western European music.[283] Gilman's analysis of Hopi melodies led him to a negative response. His study of Pueblo songs indicated to him that "[w]hat seems at first a lawless cacophony, at least in the phonograph, proves on further hearing to consist of phrases repeated with an exactness surprising to the European ear in view of their divergence from diatonic norms."[284] It was only with a repeated listening that the intervals of Pueblo music could be properly positioned in relation to each other, and not just as deviations from the familiar diatonic scale. Further analysis encouraged Gilman to argue that any correlation of the pitches of Hopi music to those of the diatonic scale was erroneous and "in part the invention of the observer."[285] Gilman noted that the observer, infused with the "inveterate prepossessions of the Western ear," did not compare to the phonograph,

[282] Ibid., 75.

[283] Western European was and is based on musical intervals that are correlated to the diatonic scale, which is composed of 7 notes. These intervals are used to create the melodic and harmonic components of a musical composition. (see Rehding here as well.)

[284] Gilman, "Hopi Songs," 5.

[285] Ibid., 6.

which "has given to science a new field of observation, that of music in the making."[286] By emphasizing the "making" of music Gilman reformulated the idea of accuracy. According to him, the phonograph provided a real-time observation and recording of Pueblo musical performances that were not idealized or approximated onto a sheet of staff paper.

By getting at the "actual impressions of sense," the phonograph was understood as tool that recorded what was and not a deviation from an underlying musical universalism. Gilman's focus on the physical sensations of sound and the correlating emotional states awakened by a musical performance embodied his notion of a redefined objectivity dependent on an inclusion of subjectivity, which can also be called "pure experience," a term coined by his teacher/mentor, William James.[287] The emphasis on repeated listening served as a way to allow the re-experiencing of a particular moment, which gradually chipped away at the *diatonic garb* that shaped an unfamiliar experience into something different than what it was in terms of the musical expression. In other words, the phonograph sidestepped the traditional musical transcription and exposed through its recording and playback the complex whole, both material (sound sensations) and immaterial (emotion) of a musical performance. With his technique, Gilman

[286] Ibid., 7.

[287] Although James recognized that a "pure experience" could only be approximated, what was important was the idea that actual sensations are inherently discrete and can be classified as something distinct from the human being experiencing them. As Gerald Meyers, a James scholar observes, "James was always prepared to oppose sensing to thinking and to champion the former as the source of the profoundest insights into the differences between appearance and reality." Thus, pure sensing precluded a rational categorization of sensations and allowed an experience to be perceived as a whole. The dissection of an experience was therefore an afterthought, something that occurred upon reflection after the experience. For Gilman, the phonograph enabled him to capture an experience without its afterthought rationalization. "A musical chord illustrates the point: despite its internal detail and variety, it nevertheless sounds as a single unity." Gerald Meyers, *William James: His Life and Thought*, (New Haven: Yale University Press, 1986), 86.

dismantled the traditional notion of objectivity in the practice of ethnomusicology, which disguised developmental and structural biases about the history of world music. He simultaneously and radically re-defined how knowledge should be acquired, problematizing the objective-subjective dichotomy by emphasizing how the fleeting and subjective expression inherent in any live musical performance had to be acknowledged by the ethnographer in order to practice a more genuine objectivity.

Interestingly, Gilman based his method of capturing the emotion present in song on a thorough understanding of the phonograph and its idiosyncrasies. Gilman dedicated a tremendous amount of energy and time into justifying his use of the phonograph by noting the variation in cylinder rotation speed throughout the course of a day and mathematically demonstrating that with the slight variations, the margin of error was exceedingly small, more precise than the standard frequency intervals for tones on the diatonic scale.[288] The deliberate and focused justification of the phonographic method allowed Gilman to explore new opportunities for making authoritative claims about indigenous music.

This significant role of the phonograph manifested itself quite clearly with the alternative transcriptions Gilman provided. In his study of Hopi songs, Gilman provided three different graphical representations of different songs, one based on the traditional method of Western theory, including a key and time signature. The other two, based off of the phonograph cylinders, strove to reveal the subtle emotional content present in the music. This can be seen in his transcription of *Snake Song #8*. In order to demonstrate the inaccuracies of standard western notation, Gilman juxtaposed a standard transcription,

[288] Gilman, "Hopi Songs," 49-52.

Figure 1, to alternative ones, Figures 2 and 3, that utilized smaller intervals that went beyond the standard half tone of Western notation.

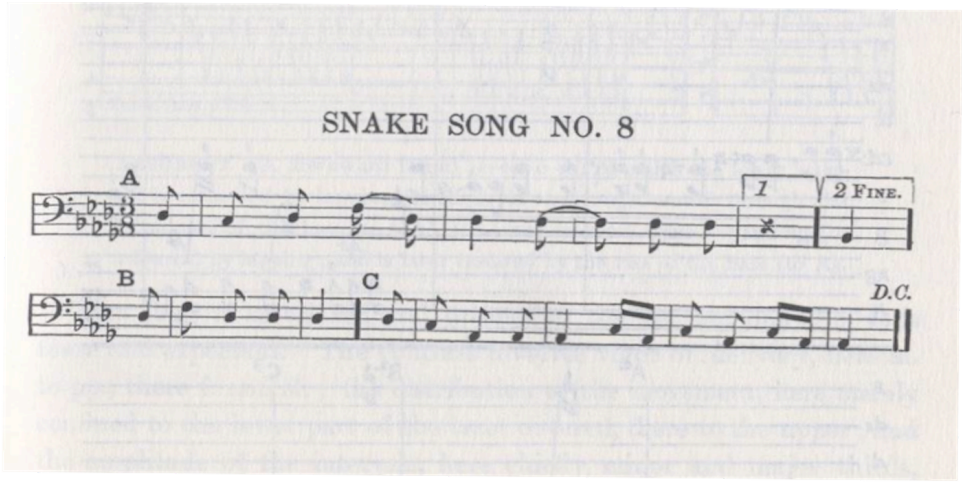

Figure 1, Transcription of a Hopi Song in Standard Notation[289]

In what follows, the alternative transcription created by Gilman traced the intricate changes in pitch and melodic development missed by the above transcription. By doing so, Gilman demonstrated not only the greater accuracy of the phonograph and new visual vista of precision, but also the inherent bias of the Western observer that could be unknowingly projected into ethnographic interpretations. He emphasized this bias though with two different critiques. First, he demonstrated quite strongly the inaccuracy of the standard notational system used by most ethnographers, which could be easily gleaned from a simple comparison of the different written notations. Second, Gilman made the argument that the more precise written notation that he provided revealed a more complete rendition of the subtle inflections and emotional expression of the singer, which the first type of written notation would have completely missed.

[289] Ibid., 103.

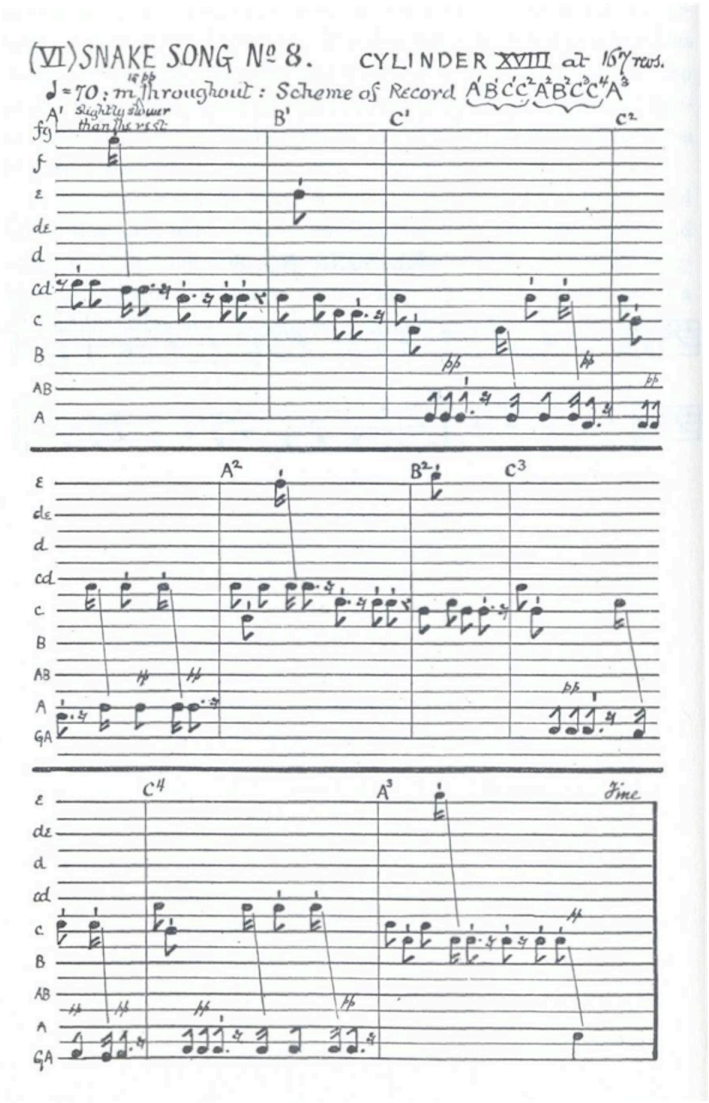

Figure 2, Graphical Representation of Alternative Notation[290]

The expanded notation produced by Gilman in Figure 2 illuminates a high degree of precision by showing the variability in the repetitions of identical phrases in this particular song, which can be seen by comparing A^1 to A^2 to A^3, for example. His concern with precision can also be seen at the top right corner of the transcription that identifies the rotation speed of the cylinder on the phonograph at 167 revolutions per minute, a source of variability that Gilman diligently recorded and accounted for in his

[290] Ibid., 104.

transcriptions. The graphical depiction of the variations in the repetition of particular parts of the song demonstrated not only the fluidity of a single performance, but also the inability to correctly capture the song with a reliance on standard staff notation, which would have projected inaccurate tones not corresponding to the standard half-interval. More important though, was Gilman's attempt to graphically display the emotional meaning of the song through his transcriptions, thus uniting his precision with the subjective qualities to a musical expression. In addition to the alternative system of notation Gilman used in his documentation of *Snake Song #8*, he also created a visual representation of the "course of tone" as seen in Figure 3. By tracing the melodic development of this song, which was based on the expanded notation rooted in the phonograph recording, Gilman hoped to visually establish a connection between a more accurate form of notation and the immaterial emotional expression.

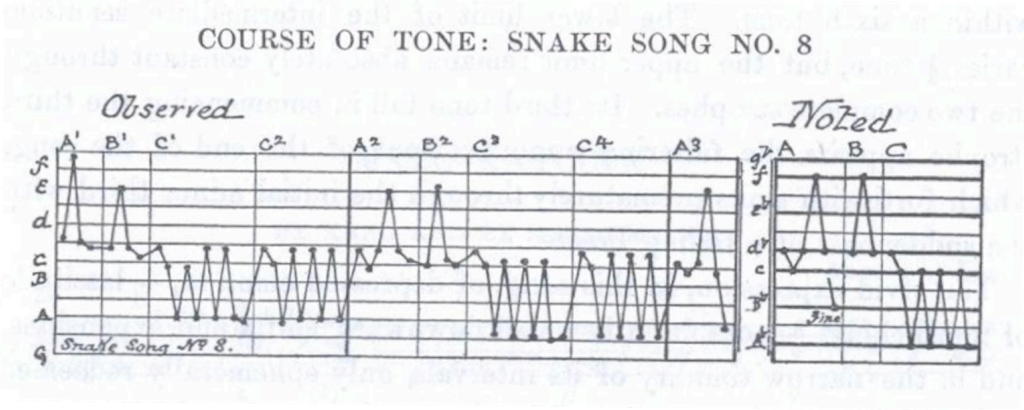

Figure 3, Graphical Representation of Tone Course[291]

In his analysis, Gilman connected the recording of the actual physical sounds with the intentions of the singer in an overlapping manner where they could not be separated from

[291] Ibid., 105.

each other in analysis or appreciation. As he noted, "[t]he vivid expression, in this song, of depressed emotion, - lassitude or melancholy, - notable in its small downward shifts and expansions, in C^3 and C^4 passed unrecognized by the unaided ear."[292]

Gilman understood this inability of the "unaided ear" to note the slight change in pitch - an inability fostered by entrenchment in the theory and practice of Western music - as a problem that could only be remedied through the aid of the phonograph, which was able to capture a musical expression with total specificity, to the point where the physical sensations inscribed onto the wax cylinder were intimately woven into the affective and emotional content of the song. For Gilman, the notation of Hopi music along Western lines as seen in figure 1 was too coarse, imprecise, and ultimately too far removed from a genuine visual representation of the emotional content present in music. Gilman's creation of an alternative system of notation, born out of sound recording, was an attempt to capture the elusive emotionality of a musical performance and integrate it into a more objective examination of the music, hopefully producing a more *complete* account of musical performances. Gilman's method and approach revolved around the study of *experience*, a concept he continued to develop, but firmly grounded in his phonographic recordings of various musical expressions.

10 years after his study of the Hopi songs, Gilman wrote *Museum Ideals of Purpose and Method* while serving as the docent of the Boston Museum of Fine Arts. In this work, which re-examined not only the purpose but also the actual physical architecture of the museum, Gilman expressed his belief that art must be understood through the artist. It was not enough to intellectually know, but to know through

[292] Ibid., 106.

experience. Utilizing William James's distinction between knowledge by acquaintance and knowledge based on thought, Gilman argued, "[t]o be acquainted with a thing is to have enter one's consciousness the sensations, the thoughts, the feelings, into which that thing can be analyzed."[293] With the emphasis on acquaintance, Gilman was also referencing the definition of beauty proposed by his fellow Harvard scholar, George Santayana. In his canonical engagement with the concept of Beauty, Santayana posited that "Beauty is a value, that is, it is not a perception of a matter of fact or of a relation: it is an emotion, an affectation of our volitional and appreciative nature."[294] Defining the concept of Beauty through emotion relocated it from the abstract and impersonal – something that existed independent of an object – and grounded it more precisely in the nature of a personal experience. In his criticism of such abstract ideas, Gilman noted, "we may make an artist's work serve our thirst for theoretical or practical knowledge. Instead of trying to assimilate the work itself, we may strive to learn about it. Our aim may be, not to perceive it, not to take it in as the artist intended, but to make the work and its methods the subject of investigation, as the artist never intended. This is intellectual dilettanteism, in its two forms, scientific and technical."[295] Gilman's emphasis on locating and relying on emotion in his studies of art crystallizes how emotionality, in its inevitable variability, could provide an access to a knowledge of experience inaccessible to an overbearing and oversimplified theoretical approach to knowledge.

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[293] Benjamin Gilman, *Museum Ideas of Purpose and Method*, second edition, (Cambridge: Harvard University Press, 1918), 83.

[294]George Santayana, *The Sense of Beauty: Being the Outline of Aesthetic Theory*, (New York: Dover Publications, Inc., 1896), 49.

[295] Gilman, *Museum Ideas of Purpose and Method,* 112.

John C. Fillmore's Case for Universal Harmony

In order to appreciate the full impact of Gilman's work, it is important to contextualize him in relation to John Comfort Fillmore, a musicologist who used the phonograph as well, but completely disagreed with Gilman's conclusions, both theoretically and methodologically. In a letter to Fewkes, John Fillmore wrote from the Milwaukee School of Music in April of 1894 and commended Fewkes for being the first to employ the phonograph. In the same breath he criticized Gilman's work and insisted that the music recorded onto the wax cylinders was inherently harmonic along the diatonic lines of Western European music, exhibiting what he interpreted as a latent universal harmony. In his discussion of the phonographic method, Fillmore stated that the "value of that method is very great; although it needs to be supplemented, as much as possible, by personal work."[296] The argument that the phonograph needed supplementation with "personal work" (i.e. a musicologist's theoretical and aesthetic knowledge) illuminates the difference between their methodologies, and more importantly how phonograph supporters and critics alike found different yet important places for subjectivity in their work.[297] Whereas Fewkes, and especially Gilman, related to the phonograph as a check on human bias and repository of genuine subjective expression, Fillmore positioned the phonograph as an instrument that could not challenge human expertise and the authoritative ear of the expert. Rather, the phonograph

[296] Fewkes Papers, MS 4408, Box 2, Folder 3, NAA.

[297] Fillmore was explicit on the need for trained ethnomusicologists to employ their theoretical and practical knowledge in studying American Indian music. Examples of this methodological orientation can be found in John Comfort Fillmore, "The Harmonic Structure of Indian Music," *American Anthropologist*, New Series 1, No. 2, (April 1899): 297-318.

functioned as an instrument for the verification and defense of the expert's view/interpretation - in this case, Fillmore's theory of universal harmony, a product of his own "personal work." Judging from his work with Alice Fletcher and Francis LaFlesche, collectors of Plains Indians' music, it is evident that Fillmore related to the phonograph in a completely different manner than Gilman or Fewkes. This difference between Fillmore and Gilman would result in markedly different authoritative claims about the nature American Indian music.

In 1888, after working with the Omaha Indians for 5 years, Alice Fletcher and Francis LaFlesche sought out John Comfort Fillmore for the purposes of studying their songs. Over a 10-year period, Fletcher, a well-known American ethnologist, resided with the Omaha and Dakota Indians and focused on the relationship between song and the socio-cultural life of the American Indians. Her well-known monograph, *A Study of Omaha Indian Music*, published in 1893 through the Peabody Museum, reflected 10 years of efforts to "truthfully set forth in a manner intelligible to members of my own race the Indian's mode of expressing emotion in musical forms."[298] She admitted that her first encounters with unfamiliar music were difficult, but with repeated listening to phonograph recordings and further interaction with the Omaha Indians, the musical qualities in their music slowly became more evident. Concerned with the "deeper revelation of heart and inner life of the Indian," Alice Fletcher "ceased to trouble about theories of scales, tones, rhythm and melody."[299] She never stressed her use of the

[298] Alice Fletcher, *Peabody Museum of American Archaeology and Ethnology*, Volume 1, (Cambridge: The Salem Press Co., 1904), 237. It is important to note that for Fletcher and Fillmore, the separation between the emotion inherent in music and the technical study of music remained firm in their work.

[299] Ibid., 239.

phonograph in her monograph, but if one looks at the federal ethnographic projects she participated in, she recorded 244 phonograph cylinders of different American Indian tribes. As for the technical study of music, Fletcher relegated that role to Fillmore.

Even though Fillmore was not afraid to discuss the emotional content of music, a topic of his earlier musicological work, he chose to examine the melodies, harmonies, and rhythms of Native American music and compare them to the canons of Western classical music.[300] Before I explore Fillmore, there is one interesting observation about Fletcher's publication on the Omaha that merits mentioning: there are no explicit references to the use of the phonograph, which was essential to the accumulation of her collected music samples.[301] Fillmore, however, was more forthcoming and accounted for his use of the phonograph. Initially, as has been demonstrated, he did not wholeheartedly embrace the phonograph, but he did find a way to integrate it into his work after he had convinced himself that he was an expert in using it.[302] But, even in his transition to working with the phonograph, Fillmore did not let it challenge his musical theory, obstinately intent on harmonizing or fitting American Indian music to the diatonic scale of Western music.

Beginning with his work on Omaha music with Alice Fletcher and continuing until his death in 1899, Fillmore articulated his fundamental view that "harmonic sense is

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[300] Erika Brady, ed., *The Federal Cylinder Project: A Guide to Field Cylinder Collections in Federal Agencies*, Volume 1: Introduction and Inventory, (Washington: U.S. Government Printing Office, 1984), 62-66. The fact that Fletcher collected over double of what Gilman collected combined with the absence of an explicit phonograph method illustrates the remarkable difference in the conceptions of the phonograph and its impact on ethnographic study. This will become more apparent with Fillmore's work.

[301] Fletcher, *Peabody Museum of American Archaeology and Ethnology*, 74-75.

[302] Alice Fletcher and Frances La Flesche Papers, MS 4558: Box 1, incoming correspondence 1888-1890, letter from John Fillmore to Alice Fletcher, December 27, 1891, NAA.

universal" for both indigenous and Western music. As he stated: "In short, there is only one kind of music in the world. … essentially and fundamentally, music is precisely the same phenomena for the savage as it is for the most advanced representative of modern culture."[303] Consequently, any deviation from the harmonic standards of Western music reflected a lack of musical training, not different musical intervals for different cultures. Working with this premise, Fillmore constantly geared his fieldwork and cylinder analysis towards fitting non-Western melodies into a developmental scheme of Western musical form. Even though he applauded the complexity of their rhythms, Fillmore lamented the pitch and tonality of American Indian singing and blamed it on a lack of musical training. From Fillmore's perspective, deviations from standard pitches did not reflect a fundamental difference between Western and non-Western musical foundations. Rather, "it will certainly be found that the Indian always intends to sing precisely the same harmonic intervals which are the staple of our own music."[304] His approach consequently made him doubt a singer's performance *a priori* due to pitch and tone aberrations. Thus, the job of the observer was to work with the singer and thus "discover what he really means to sing."[305] Fillmore's quest for proof of universal harmony through an illustration of the singer's "intentionality" defined his work as a revelation of what "ought" to be, a pursuit of the musically ideal.

The focus on the ideal in music subjugated the emotional intentions of music to the intellectual composition of a piece. As early as the 1880s, Fillmore's musicological

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[303] John Comfort Fillmore, "The Harmonic Structure of Indian Music," 318.

[304] John Fillmore, "What Do Indians Mean to Do When They Sing, and How Far Do They Succeed?," *The Journal of American Folklore* 8, No. 29, (April-June 1895): 138.

[305] Ibid., 139.

work emphasized that the emotion and the intellect buried in a musical piece were elements that had to be kept separate in analyzing a composition. Fillmore acknowledged the role of emotion in music, but he insisted that it was only through the intellectual construction of a musical score out of melodic, harmonic, and rhythmic components that the emotion could be expressed.[306] And what united all of these elements was the ideal of beauty. According to Fillmore, the notion of beauty is what the composer strove for, an abstract ideal manifested in a skillfully composed score. It was only through the masterful form of composition that "was satisfactory to the intellect," which could express "the ideally noble and exalted," and simultaneously deliver the idealized emotional content of music.[307] This notion of an imperfect form or composition compromising the intent of a musical piece and the ideal of beauty shaped Fillmore's study of indigenous music. In short, his intellectual orientation emphasized the structural analysis of musical composition.

Fillmore's assumptions about music and the relation between it and emotion shaped his work with the phonograph. His concern for identifying the singer's intention relegated the role of the phonograph to an assistant, but not an unbiased expert that would highlight misappropriated tones or rhythms. In contrast to Gilman's approach, Fillmore

[306] John Fillmore, *Pianoforte Music: Its History, with Biographical Sketches and Critical Estimates of its Greatest Masters*, (Chicago: Townsend Mac Coun, 1883), 68-70.

[307] Ibid., 71. According to Fillmore, Beauty had both sensuous and ideal, abstract characteristics in music. But the relation between the sensuous and ideal was lopsided with the physical pleasure of sound subsumed under the intellectual idealization of a musical composition created out of the musical ideas of pitch, interval, and rhythm. Additionally, Fillmore's discussion of emotion suggests that he would discuss it more in his publications, but surprisingly his work on American Indian music is literally devoid of a significant appraisal of the emotional content in indigenous music.

described the phonograph as a tool that "represents the song somewhat imperfectly."[308] Since the phonograph recorded a singer's performance, which contained according to Fillmore incorrect pitches, the phonograph could not function as the authoritative ear of the trained expert, who had to derive the idealized musical composition from the imperfect performance. Whereas Gilman's work recognized the performance recorded onto the cylinder as the authoritative specimen, Fillmore interviewed his performer to verify the singer's intention. This process of verification functioned quite importantly in the debate over the interval of the third, which Gilman had examined with his work on Chinese music. Opposed to the notion of the "neutral third," an idea defended by Gilman, Fillmore wrote, "I have never known an Indian to stick to a "neutral" third under the process of examination. He has always intended either a major or minor third."[309] By "process of examination," Fillmore would challenge the singer who sang the neutral third and suggest that what he really intended was the standard minor or major third. After "singing with and for him" what he believed to be the correct interval and musical intention, Fillmore was able to convince the singer of the new correct interval.[310] Thus, any aberration from the standard thirds on the phonographic record became for Fillmore a source of valuable information that had to be reconciled with the theoretical standards and notation of Western music. This can be seen in the following transcription (Figure 4) completed by Fillmore, from a recording done by Franz Boas.

[308] John Fillmore, "What Do Indians Mean to Do When They Sing, and How Far Do They Succeed?," 139.

[309] Ibid.

[310] Ibid., 140.

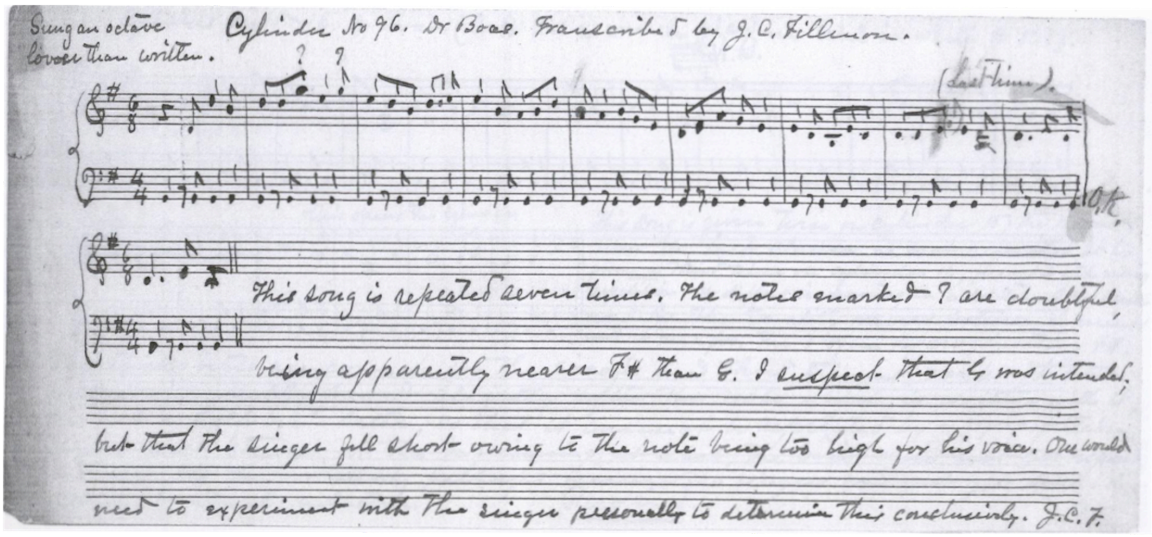

Figure 4, Transcription of Kwakiutl Music by John Fillmore and Franz Boas, 1893[311]

Fillmore's notes explain that the question marks over a couple of the first notes in the transcription were notes not sung by the singer, but "intended" in the mind of the singer. The argument that the notes in question were imperfectly performed tones that rested in the interval between a F-sharp and a G were, according to Fillmore, simply a symbol of the lack of skill in the untrained singer. The fact that the singer missed, but intended a G proved to Fillmore the subconscious universal harmony in all music and that the phonograph could be a useful tool in better categorizing the development of musical culture.

Gilman's abandonment of Western notation and music theory, based on the phonograph recordings, became for Fillmore a source of contention. In a letter to Alice Fletcher, Fillmore dismissed Gilman's alternative notation as "totally incomprehensible," and wrote, "I don't see how he contrived to hit on such a blind way of transcribing what

[311] Papers of Alice Fletcher and Frances La Flesche, MS 4558, Series 19 & 20, NAA.

he heard."[312] The inscription of an *intentional* musical expression into the phonographic cylinder by Gilman was for Fillmore an unreliable and unscientific method. It was only the trained ear of the musician, not the phonograph that could provide conclusive remarks regarding the structure of non-western music and its relation to Western music. Fillmore justified the use of the phonograph as "all right if used scientifically."[313] And by scientific, he meant the theoretical integration of the Indian singer who "does not always perfectly realize his own intentions as regards intonation," and who "seems to be groping blindly and to follow the line of the Tonic chord … in obedience to a dim, intuitive perception of the harmonic relations of tones," into an universal progressive view of music.[314] Methodologically, Fillmore's introduction of the phonograph into his work was not an effort to suppress or restrain his theoretical or aesthetic interpretations by emulating the non-discriminating observations and recordings of the phonograph. In direct opposition to an ideal of mechanical objectivity, and equally dismissive with the collapse of the subjective and objective dichotomy in Gilman's characterization of phonograph recordings, Fillmore consciously imposed his theoretical and aesthetic ideals on the music he studied by actively seeking out a singer's intention by re-harmonizing non-Western songs along Western musical intervals. For Fillmore, objective ethnographic claims about the relationship between non-western and Western music could be supplemented with the non-discriminating and impersonal faculties of the phonograph, but could only be substantiated with the trained ear of the expert familiar

[312] Alice Fletcher and Francis La Flesche Papers, MS 4558, Box 1, incoming correspondence 1888-1890, letter from Fillmore to Alice Fletcher, May 26, 1891, NAA.

[313] Alice Fletcher and Francis La Flesche Papers, MS 4558, Box 1, incoming correspondence 1888-1890, letter from Fillmore to Alice Fletcher, June 3, 1893, NAA.

[314] Alice Fletcher and Frances La Flesche Papers, MS 4558, Box 31, undated publication of John Fillmore entitled "The Forms Spontaneously Assumed by Folk-Songs," 123, NAA.

with the "universal" predilection for "universal harmony." The different ways in which Gilman and Fillmore understood the idea of objectivity and the relation of subjectivity to it molded their opinion of the phonograph. They were not alone though. Even Franz Boas, who happened to work with both Gilman and Fillmore on phonographic recordings, was not consistent with his own theoretical underpinnings regarding the definition of scientific objectivity in his practice of anthropology.

Franz Boas: A Balancing Act Between Theory and Practice

Boas's work raises potential inconsistencies in his own theoretical approach to anthropology if his work is contextualized with the methodological practices of Gilman and Fillmore. The fact that he worked with both Gilman and Fillmore, two individuals who differed in their phonographic method and musicological theory, begs the question: whose methodology did Boas prefer? One would suspect that Boas, rooted in his "plurality of cultures" and linguistic "relativity," which has been briefly explored in the beginning of this chapter, would have walked a middle ground, abstaining from embracing Gilman's extreme preference for the emotional/irrational and Fillmore's unconditional commitment to the argument for universal harmony through an isolated theoretical analysis. And for the most part, that would be true; but interesting inconsistencies arise when one compares Boas's linguistic conclusions to his musical analysis of American Indian culture.

At the World's Columbian Exposition of 1893 in Chicago, Franz Boas won an award for his exhibition on the cultural life of the Kwakiutl, an indigenous population from the Northwest Coast of Canada which he had been studying since 1886. In the showcasing of the Kwakiutl Village, "[n]ot only models of their villages are presented but the actual houses of these Indians have been transported … and the people themselves brought to live in them after their own manner."[315] Part of the exhibit included Kwakiutl Indians speaking in their native tongue and singing, thanks to which Benjamin Gilman, John Fillmore, and Boas recorded more than one hundred phonographic cylinders. In one particular instance, according to Gilman's notes, he and Boas – who recorded the cylinders for Fillmore - recorded the first two songs simultaneously on separate phonographs.[316] Gilman never published his analysis of his recordings at the World's Columbian Exposition and did not collaborate any further with Boas. As for Fillmore, Boas worked with him and used him to analyze a substantial number of phonographic cylinders that Boas had recorded out in the field or at the Exposition. It may be logical to assume from this interaction that Boas and Fillmore agreed on the qualities of indigenous music and the belief in universal harmony. This happens to be the case.

In an 1896 lecture on "Primitive Music", which was part of lecture series at Columbia University, Boas echoed the ideas of Fillmore. He stated that "[t]he recorder must endeavor … to find what the native really meant to sing … and when the study of primitive music is carried on in this way, it appears at once that the laws of harmony,

[315] Franz Boas Papers: Series 1, Correspondence with Alice Fletcher, Folder 3, An Award from the United States Department, Ethnology, April 30, 1894, American Philosophical Society, (APS).

[316] Judith Gray, ed., *The Federal Cylinder Project: A Guide to Field Cylinder Collections in Federal Agencies*: Volume 3, (Washington: U.S. Government Printing Office, 1988), 145-147. Gilman recorded 101 cylinders of Kwakiutl, Samoan, and Turkish Theatre music at the World Columbian Exposition.

which underlie our music, underlie just as much the music of all mankind."[317] The search for the intentionality inherent in an untrained singer by Boas represented the standard 19th century musicological position that through a diligent analysis of non-western music, harmonic corollaries would emerge, which would reinforce the evolutionary view of society and culture advocated by individuals such as Edward Tylor, Herbert Spencer, Daniel Brinton, Carl Stumpf, and John Fillmore. Even in the notation of Kwakiutl songs, which were recorded on the phonograph by Boas and Fillmore, Boas used the traditional Western notation system adorned with the standard key and time signature, as Figure 5 demonstrates.

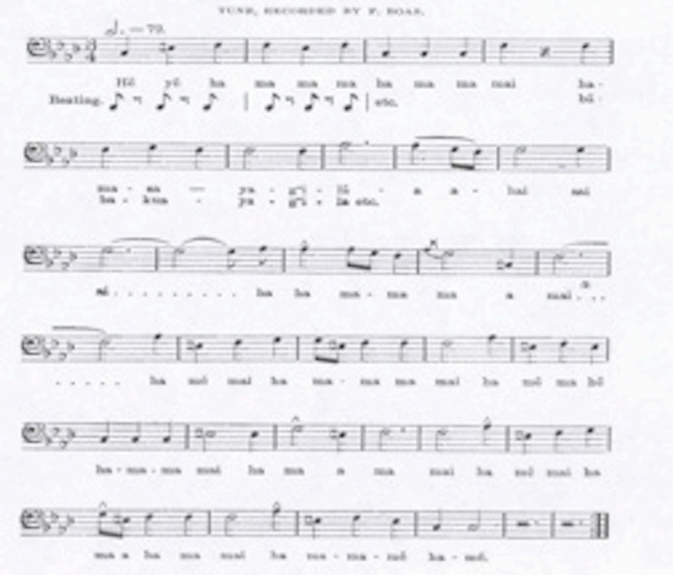

Figure 5, Transcription of Kwakiutl Song[318]

[317] Franz Boas Papers: Series 2, Boas Lectures: "Primitive Art," 1896, APS, 19.

[318] Franz Boas, *The Social Organization and the Secret Societies of the Kwakiutl Indians*, (Johnson Reprint Corporation: New York, 1970 reprint), 697. Boas never mentioned the alternative transcription techniques of Benjamin I. Gilman or ever critiqued the standard transcription methods he utilized in his anthropological work. It is thus unclear as to why he chose the standard notation system with his study of the Kwakiutl Indians.

Even though there is no record of him evaluating Gilman's alternative notional system, it is clear that Boas's decision to publish his ethnographic work with standard musical notation did not pose problems for his ethnographic work.

Ironically, the same year of his lecture, Boas wrote an article that undermined the comparative method of anthropology, with specific references to the work of Daniel Brinton. In this article, Boas dismantled the notion of "universal ideas" and argued, "starting with a hypothesis is infinitely inferior to the one in which by truly inductive processes the actual history of definite phenomena is derived."[319] His criticism of a comparative method did not make its way into his work on Kwakiutl music. Even though he was critical of Fillmore's phonographic transcriptions, which he believed were not accurate notations and which he then corrected, Boas did not publicly criticize Fillmore or utilize Gilman's alternative musical notation.[320]

The inconsistency between Boas's phonographic work with music and his methodological advocacy of a purely inductive approach that strove to understand a foreign culture from the inside marks a discontinuity in his anthropological methodology.[321] His method of using the sound recording only as a basis for analysis

[319] Franz Boas, "The Limitations of the Comparative Method of Anthropology," *Science*, New Series, 4, No. 103, (December 1896): 905.

[320] Ronald Rohner, ed., *The Ethnography of Franz Boas*, (Chicago: University of Chicago Press, 1969), 178-179. A public appreciation of Fillmore by Boas can be seen In *The Social Organization and the Secret Societies of the Kwakiutl Indians*, (New York: Johnson Reprint Corporation, 1970), 315. In the musical transcriptions, there is a significant degree of collaboration between Boas and Fillmore. From their correspondence in 1893 and 1894, it is apparent that Boas relied heavily on Fillmore for phonographic transcriptions and that many cylinders, over one hundred, were being mailed between them. This circulation of cylinders illustrates the significant role that the phonograph played in anthropological field collection. Franz Boas Papers, Collection 1, correspondence with Fillmore, Folders 1 and 2, APS.

[321] It is important to note that Boas did not explicitly discuss his method of using the phonograph, even though he utilized it for much of his work.

establishing the intentions of a singer reflects a significant limit of his philosophical and methodological position. Six years after his "Alternating Sounds" article, Boas, in a lecture on "Primitive Languages" (1896), stated: "I said before that we are misled by our own sounds to misinterpret the sounds of primitive languages." He continued that the best method for linguistic analysis was to obtain language samples and then worry about the translation later. If not, a translation attempted at the moment of observation would be "liable to contain faulty constructions." He stressed, "I have shown that the observer is involuntarily influenced by the principles underlying his own language in interpreting the material which he collects in other languages."[322] The incongruence between his analysis on music and language, which both relied on phonograph recordings, demonstrates how even for one person using a mechanical instrument, assumptions and methods differed depending on what was being studied.

The two conceptions of the phonograph as a scientific and musical instrument differentiated Boas's work: scientific for his linguistic work and musical for his music analysis. In his analysis of language, Boas hesitated in imposing a classificatory system on American aboriginal languages and other languages because they would be artificial. The process of linguistic diffusion, shifts in pronunciation, and non-European grammatical categories made the creation of a genealogical series essentially problematic.[323] Only a thorough collection of stories, myths, songs, prayers, and everyday linguistic expressions could a genuine understanding of a culture be achieved, a

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[322] Franz Boas Papers, Series 2, "Primitive Languages" Lecture, 8-18.

[323] Franz Boas, *Race, Language, and Culture*, (Chicago: University of Chicago Press, 1940), 202-203.

method manifested in Boas's desire and ability to learn the native language of the culture he studied. In this sense, linguistic samples recorded onto phonographic cylinders contained the entirety of a culture and could be not subjected to a grand theoretical system of development, but rather studied through an historical approach that precluded a theoretical organizing along seemingly objective and natural categorizations.[324]

In his linguistic work, Boas did not abandon his own overarching anthropological orientation. But this is not the case with his musical work. His practice of imposing the standards of Western harmony on indigenous music and treating deviations in pitch from the diatonic scales of Western music as unintended errors veers away quite drastically from the methodology he repeatedly advocated. Whether he was aware or not, Boas resonated with the protagonists of the evolutionary school and impressed his own universal-harmony musical predilections into his musical analysis, which he viewed as being objective to the highest degree. The argument by Boas that all societies are inherently dynamic "in a constant state of flux," represents a part of his theoretical position that he ignored. His transcription of indigenous songs along the harmonies of Western music by organizing music within the *stable* foundations of Western harmony subsequently ruptured the bond between his theory and practice.[325] His collaboration with Fillmore emphasizes this disjuncture and shows how the shifting values invested into scientific instruments depended not only on the material being studied, but also the theoretical and aesthetic views of the observer.

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[324] Franz Boas, "The History of Anthropology," *Science,* New Series 20, no. 512, (October 21, 1904): 522-524.

[325] Franz Boas, "The Methods of Ethnology," *American Anthropologist*, New Series 22, No. 4, (October-December 1920): 314-315.

Conclusion

The phonograph played a pivotal role in American anthropology during the late 19th and early 20th centuries and exposed – in a coincidental manner – potentially forgotten details regarding the fluid and unstable relationship between the values of objectivity and subjectivity. A close exploration of the phonograph's claimed ability to record and preserve the affective, emotional, and subjective qualities of a culture's expression illuminates subtle differences in an ethnographer's understanding of the subjective and objective, which generated stark differences in methodology and knowledge claims. The juxtaposition of Benjamin Gilman's work to that of John C. Fillmore demonstrates such methodological discrepancies. Whereas Gilman argued for the incorporation of a specific performer's feelings into the study of non-Western music, Fillmore - firmly committed to his assumption of universal harmony – dismissed the importance of the emotions present in a performance. These methodological differences fundamentally shaped how the phonograph was conceptualized, and consequently, molded the types of claims made about the nature of non-Western music. In particular, the work of Jesse Fewkes and especially Benjamin Gilman demonstrates how a mechanical instrument such as the phonograph could arguably preserve the essential affective qualities present in the expressions of unfamiliar cultures and play a crucial role in the study of non-Western singing and music. In contrast to a strict scientific objectivity intent on controlling the scientist, individuals such as Jesse Fewkes, Benjamin Gilman, John Fillmore, and Franz Boas found different ways, regardless of their differences, to appropriate different emotional expressions and aesthetic preferences into

their work with the phonograph, compromising any agreed-upon definition of objectivity, and subsequently its relationship to subjectivity. In other words, the phonograph became a vehicle for the re-examination of theory and practice in the field of ethnomusicology, raising important questions about perspective and authority while simultaneously enabling ethnographers to re-shape and focus their intellectual agendas.

Chapter Five

Percy Grainger, The English Folk-Song Society, and the Phonograph: The Quest for Art and Individual Expression

In a letter sent to Percy Grainger in May of 1908, Cecil Sharp, the celebrated collector of English folk songs, applauded Grainger's folk song collecting *via* phonograph. In the same breath though, he expressed a degree of hesitancy that challenged Grainger's methodologies and conclusions regarding English folk song and music. In the letter, Sharp initially shared how his own experiences with phonographic recording did not go as smoothly as he would have liked. He commented "I have found singers…yet quite incapable of singing into it in their usual un-selfconscious manner," suggesting that the folk singers were conscious of their own performances and thus potentially compromising the authenticity of the folk song.[326] As problematic as this was for Sharp, his strongest doubt revolved around the collector's interpretation of unfamiliar English folk songs.

Sharp questioned whether it was useful or even appropriate to use the phonograph's ability to manipulate the playback speed of an English folk song in order to hear subtle notes or rhythmic irregularities that may have been missed by the listener(s). He continued with his critique and insisted that "the difficulty, which is perpetually confronting the collector, is to decide which of these small aberrations he should record and which he should omit, in other words to settle when a rhythmic irregularity belongs

[326] Letter from Cecil Sharp to Percy Grainger, May 23, 1908, Sharp Correspondence, Vaughan Williams Memorial Library.

to the song itself and when it is a merely a personal idiosyncracy."[327] Whether it was a melodic or rhythmic irregularity, Sharp did not believe that the authoritative source for the study of folk music should be based off a phonograph recording, but rather should emerge from the trained musician skilled enough to interpret unwritten and un-codified music. In other words, the phonograph was not there to challenge the authoritative ear of the trained musician with its recorded bits of sound easily missed by the listener, but rather to aid in the interpretation of folk music, a position that he and others associated with the English Folk Song Society strongly endorsed.

Percy Grainger, on the other hand, would go on to question an unacknowledged assumption in Sharp's argument, which was the distinction made between the performer and the composition. Similar, to the previous chapter's examination of a singer's "intentionality," this chapter will explore how this distinct relationship between the composer and the performance was an assumption and an approach to music that Grainger vehemently rejected. According to Grainger, Sharp's distinction between the performer and a musical composition was an artificial one and the phonograph served as the perfect instrument for the elimination of this long-accepted boundary between a composition and its performance because it collapsed the acts of creation and performance into one musical moment, which Grainger saw as essential to the next developmental phase of modern music at the beginning of the 20th century. Even though Sharp and Grainger remained on good terms throughout their professional careers, Grainger maintained his intellectual position and continued to record collect folk songs until he busied himself with other compositional projects and performances.

[327] Ibid.

Much has been made over this debate, creating a highly polarized assessment of the dynamics at the English Folk Song Society at the turn of the 20th century.[328] And while much has also been made of his travels, compositional works, friendships with other musicians and composers, and overall innovative stamp on modern music, Grainger's phonographic work at the turn of the 20th century is interpreted as an enthusiastic, temporary project not to be taken seriously. The aim of this chapter is not to engage the debates of the English Folk Song Society head on or to isolate Grainger as "a solitary and courageous pioneer," the assessment made in John Bird's biography of Grainger. Rather, this chapter aims to bring into focus Grainger's use of the phonograph during his folk-song collecting project between 1905 and 1908 and explore how it shaped his musical theory and practice during the first two decades of the 20th century, as well as his later projects.[329]

David Tall, author of "Grainger and Folksong," echoes John Bird's assessment of Grainger and casts him in a heroic light, highlighting Grainger's innovative and groundbreaking work in folksong recording. Tall emphasizes this point by crediting Grainger as the first member of the English Folk Song Society to utilize the phonograph

[328] A simplified interpretation of this debate can be found in Michael Yates, "Percy Grainger and the Impact of the Phonograph," *Folk Music Journal* 4, No. 3, (1982): 265-75. Even though important distinctions are made between the various intellectual positions of different EFDSS members, the impact of the phonograph can be better assessed through a more comprehensive look at Percy Grainger's work. For other interpretations of the debate, see Christopher J. Bearman, "Percy Grainger, The Phonograph, and the Folk Song Society," *Music & Letters* 84, no. 3, (August 2003): 434-55 and David Josephson, "The Case for Percy Grainger, Edwardian Musician, on his Centenary," in *Music and Civilization: Essays in Honor of Paul Henry Lang*, edited by Christopher Hatch, Maria Rika Maniates, and Edmond Strainchamps, (New York: Norton, 1984).

[329] John Bird, *Percy Grainger*, (New York: Oxford University Press, 1999), 131. Grainger was definitely not alone in his ideas or his work. This can be seen with his reference to the work of Bela Bartók and Edvard Grieg, fellow musicians interested in incorporating folk music into their compositions.

in the recording and study of folksongs.[330] Similarly, John Bird states that Grainger saw folk songs as advanced music and not a project in musical archaeology and thus Bird heralds him as a cutting-edge musician and scholar who brought innovation to a stagnant musical tradition in England.[331] For the most part, I agree with this statement, but refrain from romanticizing a heroic Grainger.

Christopher Bearman comments on the debate between Percy Grainger and Cecil Sharp in a slightly different manner. He suggests that there was more in common among the members of the English Folk Song Society regarding the use of the phonograph, and that any suggestions of hostility are merely unsubstantiated myths.[332] I generally agree with Bearman's assessment of the relationship between Grainger and members of the English Folk Song Society. However, if one expands the analysis of Grainger and the phonograph to a larger vantage that includes both his musical ideas and his later experiments with automatic music-making machines, there still exists an important facet of Grainger's work which was quite unique and shaped by his early engagement with the phonograph that deserves additional exploration. Beneath the surface of simple arguments over the enthusiastic or cautious use of the phonograph lay important social and musical concepts that were being contested by musicians and cultural critics, such as the difference between folk and art-music, a distinction that Sharp and others maintained throughout their careers. Additionally, questions over scales, rhythms, and musical style

[330] David Tall, "Grainger and Folksong," in *The Percy Grainger Companion*, edited by Lewis Foreman, (London: Thames Publishing, 1981), 55-71.

[331] Ibid., John Bird, "Grainger on Record," 195.

[332] C. J. Bearman, "Percy Grainger, The Phonograph, and the Folk Song Society," 452-54.

were posed, begging the question what exactly is music and if it is modern, what makes it so?

One way to answer this question is to examine Grainger's work with the phonograph and folk music in England at the beginning of the 20th century, which formed the foundation for his overall vision and quest for genuine musical artistry. The phonograph provided an experiential basis, upon which he reflected and articulated his interpretation of what music is to be in order to remedy what he and other cultural critics considered to be the "musical poverty" of modern music. This crisis occupied the attention of many musical experts at the turn of the 20th century.

For instance, in the summer of 1916, a heated debate emerged between two musical critics, Hugh A. Scott and D. K. Sorabji. Scott began his case with an article entitled "The Melodic Poverty of Modern Music," in which he deplored the current state of modern music due to its willingness, for the most part, to dismiss any serious interest in the composition of strong melodic and thematic components in classical music. Even though he acknowledged "no one will be disposed to deny that … serious music is often independent of melody in the more obvious sense," he countered with the argument "there is – to put it moderately – a legitimate place for it."[333] A month later, D. K. Sorabji – also a composer - responded to Scott's essay criticizing him for not providing a broad enough definition of what a melody or tune could be. Sorabji gave the example of short Indian melodic fragment to suggest that even though Scott's plea for melody was important, it did not go far enough, since his request for melody did not include non-

[333] Hugh Arthur Scott, "The Melodic Poverty of Modern Music," *The Musical Times* 57, No. 88, (June 1916): 276.

Western melodies. For Sorabji, "There is no possible place for Mr. Scott's 'definite melody' in modern music … Melody as understood in a wide and not unwarrantedly restricted sense there is in abundance of rarest and richest beauty."[334]

In this short debate, Scott and Sarabji addressed a topic that obsessed musical circles of the early 20th century, re-assessing not only the balancing of melodic and harmonic components in modern classical music, but also the very definition of melody and harmony. Interestingly enough, Scott in his assessment of the state of modern music, gave credit to Percy Grainger as the only composer who "excites anything like genuine enthusiasm in the concert room – whose music is strikingly, one might even say aggressively, tuney."[335] Current musicology sees Percy Grainger as a minor, yet interesting figure that played an important role in addressing questions regarding the future direction of modern music in England. But what was missing from Scott's analysis was the source of inspiration for Grainger's approach to musical modernism: the melodies of English folk songs recorded on the phonograph.

An examination of Grainger's work beginning with the English Folk Song Society and concluding with his manufacturing of "free music" machines in the 1940s and 50s demonstrates the indispensable role of the phonograph in the creation of a musical theory and practice that endured for longer than Grainger's short time spent on

[334] D.K. Sarabji, "The Melodic Poverty of Modern Music: To the Editor of the 'Musical Times'," *The Musical Times* 57, No. 881, (July 1916): 332. As the previous chapter has indicated, major questions regarding the nature of music emerged in response to the rich ethnographic fieldwork completed by American and European anthropologists and musicians. The different harmonics, rhythms, instrumentation, and overall musical expression of non-Western music, when analyzed, put the traditions and customs of Western music under the microscope, which either proved problematic or helpful in reinforcing accepted musical theories about the historical evolution of music.

[335] Scott, "The Melodic Poverty of Modern Music," 278.

direct recording of folk music. The phonograph forced Percy Grainger and others, regardless of their feelings for the phonograph, to wrestle with slippery assessments of musical categories such as melody and harmony in English folk music as they struggled to establish authoritative claims about the foundations of music.[336] Also, the fusion of the phonographic technique and folksong study not only redefined what folk songs were in relation to other Western music, but also developed a part of Grainger's overall musical vision to collapse as much as possible the distance between the moments of musical creation and execution.

What he experienced and learned from his phonographic recordings in 1905 laid the groundwork for an intimate relationship with music that broke free from not only the bounds of time signatures and scales, but also the distinction between composition and performance. It was in the ability of the phonograph to bend these axes of musical notation and listening, which revealed for Grainger a new space for the creation of a new type of music generated from the personal, idiosyncratic styling of an artist not hindered or constrained by traditions or customs. In other words, Grainger interpreted the creative and performative acts of folk music as occurring simultaneously, bypassing the need for a separate moment of composition, and thus musical notation. For Grainger, the symbolic limits of written notation deadened music and thus could not compete with the more genuine and living reproduction of folk music made possible with the phonograph.

[336] As each of the previous chapters have examined, the phonograph – regardless of its field of application – problematized traditional dichotomies and/or categories. Whether from its protagonists or detractors, the phonograph questions about intellectual, experiential, and material boundaries. This chapter will pursue the same strain of inquiry and explore how the phonograph brought to the foreground problems with traditional categories or binaries, subsequently encouraging its most avid supporters to embrace new conceptual frameworks relevant to different fields of study and practice.

It was only through his phonographic work that he was able to clearly articulate his ideals for truly expressive music and to put them into practice with the free music project he pursued until his death in 1961, which strove to eliminate the distance between the creation and production of music through mechanical means. And ironically, by the end of his career, Grainger placed his free-music machine at the source of genuine emotive expression, not a living, breathing musician subject to the dead hand of an absent composer. Simply put, the phonograph functions as a critical link between the first decades of the 1900s and the free music of the 1950s. At every level of his work, the emotion captured and reproduced on phonograph recordings confirmed for him the way *all* music should be experienced, whether folk or modern. The phonograph established a practical and visceral foundation from which Grainger developed both his musical theory and practice, invigorating his incessant pursuit of authentic emotional expression in music.

Percy Grainger and the English Folk Song Society

As early as 1892, Lucy Broadwood, one of the key individuals responsible for the establishment of the English Folk Song Society (1898), believed that there still remained much work to be done in the collection of English folk songs and ballads. Quite urgently, she asserted, "there still remains very much to do in the way of *systematically and accurately* collecting and recording the old ballads, songs, and rhymes of the

peasantry."[337] In her initial analysis, she suggested that the "pure English folk-tune is exceedingly simple in construction; often it is eight bars long. Its subjects are repeated with artless economy."[338] She continued that "[o]ur true folk-tune is purely diatonic, and it is often purely modal."[339] What is interesting about this statement is that her notation of the tunes she characterized as "simple" is just that. However, the juxtaposition of her notation or Cecil Sharp's, with whom she worked starting in the 1890s, with those of Percy Grainger suggests that these tunes may not be so simple, either in pitch, harmony and/or rhythm.

The approach Broadwood took to the study of English folk-tunes was one of large-scale development and connection, meaning she sought to place within a chronology of progression the emergence and evolution of folk-tunes in relation to "modern" music, also known as "art" music. But, there was a caveat to this argument. For Broadwood and Sharp, folk-tunes "have been from the first, and still remain, an art distinct from that consciously-composed music, and … they are the real expression of a sane, sturdy people, none the less emotional because slow to talk of its emotions."[340] She concluded that for the casual observer, "[t]here is something almost esoteric in this

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[337] Lucy Broadwood, "Folk-Songs and Music," *Folklore* 3, No. 4, (December 1892): 552.

[338] Lucy Broadwood, "The Collection of English Folk-Song," *The Journal of the Royal Musical Association* 30, 91.

[339] Ibid.

[340] Ibid., 95. It is likely that in this analysis, Lucy Broadwood was referencing a larger European and American discourse on neurasthenia, a peculiar psychological disorder of the late 19th century characterized by an exhaustion of the nerves brought on by the rapid and incessant stimulation of modern civilization. By distinguishing the folk community as a "sane, sturdy people," Broadwood was reinforcing the psychological and cultural gap between the neurosis associated with modern urban life and its absence in the pre-modern folk community. For more on the medical and psychological discourse surrounding neurasthenia, see Anson Rabinbach's *The Human Motor: Energy, Fatigue, and the Origins of Modernity*, 153-163.

ballad-singing."[341] This suggestion, that the untrained listener might find English folk songs difficult to understand due to their anomalous relationship to modern music, would become a serious point of contention for Percy Grainger. Grainger believed that such an attitude towards folk music blocked the universal appreciation of different musical styles. And more to the point, Grainger found such a distinction between folk songs and contemporary music untenable.

In the discussion that followed Broadwood's introduction to the process of collecting English folk songs, it was suggested that the purchase of a phonograph would be the next best step for the Folk Song Society.[342] Even though several members of the Folk Song Society would occasionally use the phonograph, it would be Grainger who fully employed the phonograph in his ethnographic fieldwork. Broadwood and Sharp, on the other hand, did not follow after Grainger in fully utilizing the phonograph. They had a larger musical project in mind that differed radically from his. At a time of renewed interest in national musical styles, it was important for Broadwood and Sharp to establish the legitimacy of their project by fitting the characteristics of English folk music into a larger model of musical development that culminated with contemporary English music of the late 19th/early 20th century.[343]

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[341] Ibid.

[342] Folk Song Society Meeting Minutes, October 25, 1906, Vaughan Williams Memorial Library.

[343] The conversation over the state of contemporary music in England, Europe, and America was not just for folk music specialists. Many musical scholars and critics were part of the dialogue. In particular, Sydney Grew, a well-known English music critic, wrote many articles addressing the future of English music, with a particular focus on the role of folk music in the development of a national style of music. He wrote "National Music and the Folk-Song" in 1921 and maintained the same position as Sharp and Broadwood that a sharp distinction existed between folk and art music. The prevalence of this national dialogue indicates the significance of the concern over the state of modern music and how the study of folk music could have a role in shaping the direction of music's future.

Immediately after the formation of the Folk Song Society, Broadwood and Sharp quickly established a framework for their study of English folk music, which they would refine and add to over the next two decades. Together, they led the collection of English folk songs over the next ten years and recruited fellow specialists to examine the lyrics and music of folk song to ascertain their origin, and subsequently, relation to modern forms of music found throughout Europe. Not until 1906, when Broadwood presented her work for the Musical Association at the Briggs Festival in North Lincolnshire, did Percy Grainger attend her lecture and engage in the work of the English Folk Song Society. Grainger familiarized himself with Broadwood's folk song collections, which she had translated into musical notation through a process of repeated listening. Grainger found her work exciting and it is from this point that he began in earnest his collection of folk music with the phonograph.[344] But before turning to Grainger's work, it is important to establish the fundamental arguments made by Broadwood and Sharp regarding the nature of English folk music.

Ten years after the official establishment of the Folk Song Society, Cecil Sharp and Lucy Broadwood explained the significance of accurately recording and scientifically studying folk songs. They proclaimed that such an undertaking would reveal a great deal about the origin of music, and as a consequence the relationship between different forms of music from around the world. Considering that since the late 1880s, many Western ethnologists and musicians had been studying the music of the Chinese, Samoan, American Indian, Indian, and other non-Western groups, the presence and practice of a folk music in England necessarily raised the question of the "ethnic" heritage of English

[344] *Percy Grainger*, 117.

music. Sharp and Broadwood's core argument about folk music was that it lacked a formal structure and any formal rules in terms of composition or performance. However, Sharp did point out that for the most part, English folk songs utilized the diatonic modes, categorizing English folk songs into medieval modalities that had not been used in modern (art) music since the 17th century.[345] It was this characteristic of diatonic modes that Sharp and Broadwood relied on to establish their scientific study of the form of folk music. And this could be seen in the numerous song notations that both Sharp and Broadwood published in the first decade of the 1900s.

Cecil Sharp went on to compare the construction of the folk song to the arrangement of the planets around the sun, meaning that there was a "*center of gravity*," in this case the tonic note, around which most, if not all, folk tunes arranged their melodic lines. An important musicological point was then made by Sharp, who argued that all music from around the world, whether modern or not, was modal and "*natural*" in terms of scale(s). By "*natural,"* Sharp suggested that the "intuitive and instinctive music – *i.e.* the folk-music – of many nations, in Asia as well as in Europe, is like our own in being diatonic and modal."[346] This peculiar universality meant that folk music was to be compared and interpreted within this modal framework. Subsequently, there was an imposed model of development utilized in the evaluation of a folk song. If a documented tonal or rhythmic aspect represented an irregularity in relation to the canon of universal musical ideas and practices, it was due to the individual performance of a folk singer, not the musical style or values of a particular community. The underlying structure of the

[345] Lucy Broadwood and Cecil Sharp, "Some Characteristics of English Folk-Music," *Folk Lore* 19, no. 2, (June 30, 1908): 136.

[346] Ibid., 140.

musical performance could still fit within the patterns of an over-arching model of musical evolution. But that is the point at which the similarities between folk music and art music ended.

According to Sharp and Broadwood, the change in musical style during the fifteenth century, after the unification of the Catholic Church with the Council of Constance shifted the interplay between art music and folk music. This relationship became one where "the folk musician has been the *ex*porter rather than the *im*porter," suggesting that after the seventeenth century, folk music shared its melodies, which may have been modified by new art music, but folk music did not adopt new modes or other forms of musical standardization that spread throughout Europe in the 1600s.[347] They maintained that art music was built off of and borrowed much from folk music, and that the replacement of the various scale modalities with the minor and major scales during the seventeenth century revolutionized the creation and dissemination of music, but did not affect folk music in a reciprocal manner. Folk music thus did not change, while modern music began a trajectory contoured by specialization and further standardization.

More precisely, Sharp argued that the abandonment of musical modes during the last half of the seventeenth century ushered in a new wave of harmonic composition that revolved primarily around major and minor scales.[348] According to him, this revolution "did not affect the folk" and they "continued to make their own music in their own way independently of the art-musicians."[349] Inherent in this analysis was the argument that

[347] Ibid., 141.

[348] Cecil Sharp, *English Folk-Song*, (Taunton: Barnicotts Limited, 1907), 45-46.

[349] Lucy Broadwood and Cecil Sharp, "Some Characteristics of English Folk-Music," 141.

there was a strong and marked difference in the artistic expressions made by folk music and art music in the transition from a focus on melody to a focus on harmony.

Sharp articulated this difference between melody and harmony in another way by stating that folk music "is The song created by the common people, that is by those whose cultural development has been effected not by means of any formal system of training or education but through the unconscious and intuitive exercise of faculties that are natural and inborn" while he defined art music as that "which is due to the exercise of faculties consciously and intentionally cultivated."[350] Sharp's distinction between folk (melodic) and art (harmonic) music necessarily placed folk music within a developmental schema using self-consciousness and intentionality as signifiers of evolution. And it simultaneously made a larger argument about a process of social evolution, marked by a transition from a group-centered society to an individualistic modern society. This model of development would suffice for Sharp and Broadwood as they examined the nature of folk music, and anything that might disturb their theory of musical evolution was to be considered as problematic.[351]

An examination of the article by Broadwood and Sharp after Sharp's critical letter to Grainger signifies that neither valued the phonograph as a reliable agent or revolutionary apparatus for the English Folk Song Society. A quick examination of the notations provided in "Some Characteristics of English Folk-Music" demonstrates a

[350] Draft of article prepared by Cecil Sharp for the Harmsworth Encyclopedia (March 1919), Cecil Sharp Collection, Vaughan Williams Memorial Library.

[351] For a more complex and detailed analysis of recent musicological scholarship on the historical changes undergone by Western music, in regards to identity, authority, gender, expression, and style, see Susan McClary's *Modal Subjectivities: Self-Fashioning in the Italian Madrigal*, (Berkeley: University of California Press, 2004) and *Feminine Endings: Music, Gender and Sexuality*, (Minneapolis: University of Minnesota Press, 1991).

couple of things. First, the phonograph was not referenced at all, suggesting that the documentation of folk songs was performed by the traditional method of notational transcription. Second, the classification of various folk songs into ideal modal types with single time and key signatures emphasizes the point that it was the authoritative ears of the folk song collectors, in this case Lucy Broadwood and Cecil Sharp, which would parse the folk song repertoire into well-defined musical categories.[352]

This theoretical approach was maintained even in the few moments that the phonograph was used. In November of 1912 near Exeter, Lucy Broadwood did notate a folk song from a phonograph record, but she transcribed the entire song in a single time and key signature. Additionally, in her description of the song's lyrics, she discussed how an unclear line towards the end of the song was not decipherable due to "the very indistinct words and accents of the phonograph."[353] Even though Broadwood utilized a phonograph recording in this one instance, her caution regarding the phonograph suggested that the phonograph could not supersede the trained ear of the musical scholar, a position quite different from Percy Grainger's. The presence of "indistinct" recorded sound demonstrated for Broadwood that the phonograph mainly functioned as a collection apparatus – albeit an imperfect mechanism - that would have to be eventually processed by a trained specialist. The automatic recording of the phonograph would not suffice in providing accurate and meaningful historical knowledge all on its own. Effective musical analysis required skilled judgment.

[352] Ibid., 132-52.

[353] "The Pretty Ploughboy," *Journal of the Folk-Song Society* 4, No. 17, (January 1913): 304-7.

After his initial meeting with Lucy Broadwood in 1906, Grainger began his own collection project of folk songs with a phonograph in Northern Lincolnshire. He took a small Edison Bell cylinder phonograph with him on the back of his bicycle and continued his work in Gloucestershire, Worcestershire, and London until 1908.[354] In May of that year, Percy Grainger published a lengthy article expounding the merits of collecting folk songs with the new phonographic method. He quickly acknowledged the immediate, if temporary, discomfort of the folk singers, but pointed out that once they had grown accustomed to singing into the device, this method of recording allowed for an "incomparably greater scope" in the "unconscious sense for rhythmic and dynamic contrasts and dramatic effects."[355] In contrast to Broadwood's understanding of the phonograph as an imperfect recorder of sound, Grainger thought that more important and intangible elements of musical expression could only be accessed with the phonograph. This advantage of phonographic recordings overshadowed, for Grainger, the initial discomfort and acclimation to the phonograph experienced by the singer.

Grainger did not utilize the phonograph to record a song in order to defend his unaided interpretation, but rather to challenge his own musical predilections steeped in Western European musical ideals and practice. As he bluntly put it, "[t]he gramophone and phonograph record admirably what our ears and systems of notation are too inaccurate and clumsy to take advantage of."[356] Here, Grainger placed a premium on the value of accuracy, something the human ear failed to exercise in comparison to the

[354] Bird, *Percy Grainger*, 123-125.

[355] Percy Grainger, "Collecting With the Phonograph," *Journal of the Folk-Song Society* 3, No. 12, (May 1908): 147.

[356] Ibid., 152

phonograph. Compounding the problem, the limits of standard written notation were also part of the problem for Grainger. Thus for Grainger, the phonograph acted more as an objective ear than the supposed trained ear of the "civilized" observer, which might consciously or unconsciously miss important subtleties of a folk singer's performance.

Not limited by a musical tradition that emphasized certain scales and harmonies, the phonograph could record unique, yet significantly different musical expressions that evaded even the best-trained ear without forcing what it heard either melodically or harmonically into the modern music mold. Grainger reflected on his own experience and concluded that "I find it impossible to render into musical notation anything approaching the full charm of the great or slight rhythmic irregularities ever present in traditional solo singing."[357] The consequences of relying solely on written notation compromised a genuine collection and preservation of unique musical performances, which might be both misinterpreted and over-simplified.

In his emphasis on noting subtle irregularities in both tone and rhythm, Grainger dismissed the notion that verses in a song were blanket unconscious repetitions of a particular melody. He argued instead that each verse was supposed to be different and purposely unique, making a strong case that for most folk singers "the tune of a song in (say) its fifth verse is not merely a repetition of the turn of "verse one" sung to different words, but is, rather, *the particular music to those particular words*."[358] The attention to detail that Grainger argued for opened up a new exploratory realm of "the intimate

[357] Ibid.

[358] Ibid., 153.

flavour of his personality," that personality belonging to the recorded folk singer, to educate listeners about the power and magic of folk music.[359] This priority on "personality" was for Grainger a key criterion in what he considered to be appropriate and thorough ethnographic studies. Folk music could not be separated from its individual artists if possible. Contrary to a purely communal interpretation of folk music advanced by Sharp, Grainger argued for the additional and essential inclusion of the artist as individual in the proper study of music.

H. G. Wells, the novelist, accompanied Grainger to Gloucestershire and after observing his work concluded that Grainger was not recording just folk music, but "trying to record life."[360] In addition to noting down dialect details, Wells noticed how Grainger also documented bits and pieces of conversations with different singers and farmers, which he used in his description of specific folk songs. Taking into account Wells's socialist background, he saw in Grainger's work a rehabilitative project that would give a voice to the downtrodden of modern society, which would simultaneously show the rest of society the inherent problems with industrial capitalism and its impact on cultural and social development. Well's short statement also reinforced Grainger's opinion that narrative folksong possessed inherent inventive qualities. This notion of making English folk songs unique relative to contemporary art music forms would become a formidable component of Grainger's argument for his modern vision of music

[359] Ibid.

[360] Quoted in Percy Grainger, "The Impress of Personality in Unwritten Music," 420. Grainger himself described his work with folk music as experiencing the "splendid manifestation of its life-force!" This is from "Collecting with the Phonograph," 153.

and overall rehabilitation of modern culture. And, the mechanism responsible for this cultural renovation would be the phonograph.

Grainger's disappointment with what he called the dead and lifeless aspect of art music, due to its general over-dependence on traditional harmonies, regular rhythms, and the composer, was to be addressed by listening to the phonograph recordings of folk music, enabling the collector and student of folk songs to "feel the throb of the communal pulse, but each single manifestation of it is none the less highly individualistic and circumscribed by the temperamental limitations of each singer."[361] Here, the phonograph's unmediated recording became the access point to the artistry of a quickly fading communal identity, which was contoured by the technique of individual singers. The emphasis on the *individual* resonated strongly with his work in 1906 on folk songs and established a well-formed foundation from which Grainger extended his plea for the return of the musician's personality and passion to all music, especially contemporary music.

Percy Grainger's first collection of transcriptions acquired from folk-song recordings is interesting in the fact that it contained several versions of songs, such as "Six Dukes Went A-Fishin'," occasionally sung by different folk singers. The published transcription was based off of a recording conducted on July 28th, 1906 by a Mr. George Gouldthorpe, who sang "Six Dukes Went A-Fishin'" into Grainger's Edison Bell phonograph. What is interesting about this recording is the fact that the same Mr. Gouldthorpe performed the identical song for a recording conducted on an earlier date on September 4th, 1905. Even though there was great similarity between both recorded

[361] Grainger, "Collecting with the Phonongraph," 164.

versions, Grainger pointed out that in his notation of the first rendition, C-sharps were actually sung as C-naturals. However, at the second recording, the noted C-sharps were sung as C-sharps. Grainger's transcription did not stick to one meter, but noted it as oscillating between two different time signatures throughout the entire song.[362] Looking at other folk-song transcriptions done at the same time, one sees that other folk-song specialists simply did not acknowledge the notational shifting and meter changes Grainger heard on his phonograph recordings. In analyses by Lucy Broadwood or Cecil Sharp, one notices the lack of a commitment to noting down not only different versions by different singers, but also the subtle discrepancies in one folk-singer's multiple versions of a song, such as Grainger's study of "Six Dukes Went A-Fishin'."

Consistently, Grainger included more comments on stylistic elements, elaborating the mood in which songs are sung. For example, in "The North-Country Maid" ballad sung by Joseph Leaning, Grainger notes "Mr. Leaning sang this song with great lilt, and in parts with striking expressiveness. It is noteworthy, that for his most pathetic moments, he has chosen the sharp third, while the minor third is used with a merry swing in the same verses."[363] Here, Grainger drew a connection between musical styling and the emotional content of the song, which demonstrates two things. First, unlike other members of the English Folk Song Society, Grainger chose to analyze and point out the complex emotional expression of folk-songs; this emotive freedom was a sign of what modern musicians should be pursuing, not musical codification. Second, what made this analysis unique was his work with and openness towards the phonograph. He could have

[362] Ibid., 171.

[363] Ibid., 185.

interpreted the material just like the other folk song scholars, but the ability of the phonograph to playback its recorded material at different speeds coupled with Grainger's willingness to challenge his own pre-conceived notions of music allowed him to hear the singer's expressiveness as genuine freedom from pitch constraints and a consistent rhythmic meter. Here, Grainger's preference for phonograph recordings, not musical notation, highlights how he understood the phonograph as an un-mediating mechanism necessary for enriching and furthering the practice of musicological work.

Without the phonograph, the folk song collector had to constantly focus his or her attention to the details of the musical performance and thus could not completely experience a folk song performance, in terms of genuinely feeling the emotional expression performed by the folk singer. With the phonograph, the collector was "able to note down leisurely and unhurriedly" the "melodic variants" of a song's verses. Capturing these subtle details convinced Grainger that with the phonograph, "the stronger grows my *personal feelings* that any noting down of an *individually and creatively gifted* man's songs that does not give all possible details of all the different verses of his songs … cannot claim to be a representative picture of such a man's complete art and artistic culture, but only a portion of it."[364] Not happy with only one version of a song, Grainger believed that a thorough recording and preservation of a song's verses preserved the creative individuality of individual singers by not reducing them down to a few melodic elements. Moreover, in terms of rhythm, the phonograph's preservation of at times the "frequent uniform repetition of irregularities … prove that very many of them are not mere careless or momentary deviations from a normal, regular form, but radical points of

[364] Ibid., 150-51.

enrichment, inventiveness, and individualisation."[365] The mechanical means of preserving and re-playing melodic and rhythmic freedom through phonograph recordings was for Grainger a critical component in his study of unwritten music. Mechanized recording revealed a level of detail and expressiveness, unmatched by traditional written notation, and Grainger consistently emphasized this in his analysis of folk songs.

In the recording of another folk song, "Lord Melbourne," Grainger emphasized the importance of having three records of the same song performed by the same singer. Individually, they could have been categorized as either Dorian or Mixolydian scales. But, taken together, these three recordings signified for Grainger the variability with which folksingers modified their pitches due to the mixing of different modes.[366] Also, he noted, "the minute rhythmic irregularities of the above (such as the 3/16 bars) are mere wayward and theoretically unimportant lengthening and shortening of rhythms fundamentally regular. Nevertheless, their presence added to the extreme quaintness of Mr. Wray's rendering, as I feel there may be value in as literal as possible a translation into musical notation of all his details."[367] In Lucy Broadwood's commentary about the same song, there is not the same emphasis on the stylistic varieties as in Grainger's.

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[365] Ibid., 155.

[366] The Dorian and Mixolydian scales are two of the eight modes established by the Church during the ninth century. They were established in order to compose music that would generate a specific emotional state appropriate for a religious ceremony. All modes are based in the C scale, but the scales begin on different notes. For example, the Dorian scale is mode I and begins on D. The Mixolydian is mode VII and begins on G. The significance is that very few, if any, folk song collectors noted the degree of mode shifts in one song as Grainger did in his own analysis.

[367] Grainger, "Collecting with the Phonograph," 205.

Rather, she drew a connection in how the song was regionally similar between Sussex and Lincolnshire.[368]

Broadwood emphasized the categorization of folk songs, which differed from Grainger's delight in individual idiosyncrasies. Rather than expose the individual variations between different singers, Broadwood preferred to streamline folk song content into categorical interpretations.[369] Interestingly, the different arguments by Grainger and Broadwood were both justifiable through phonograph recordings, but the direction of their arguments depended on how they related to or relied on the phonograph as a collection technology. How these folk song scholars related to the phonograph was a point of distinction, which not only impacted how folk music was understood, but also, in Grainger's case, shaped his later musical work.

Other members of the Folk Song Society, including Broadwood, Sharp and Anne Gilchrist, important figures in the society, expressed hesitations over Grainger's zealous endorsement of and practice with the phonograph. They did not relinquish any authority to the phonograph in challenging their expertise, but rather erred on the side of caution, preferring to resort to their own personal impressions regarding knowledge created about English folk song. Gilchrist did not believe that the phonograph was as reliable as Grainger proclaimed and commented "it seems to me wisest to regard it meanwhile as the best substitute (available) – where a substitute has to be found – for the trained ear of the musician – or as its *corroborator* – but not as its *supplanter*. Its limitations are somewhat

[368] Ibid.

[369] The bulk of the collections and analyses made by Broadwood and Sharp demonstrate that they chose only one mode for each of the folk songs they transcribed. This can be found in Lucy E. Broadwood, "On the Collecting of English Folk-Song," *The Journal of the Royal Musical Association* 31, 91-109.

like those of photography – cinematographic, if you like!"[370] Although Gilchrist did not explain what the shortcomings were of other mechanically rendered media, it is safe to assume that she understood them, and the phonograph, to not provide the most accurate or complete re-creation of a particular visual or audio experience. Gilchrist found the phonograph to be only a last resort, an imperfect mechanism that could not interfere with or supplant the trained judgment of a musician.

Sharp, in his May 1908 letter to Grainger would make the same suggestion and like Gilchrist, he invoked the analogy of the camera. He conceded that there did reside some scientific accuracy with such technologies, but emphasized that the "artist does not want to put upon his canvass just what is in front of him, but only that part of it that he sees, and even that, not as it is, but as it appears to others."[371] For Sharp, the impression created by the artist mattered, not necessarily the specific notational or rhythmic idiosyncrasies missed by the listener. Sharp explained this by stating "I fancy that many of the chromatic notes which you have transcribed from your records, although no doubt they were in fact sounded, were nevertheless, practically inaudible, and would have been omitted, and I contend rightly so, by the ordinary collector."[372] The subtle detail collected by Grainger was unnecessary for Sharp and thus diverted attention away from the general form of a folk song, which would reveal its similarity to other English folk songs in the communal conception that he argued for in *English Folk-Song*.

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[370] Quoted in Michael Yates, "Percy Grainger and the Impact of the Phonograph," 266-67. Letter from Anne Gilchrist to Lucy Broadwood, June 1 and 2, 1908, Anne Geddes Gilchrist Correspondence, Vaughan Williams Memorial Library.

[371] Letter from Sharp to Grainger, May 1908, 5. The last part of the quotation beginning with "and even that…" is Sharp's own editing of the letter and the underlining is his as well.

[372] Ibid.

In their efforts to analyze English folk songs systematically, Broadwood, Sharp, and Gilchrist refrained from going into much detail regarding specific songs, which might muddle their overarching theoretical outline of the relationship between folk and art music. Gilchrist, in her evaluation of Grainger, acknowledged his argument that "we have lost a presumably similar innocence of the ear (*possibly* surviving to some extent amongst folksingers), and as musicians are *apt* to reproduce tunes as we think they ought or are meant to be rather *than* as we hear them."[373] But, she was not convinced. She responded with:

> I think it is undoubtedly possible to more than regain what has been lost, and granting the limited 'accuracy' of an unreasoning recorder, whether an infant eye or ear, a sensitive plate, or a vibrating needle, the trained ear or eye of musician or artist is surely able to reproduce with more real *truth*…the sounds or the sights impressing the sensitive surface – whether human or artificial – of an 'innocent' receptive medium.[374]

At this level of interaction between the human observer and the phonograph mechanism, Gilchrist did not trust the phonograph and insisted that a cognizance of one's own predilections could be challenged and put aside for the sake of legitimate folk song studies. In other words, Gilchrist did not position the phonograph as an essential tool in folk song analysis since "accuracy" alone would not generate a truly comprehensive assessment and understanding of folk music.

Grainger did not share Gilchrist's trust in the well-trained folksong specialist. For Grainger, to focus in on "what is actually heard" with the unaided ear failed to address the problems of subconscious traditions and habits that would color, filter, and misinterpret the folk songs of folk-musicians. As he stated at the beginning of his 1908

[373] Quoted in Yates, 267. Gilchrist Correspondence, Vaughan Williams Memorial Library.

[374] Ibid.

article, "[p]ersonally I deeply regret having to rely on my own hearing in any delicate matter of pitch. One is so distressingly liable to think one hears what one is expecting to hear." As a consequence, "[e]ven what one does hear with fair accuracy loses in exactitude when translated into our very limited musical and verbal notations."[375] According to Grainger, the cultural and intellectual listening tools brought to the recording of folk music required the phonograph to counterbalance and call into question what the listener thought they heard or should have heard. This scientific approach to the study of non-art music that relied on mechanical recording and reproduction generated a new degree of musical engagement, which would have important implications for the composition and performance of art music, a major concern Grainger engaged with throughout the rest of his life. Even though he did not collect English folk songs with the phonograph after 1908, he did collect a few cylinder recordings of Maori and other samples of Polynesian music that same year. But, the legacy of the phonograph did not stop there, its impact on his musical ideas and practices continued well into his later work. By the early years of the next decade, Grainger shifted his attention and focused his energies on piano performance and eventually composition, while writing significant essays on music which were both grand in scope and deeply marked by his experiences with English folk music.

[375] Grainger, "Collecting With the Phonograph," 152.

Grainger's Theory of Music

Seven years after his work with the phonograph and folk music, Grainger published in July of 1915 an article entitled "The Impress of Personality in Unwritten Music." This article expanded beyond the locality of English folk songs and folded in other forms of unwritten music, from Polynesian music to North American Indian music, in order to generate larger conclusions about the state of modern music. He came to conclusions that challenged some of the fundamental assumptions made by others in the English Folk Song Society. In opposition to the communal basis of folk music identity advanced by Sharp and Broadwood, Grainger emphasized the individual nature of the different unwritten songs. He explained how "an old Lincolnshire man" heard a variation of a song sung by another person and he responded with "I don't know about it's being fine or not; I only know it's *wrong*."[376] Grainger understood this response to mean that "[t]o each singer his own versions of songs are the only correct ones."[377] Even though this statement was made several years after his work with the English Folk Song Society, it is clear that he was responding to arguments made by Cecil Sharp, which suggested the "folk-song is, therefore, communal in two senses; communal in authorship, and communal in that it reflects the mind of the community."[378] Grainger fundamentally disagreed with this conclusion, asserting the non-communal, and rather more individualized character of unwritten folk music. Thus, the emphasis on the individual

[376] Percy Grainger, "The Impress of Personality in Unwritten Music," *The Musical Quarterly* 1, no. 3, (July 1915): 421.

[377] Ibid.

[378] Sharp, *English Folk-Song*, 15.

artist, whether it was folk or art music, was paramount for Grainger and was not relegated only to the modern era of music. Evidence of individually crafted musical expression could be found in older folk music and for Grainger, this signified that at its core, all genuine musical composition and performance depended on the individual artist.

In his analysis of Edvard Grieg, the Norwegian composer, Grainger borrowed the words of Grieg's biographer to emphasize "how much more the Norwegian genius owed the unique originality of his music to the strength of his own purely personal inventiveness than to any particular external or "national" source whatever."[379] Thus, for Grainger, an artist's personality lay at the core of any original music, not a cultural or nationalist ideal that transcended the individual. And this would become a theme that Grainger would not abandon. Whether it was folk or art music, a distinction that Grainger questioned, the individual emotion and style present in a musical performance or composition was not overshadowed by a communal or national "style" of music.

Grainger continued in this article to explore the hidden complexities of folk music. Essential to the crafting of his interpretation was the phonograph. He admitted that many folk song melodies are simple as abstract structures, but what made them rich and complex were the idiosyncrasies employed by the artist in performance. Grainger saw this personal expression as "a precious manifestation of real artistic personality; so much so that a skilled notator will often have to repeat a phonograph record of such a

[379] Grainger, "The Impress of Personality in Unwritten Music," 417. In this observation of Grieg, Grainger is referencing a larger debate at the end of the 19th century regarding the relationship between folk music and the creation of new national styles of music, which dominated all circles of European cultural discussions. For more on the complex relationship between folk music and art music, and its impact on the debate over the emergence of national styles of music at the turn of the 20th century, see Richard Taruskin, *Stravinsky and the Russian Traditions: A Biography of the Works Through Marva*, (Berkeley: University of California Press, 1996).

performance some hundreds of times before he will have succeeded in extracting from it a representative picture on paper of its baffling, profuse characteristics."[380] Here, Grainger offered an alternative point of view in comparison to the arguments made by Anne Gilchrist in the letter she sent to Lucy Broadwood, which had assigned the role of the phonograph to a mere "corroborator." Grainger, on the contrary, understood the phonograph as a critical technology essential to breaking through the modern musician's theoretical and performative limitations. Contrary to the notion of the "corroborator," the phonograph functioned for Grainger as a "supplanter" that would force the listener to question his or her initial impressions of a musical recording. More precisely, phonograph recordings of unwritten music signified for Grainger that the modern musician could finally cast off the limitations of musical theory and practice inherent in any standardized art music and to learn how to bring the artistic styling of a singer or musician to the foreground.

Grainger further expanded on the complexity of folk music by elaborating on the melodic and rhythmical irregularities that he recorded on the phonograph. In his analysis, Grainger suggested that the way "so-called "modal" melodies move are not finally fixed as are our art-scales, but abound with quickly alternating major and minor thirds, sharp and flat sevenths, and (more rarely) major and minor sixths."[381] In this argument, Grainger again responded to arguments made by Sharp and Broadwood regarding the scale characteristics of folk music. They both argued that English folk songs operated on modal scales, which were all diatonic. Many of the songs resembled

[380] Ibid., 422.

[381] Ibid.

historical church modes, and thus represented a striking separation from modern music. Part of Sharp's argument created a chronology of development for music, since folk music loosely correlated to old modal scales that were no longer used in modern art music. From a broader vantage, Sharp's larger purpose was to firmly establish the place of modern English classical music in the culture of Western Europe at time when concerns over a potentially stagnant artistic culture reverberated throughout Europe.

Grainger opposed this grand project of music classification and argued from his own experience with over 400 phonograph records that folk music changes modes more than once in one performance. From this survey of musical recordings, he concluded that the "whole art is in a constant flux; new details being continually added while old ones are abandoned."[382] Grainger found this constant improvisation not only interesting, but also appealing. What he found lacking in the biased listening of the modern musician was compensated for with the phonographic preservation and manipulation of highly individualized folk songs. The phonograph served as an un-mediating mechanism that revealed subtleties easily missed by the best-trained ear. More precisely, the phonograph in an ironic turn became an essential mechanism in Grainger's understanding of music the collector and preserver of living music, to not only be preserved for future generations, but also to demonstrate how the creative human spirit could regularly shape well-known musical pieces. The trained musician, saturated with standards and rules about music, would be unable to truly capture and notate the vital subtleties in folk music, and would need to rely on the indiscriminate operations of the phonograph to transcend the strictures of standard written notation.

[382] Ibid., 423.

In the rest of the article on unwritten music, Grainger posited what he called lessons. He began with "[w]hat life is to the writer, and nature to the painter, unwritten music is to many a composer: a kind of mirror of genuineness and naturalness. Through it alone can we come to know something of the incalculable variety of man's instincts for musical expression."[383] Drawing inspiration from the phonograph's ability to preserve musical expression without the constraints of musical notation, Grainger detected a degree of freedom and personality in unwritten music that was lacking in modern music. The core of the problem with modern music stemmed from the simple act of written notation, since it "divided musical creators and executants into two quite separate classes."[384] Grainger thought that unlike artists of unwritten music, who were simultaneously both the composer and performer, the methods of modern music nearly eliminated the possibility for idiosyncratic artistic expression due to the chasm established between the composer and performer.

Grainger was not alone in his concern over the gap that existed between the processes of musical composition and performance and the role of the phonograph in rehabilitating this relationship. Rudhyar Chenneviere and Frederick Martens, two musical critics, published an article in 1920 entitled: "The Rise of the Musical Proletariat." Similar to Grainger, they diagnosed the root of modern music's stagnation in the bifurcation of the two moments: "creation" and "execution." And the culprit of this separation between composition and performance was written notation. To solve this dilemma, Chenneviere and Martens suggested that modern musicians look to the

[383] Ibid., 427.

[384] Ibid., 428.

phonograph because "[t]he phonograph record sempiternally and at every point offers every executant a true image of the mother rendering."[385] This positioning of the phonograph testifies to the perceived authenticity of the phonograph record, containing the genuine imprint of the "mother rendering." The language of vitality used to describe the phonograph echoes of Grainger's perception of the phonograph's ability to record the uniqueness of English folk music. From Chenneviere, Martens, and Grainger, the phonograph provided a means to collapsing the strict boundary between the "creation" and "execution" moments in the production of music and thus brought musicians to a better understanding of how to truly experience and share musical artistry.

In his concern for the modern musician, Grainger identified with the folk-musician's adherence to "natural music," which meant employing non-standard musical forms in musical expression, and he considered this musical style and practice as something to be emulated and necessary for repairing what he described as the deplorable state of art music. The main culprit for this cultural demise was the egotistical and self-absorbed intellectual obsession with technical virtuosity, a product of developed art-music that overshadowed the genuine individual creativity reflected in unique personal performances of English folk singers as well as other forms of unwritten music.

In his study of Arnold Dolmetsch, a specialist in historical performance, folk songs, and non-traditional instruments, Grainger pointed out that Dolmetsch's efforts at re-creating English folk songs unfolded "the angelic mood, the sustained rapture, the complexity of musical thought, the glowing sonority, the breadth of form-flow so native

[385] Rudhyar D. Chenneviere and Frederick H. Martens, " The Rise of the Musical Proletariat," *The Musical Quarterly* 6, no. 4, (October 1920): 503.

to the strings."[386] Dolmetsch, who had learned the craft of making and repairing various instruments in the family's piano making business, was exposed to a largely marginalized style of music, which he subsequently studied and practiced. As an important figure in the Early Music Movement, Dolmetsch sought to bring what he understood as the aesthetic beauty of antiquated music – music that predated Sharp's split between folk and "modern" traditions – to the musical culture of contemporary England as something to be appreciated and inspired by, not merely studied. As Harry Haskell states, "he showed that music centuries old could speak to modern ears without being translated into a modern idiom."[387] According to Grainger, modern musicians were only concerned with the "need of pushing forward their tiresome skill and personality," which he also characterized as "wretchedness." Dolmetsch, by contrast, represented for Grainger the balanced approach to the study and performance of music that had been lost with the modern emphasis on intellectuality and technical skill. Grainger also saw this in the growing divide between composition and performance.[388] At the core of Grainger's argument was his belief that folk music embodied musical perfection, an ideal which many modern musicians were pursuing as well – but Grainger defined perfection quite differently. For Grainger, Dolmetsch revealed "to our ears the perfections of a great variety of ancient European music," which made Dolmetsch a "genius…one who has not allowed his great natural gifts to become narrowed and withered by specialization, but

[386] Percy Grainger, "Arnold Dolmetsch: Musical Confucius," *The Musical Quarterly* 19, no. 2, (April 1933): 196.

[387] Harry Haskell, *The Early Music Revival: A History,* (London: Thames and Hudson, 1988), 43.

[388] Percy Grainger, "Arnold Dolmetsch: Musical Confucius," 196-197.

instead has kept a manly, full blooded, all around approach to art and life."[389] In contrast, Grainger assessed the lifelessness of the modern musician to be rooted in the quest for an ever-improved technique. As a result, Grainger and others saw modern musicians at the turn of the 20th century as becoming too mechanical and less unique as individual artists. But, musicians were not the only ones to blame.

In "The Impress of Personality in Unwritten Music," Grainger argued that "[i]t has grown to be an important part of the office of the modern composer to leave as few loopholes as possible in his works for the idiosyncrasies of the performer."[390] This argument arose from Grainger's concern that the core of 19th century music was developing in a manner that de-valued both unaccompanied melodies and discordant harmonies, preventing individual musicians from recognizing their own unique musical voice. And the composer was a fundamental part of this problem. Grainger desired not a return to old folk musical styles, but a more balanced approach that encouraged creativity and expressiveness for all aspects of musical expression, whether they were technical, instrumental, or even personal. For him, "[t]he considerable increase of exactness in our modes of notation and tempo," which has produced both great music and creative musical geniuses, "has done so at the expense of the artistry of millions of performers."[391] In a way, his democratic approach to music was embodied in his assessment of the

[389] Ibid., 191. In his assessment over the current state of music in the early 20th century, Grainger envisioned folk music as a way to reinvigorate the 'manly' character of artistic expression. In both the United States and throughout Europe, discussions about the compromising of manliness dominated many fields of intellectual, political, and cultural practice. For a comprehensive analysis of Great Britain, see David Alderson, *Mansex Fine: Religion, Manliness, and Imperialism in Nineteenth-Century British Culture*, (Manchester: Manchester University Press, 1998).

[390] Percy Grainger, "The Impress of Personality in Unwritten Music," 428.

[391] Ibid.

phonograph and its ability to expose the interpretative predilections of the modern musician in their analysis of either folk or modern music. Additionally, his musical arguments resonated with his assumption about the phonograph as being able to close "the present gulf between the mentality of composers and performers."[392] Chenneviere and Martens echoed this argument and insisted that with the phonograph, "Instead of using our eyes in order to play, we will use our ears – unquestionably a more logical procedure."[393] In an ironic turn, it would be the mechanical phonograph, which would help re-enliven the musical culture of Europe, which unfortunately had become overly mechanical due to an over-reliance on the visual practice of written notation. Now, with the phonograph, a new aural culture would emerge that would redirect and resuscitate the trajectory of modern music by exposing both professional and amateur musicians to authentic musical creativity and passion. But, the importance of the phonographic mechanism did not stop there.

Grainger dedicated a significant portion of the rest of his life to closing the gap between composers and performers. A brief glance at concert announcements throughout the early decades of the 1900s demonstrates that in his own compositions and performances, he strived to present audiences with musical work inspired by the folk music that so impressed him.[394] Even after his relocation to the United States in 1921, Grainger continued this pursuit in White Plains, New York, and while he composed

[392] Ibid.

[393] "The Rise of the Musical Proletariat," 507.

[394] Program notes from an assortment of concerts share similar language in describing Grainger's performances. In addition to invoking comparisons to nature, many of Grainger's compositions regularly refer to a sense of individualistic expression and were inspired by old English and Irish folk tunes. *Percy Grainger Collection*, White Plains Library.

music and performed around the world, he began a new project that would culminate in the construction of a music-making machine, which embodied what he called "free music," the foundation of which can be traced back to his work with the phonograph and English folk music.

Free Music and its Phonographic Roots

Grainger's pursuit of his "free music" project, which did not gain full speed until the 1940s, had roots that went back to the first decade of the 20th century. In 1907, after Grainger had completed the bulk of his phonograph recordings, he received a letter from the composer and friend Cyril Scott. Interested in the same question regarding the direction of modern music, Scott, according to Grainger's account, requested permission "to use my 'irregular rhythms', saying that he had got so used to hearing them in my music that he could not compose naturally without them."[395] Even though Grainger had briefly experimented with 'beatless' music in the 1890s, his exposure to the irregular rhythms and subtle pitch shifts in folk song melodies reinforced the bold new direction he took with his compositional work. And, in an effort to stretch the boundaries of contemporary music, Grainger developed a series of mechanisms that would play what he called free music. At its core, it would be characterized as scaleless and pulseless

[395] Quoted in Ivar C. Dorum, "Grainger's 'Free Music'," *The Grainger Society Journal* 8, No. 1, (Spring 1986): 26.

music.[396] It is important to emphasize that the elements of English folk song, which he dedicated so much time and energy to study in his 1908 article for the English Folk Song Society, continued and reinforced an essential part of the musical vision Grainger pursued until the end of his life in 1961. His experiences in the field with the phonograph and English folk song artists in the early years of the 20th century, where the form of unwritten music so impressed Grainger, would become the basis for his vision and ultimately channeled in a new type of instrument.

In August of 1916, a year after the publication of "The Impress of Personality in Unwritten Music," the Scottish music critic D. C. Parker was working on a monograph covering Grainger's musical work. Parker wrote Grainger and asked him his opinion concerning different pieces of his unpublished manuscript. Grainger responded with a lengthy letter (28 pages) explaining how he had evolved musically throughout his life. Grainger began his letter with a fundamental assumption that every living creature has the capacity for artistic expression. But, there was a critical element to this statement: time. It was time which created the space for artistic expression, but with a quick observation of civilized life, Grainger concluded that the "civilized wage slave not only has laughably little time to be artistic, but he is held back from the natural unreasoning self abandonment of art by 1000 and one ideals, ideas – rights and wrongs."[397] In this statement, Grainger crystallized one of his musical goals, which was that more and more people should practice musical expression and not concern themselves with the musical dos and don'ts established by a cadre of authoritative musicians. It was more important

[396] Ibid., 21.

[397] Percy Grainger, "Grainger on Grainger," *The Grainger Society Journal* 4, No. 1, (Fall 1981): 4.

to find the time for an artistic outlet, where the depleting aspects of modern life could be addressed and corrected.

Much of Grainger's inspiration for the future of music came from his work with English folk song. He recalled how one of his compositions, the "Hill-Song," contained the irregular rhythms and musical barring, which he found so enlivening in folk music. Also, critical to his vision for music's future was melody. He wrote: "an instinct for melody was never properly stirred until my contact with English folksongs."[398] Even though, he proceeded to speak of the superiority of the English melodic line, it is important to emphasize how his phonographic work with English melodies shaped his musical identity at a time when he had professionally established himself as a leading modern musician.

Another important element to Grainger's approach to music that emerged in this response to D. C. Parker was his physical conception of music. Although this is still thirty plus years before his work on free music machines, the physicality to which Grainger alludes to in his understanding of music establishes a strong connection between the phonograph and his work in the 1950s. Just before his discussion of the value of folksongs, Grainger spoke of the "force" that he wanted to infuse into his work. He borrowed the Maori proverb: "Die like the shark, fighting to the last gasp."[399] He elaborated: "Some force like that, a force not of beliefs, morals, ideals & ideas, but the bodily force of life itself, is what I always long to invest my music with."[400] Opposed to a

[398] Ibid., 7.

[399] Ibid., 6.

[400] Ibid.

conceptual relationship with music, Grainger preferred to emphasize the physicality of music in terms of the body. He continued:

> Music seems almost to have a "surface", a smooth surface, a grained surface, a prickly surface to the ear. All these distinguishing characteristics (scarcely hinted at in the above silly similes) are to me the "body of music", are to music what "looks", skin, hair are in a person the actual stuff & manifestation whereby we know it & recognize it.[401]

This visceral understanding of music, something that he explicitly sought out in his phonographic recordings during the first decade of the 20th century, was integral to his articulation of a musical argument that did not reside in the realm of theory, but was rooted in the realm of a physical experience. He manifested this priority in the creation of different musical mechanisms, which would contain those different "surfaces" quite explicitly, embodying a precise relationship between physicality and musicality. But, the physicality, which Grainger alluded to, was not about constraint. Rather, it embodied a type of music that correlated to the freedom Grainger saw in nature.

Before he began his partnership with the physics professor Burnett Cross at Columbia University in the 1940s to construct his new music machine, Grainger laid out his principles of free music in an article entitled "Free Music" (1938). The basis of these principles can be traced back to collaboration between Grainger and the Russian inventor, Léon Thermin, beginning in 1936. Patented in 1928, Léon Thermin's theremin was an electronic musical instrument capable of generating gliding pitches and it did not require physical contact from its user during a performance. Between 1936 and 1937, Grainger

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[401] Ibid., 9.

wrote three pieces for the theremin, one being the Theremin Quartet.[402] Even though Grainger's collaboration with Léon Thermin was short-lived due to Thermin's abrupt return to the Soviet Union in 1938, Grainger's experience with the *freedom* of the theremin nurtured his musical vision to actualize his free music.

At the foundation of his musical vision was an admiration for the sounds of nature. He wrote: "Out in nature we hear all kinds of lovely and touching 'free' (non-harmonic) combinations of tones; yet we are unable to take up these beauties and expressiveness into the art of music because of our archaic notions of harmony."[403] As he worked out his plan for realizing his free music project, Grainger composed and performed pieces, which were described in programs for different concerts with strong references to nature. But, in the end, he was not satisfied with the idea of a human performance of free music. As he understood the course of musical development, free music was to be "the only music logically suitable to a scientific age" and it required "a non-human performance."[404] He continued:

> Like most true music, it is an emotional, not a cerebral, product and should pass direct from the imagination of the composer to the ear of the listener by way of delicately controlled musical machines. Too long has music been subject to the limitations of the human hand, and subject to the interfering interpretations of a middle-man: the perfomer…Machines (if properly constructed and properly written for) are capable of niceties of emotional expression impossible to a human performer.[405]

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[402] Ivar C. Dorum, "Grainger's 'Free Music'," 21-28.

[403] Teresa Balough, ed., *A Musical Genius From Australia: Selected Writings by and about Percy Grainger*, (Nedlands: University of Western Australia Press, 1982), 143.

[404] Balough, *A Musical Genius From Australia*, 143-44.

[405] Ibid., 144.

In this direct and radical break from the traditions of Western musical composition, Grainger saw machines as the next musical performer in the history of music. With an interesting twist, the technical skill and interpretative constraints of the over-mechanized performer could only be transcended with delicate and emotive musical machines.[406] The emotional expression of the composer was now to be directly written into the machine and directly transferable, giving the audience a more genuine and true musical experience.

Beginning in 1946, Grainger and Burnett Cross, a long-time admirer of Grainger and musician, initiated the free music project by attempting to construct a machine capable of producing Grainger's musical ideas. Over the course of 6 years, Cross and Grainger produced 4 types of mechanical instruments, which fundamentally operated on player piano mechanics, and would eventually become fully electronic. Regardless of their differences though, the main function of the free music machines was to produce gliding tones, which were not possible on most instruments.[407] As Cross recounted, "Percy didn't see why … as a composer he should be limited to the pitch of the ordinary scale or, indeed, the quarter-tone scale, eighth-tone or sixteenth-tone of any fraction of

[406] Percy Grainger's vision of using precise musical instruments as an avenue to genuine emotive expression represents only one direction of early electronic music. Others, such as John Cage and Milton Babbitt, pursued different ends with their avant-garde projects in electronic music. For more on Cage and Babbitt, see Wilfred Mellers, "The Avant-Garde in America," *Proceedings of the Royal Musical Association,* 90th Session, (1963-1964): 7-11. For a more comprehensive and global examination of the advent of electronic music, see Joel Chadabe, *Electric Sound: The Past and Promise of Electronic Music*, (Upper Saddle River: Prentice Hall, 1997).

[407] Bird, *Percy Grainger,* 276.

any known scale."[408] Put in a more qualitative sense, John Bird explained that Grainger "thought to himself that just as the sounds and shapes of nature knew no arbitrary scales or metres so there should be no reason why in its search for full emotional expressiveness music should not enjoy a similar freedom."[409] For Grainger, his free music project was an avenue to empower the musical artist to not be restrained by either a musical performer, who would have to understand a composer's musical intention through written notation, or the standards of pitch and meter, which shaped what music could be and sound like. As he put it, "[e]xisting conventional music (whether 'classical' or popular) is tied down to set scales, a tyrannical (whether metrical or irregular) rhythmic pulse that holds the whole tonal fabric in a vice-like grasp … that are merely habits, and certainly do not deserve to be called laws."[410] Grainger's commitment to a fully expressive music, which broke free from the bounds of scale and meter, required the ability to produce sliding tones defined and shaped by the composer. The precise control over the shifting of tones and chords represented for Grainger the music of a "scientific age" and by "scientific age," Grainger meant experiencing the sounds of music as it is and not as is it should be symbolically represented.[411]

The ability to bypass the standards of meter, scale, and written notation represented for Grainger a step forward in the development of music. Grainger's free

[408] "Interview with Burnett Cross," Australian Broadcasting Commission, 1966, printed in *A Musical Genius From Australia: Selected Writings By and About Percy Grainger*, ed. Teresa Balough, (Nedlands: University of Western Australia Press, 1982), 155.

[409] Bird, *Percy Grainger,* 274.

[410] Percy Grainger, "Free Music," (December 6, 1938), in Balough, *A Musical Genius from Australia*, 143.

[411] Letter from Percy Grainger to the music critic Olin Downes, in Balough, *A Musical Genius from Australia,* 141.

music, due to its breaking away from standard musical form, required a non-human performance. Grainger explained, "Like most true music, it is an emotional, not a cerebral, product and should pass direct from the imagination of the composer to the ear of the listener by way of delicately controlled musical machines."[412] For the composer to deliver his or her musical composition without it being modified or interpreted by a human performer, Grainger maintained that the composer needed mechanical means to guarantee the integrity of the composer's complete composition and emotional expressiveness, not a series of human intermediaries necessary for the transmission of artistic expression.

Grainger filled this need with his free music machine inventions. The most notable one, known as the Cross-Grainger Kangaroo-pouch system, "consisted of two huge vertically mounted carpet rolls around which had been wound two strips of strong coloured paper whose specially cut 'hill-and-dale' upper contours correspond to the pitch and dynamic needs of music."[413] With a feeder system, the Cross-Grainger Kangaroo-pouch system, allowed the composer to graphically inscribe onto the paper roll the pitch and meter undulations necessary to activate the oscillators responsible for sound production, and thus fulfill on the principles of free music. Unfortunately, the mechanism did not work perfectly, but enough to demonstrate that the creation of free music was possible.

The significance of the Cross-Grainger Kangaroo-pouch system, as well as the earlier and later mechanical contraptions, resided in their mechanical similarity to the

[412] Grainger, "Free Music," 144.

[413] Bird, *Percy Grainger*, 277.

phonograph. They all fundamentally included some type of cylinder, which rotated, and a pliable medium that would be inscribed upon. What is clear from this is that the technology of the phonograph facilitated the access to the mechanical means necessary to fabricate technology that could - as the early phonograph recordings of folk music demonstrated - capture and reproduce the complete emotional and personal musical expression of the composer. Even during the inventive process of the 1940s and 1950s, both Grainger and Cross worked on a project, which sought out to "find a way of making minutely accurate analysis of the pitch and metre of his folk-singers' cylinders."[414] The simultaneous work on free music machines and continued work on the folk song phonograph cylinders signify the clear role that the phonograph had in casting a realistic way of achieving Grainger's musical goal: the freedom of artistic expression. An essential component to that musical vision included the ability to transcend in a very physical and visceral sense, the tonal and rhythmic constraints imposed by traditional musical standards. Ironically, the path towards musical development, for Grainger, emerged out of his engagement with the past through phonographic recordings of folk songs that did not operate on the rules of modern art music. Rather, the manipulation of playback speed and the repeated listening of recorded folk songs exposed the crucial ingredient of emotional and personal freedom in terms of pitch and rhythm, a characteristic Grainger pursued throughout his life, both professionally and personally.

[414] Ibid., 280.

Conclusion

Frank Howes, in his article "Recent Work in Folk-Music" (1937), cast a backward looking gaze on the collection of English folk music and concluded that it wrapped up around 1925. In the survey he provided about the collection of music, Howes commented that for most folk song collectors, "no musician who has anything to do with folk-song can resist "setting," and "arranging" it, from Lucy Broadwood to Ernest John Moeran."[415] Howes did not see anything fundamentally wrong about this, but merely suggested that this was one way that musical scholars responded to the unfamiliar contours of folk music. Further on, Howes repeated what Ralph Vaughan Williams, an important individual in the English Folk Song Society and famous composer during the early 20th century, had to say about the adaptation of folk songs. Vaughan Williams saw the adaptation of folk songs born from the idea that "it is necessary to "make something of it," the "it" being an unconstrained folk tune.[416] This chapter has explored the importance of the phonograph for engaging with this "it," and how the recording activities of a music scholar shaped our understanding of folk music and its relationship to modern music.

What is important about Howes's work is that its reflective position highlights the problematic nature of early 20th century arrangements of English folk tunes. The work of

[415] Frank Howes, "Recent Work in Folk-Music," *Proceedings of the Musical Association*, 64th session (1937-1938): 43. Howes lectured on the history of music at the Royal College of Music throughout the 1910s and 20s. With a focus on the psychology of music, he also published *The Borderland of Music and Psychology* in 1926 and *Man, Mind, and Music* in 1948.

[416] Ibid., 44.

the English Folk Song Society raised important questions regarding the origin of English music, and also the relationship of modern music to a type of music that seemed to completely separate from the style and standards of an art music wrestling with its future direction. Percy Grainger had a key role in answering some of these questions, a point that has been made by many musical scholars, but the specific "mechanism" by which Grainger developed his musical ideas and practices has never been fully addressed. The aim of this chapter has been to explore that topic by tracing how the new technology of the phonograph at the turn of the 20th century both figuratively and literally shaped Grainger's musical theory and projects.

Grainger's work with English folk song and the phonograph gave him an important experiential basis from which to articulate what was missing in modern music. The extremely personal and unique expositions of English folksingers coupled with Grainger's exposure to other recordings of non-western music provided him with a rich musical experience integral to his vision of music around the world. His work with the phonograph helped him to see not only the possibility of creating a musical stage where the personal improvisation of folk musicians could be forever preserved and played for future generations, but also to move forward in the development of music with his free music instruments where an artist's creation could be fully expressed. In an ironic twist, the very mechanization that Grainger deplored in the modern musician was to be corrected with the aid of a mechanical phonograph. For Grainger, a proper understanding and application of the phonograph would serve as a model and tool to reinvigorate the natural vibrancy and creativity needed in a 20th century modern society.

Chapter Six

Conclusion

In 1934, Theodor Adorno appraised the fate of the phonograph in "The Form of the Phonograph Record." In less than five pages, Adorno delivered a scathing critique of the consequences of sound reproduction technology. He was unimpressed by the quality of tone produced by the phonograph and even more upset with the illusion foisted on middle-class families that listening to phonograph records qualified as worthy musical entertainment. From the opposite end of the political spectrum, Adorno expressed sentiments similar to those of the nationalist John Philip Sousa. Adorno felt that the age of sound reproduction had fastened the final nail in the coffin of good quality music, but he did so with an interesting twist. He stated, "music is removed by the phonograph record from the realm of live production and from the imperative artistic activity and becomes petrified, it absorbs into itself, in this process of petrification the very life that would otherwise vanish."[417]

As much as Adorno disdained the direction taken by sound technology in the early 20th century, he could not ignore the "profound justification" of the phonograph: the ability to preserve some semblance of artistic and musical expressions that would dissipate into the air the second the performance ceased.[418] Even with this one redeeming quality though, members of society, according to Adorno, were exposed to a

[417] Theodor Adorno, *Essays on Music,* ed. Richard Leppert, (Berkeley: University of California Press, 2002), 279. For more on the relationship between art and capitalistic modes of production, see Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in *Aesthetics: A Comprehensive Anthology*, eds. Steven M. Cahn and Aaron Meskin, (Malden: Blackwell Publishing, 2008), 327-343.

[418] Ibid.

new category of musical experiences, which lacked the genuine artistry and immediacy present in live music. Adorno further argued that the very physical shape of the phonograph record confined the dimension of time and actual music inscribed onto the phonograph record, moving the experience of music from the ephemeral to the physical. Music was now a physical artifact and a consumer good, turning the human listener into a passive receptacle of the poor quality music constrained by the physical limitations of sound reproduction technology.

Notwithstanding Adorno's later argument that the phonograph and its accompanying cylinders and discs had become an oppressive technology determining the social experiences of its passive listeners, the early phonograph – as shown in the previous chapters – was actively molded into different identities and roles by its users. Different constituencies mobilized personal and collective assumptions about technology, music, society, and human beings in order to fit the phonograph into their lives. For some, such as the conductor John Philip Sousa and the ethnographer John C. Fillmore, the phonograph was a flawed and undiscriminating mechanism that needed oversight in the form of the trained human expert. Others, such as the inventor Thomas Edison and the composer Percy Grainger, positioned the phonograph as a bold new technology essential to the progress of human society. It was a mechanism that could deepen the understanding of the physical universe and simultaneously unlock the potential of human development and expression by exposing the physical and conceptual limitations of the human being.

In a variety of historical contexts, social and cultural values determined the boundaries of the mechanism's potential. And in so doing, the early recipients and users

of the phonograph did not isolate this mechanism from society. Rather, it was "always bound up in a social system."[419] The cultural forces at work at the turn of the twentieth century gave rise to the phonograph, molding it in the cauldron of discussions and debates of Anglo-American culture. We see how the intellectual commitment to accuracy in legal practice and ethnography was embodied in the phonograph. Lawyers and judges assessed phonographic testimony as accurate and reliable in the courtroom, contributing to already shifting conceptions about the importance of mechanically produced demonstrative evidence. Similarly, with the ethnographic fieldwork completed on both sides of the Atlantic, ethnomusicologists grappled with notions of accuracy and authority when they deployed the phonograph. Debaters over music education, a topic for passionate exchanges over the direction of music on a national scale, used the phonograph as a tool in advancing cultural agendas. While some saw the phonograph as a valuable new technology for cultural education, others deplored the type of music dominating phonograph record distribution. In these different cases, the phonograph embodied the desires and concerns of a modern society, harboring the social and cultural uncertainties of the modern age. And as part of this social web, a diverse set of individuals and groups reflexively projected their very own anxieties onto the phonograph's unique abilities.

The phonograph emerged at a time when psychological uncertainty permeated American and English society – wrestling with notions of the self and free will, including

[419] Timothy Taylor, *Strange Sounds: Music, Technology & Culture,* (New York: Routledge, 2001), 7. In this book, Taylor explores the history of sound reproduction technologies, and in particular, examines the anxiety surrounding digital revolution in music and the questions that emerge over authenticity and human input in musical composition/performance. A major thrust of his argument is that the cultural forces comprising society significantly shape technology through the contours of human values and desires.

the subconscious, unconscious, behavioral determinism, and fragmentation. It intensified this cultural uncertainty with its acclaimed power to preserve and reproduce the human voice separate from its source, the body. In the realms of fiction, the phonograph was treated as machine imbued with special life-like powers. With its faithful reproduction of the emotive in human expression, or its ability to perfect distinctive human traits, it was commonly regarded as an automaton, as a mechanism that possessed certain attributes of the living. Its ability to imitate or mimic some aspect of a living thing sparked passionate conversations about the fundamentals of human nature. The phonograph's perceived capacity to straddle the distinction between the living and the non-living challenged long-accepted assumptions about identity and subsequently raised questions about self-determination and the uniqueness of being human. As this dissertation has shown, the uncanny character of the phonograph smacked of a dehumanizing materialism for some and for others symbolized a new era where humans and machines would form a perfect symbiosis. This spectrum of responses to Edison's baby illustrates how such a simple mechanism tapped into the deep-seated wishes and fears of human beings and projected them back out into society to be heard and engaged.

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