

More Than a Feeling: An Analysis of Contrasting Approaches to the Study of Musical Emotions

Ryan Clegg

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Veit Erlmann, Ph.D.
Butler School of Music
Supervising Professor

Ruth Buskirk, Ph.D.
School of Biological Sciences
Second Reader

ABSTRACT

Author: Ryan Clegg

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Supervising Professor: Veit Erlmann, Ph.D.

The investigation of music and its ability to move us has captivated thinkers for millennia. In modern scholarship, the fields of ethnomusicology and evolutionary musicology represent two distinct attempts to unravel this mystery. The methods and assumptions guiding these disciplines often set them in opposition, exemplified by the contention surrounding the idea of musical universals.

In this thesis, I investigate the history of each discipline and examine a sampling of contemporary scholarship in order to gain insight into the sources of this conflict. For ethnomusicology, I examine two recent ethnographies, and for evolutionary musicology I present a number of hypotheses across a variety of fields of scientific research. In conclusion, I outline some of the sources of their conflict and offer an understanding of the human capacity to communicate emotion through music that seeks to take the central principles of both disciplines into account.

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I. Introduction

“Since ancient times, philosophers, intellectuals and musicians have written about music and have clearly believed it to have a particular status among the arts, being endowed with special powers Both the fascination it has always exerted and its extreme elusiveness are due primarily to the nature of its expressiveness: it expresses something, and yet, despite the complexity of its ‘language,’ it says nothing definite about anything; while everybody, even the strictest of formalist thinkers, seems to concur in ascribing to music a certain power of expression nobody has yet succeeded in defining clearly what it is that music expresses or how it does so.” - Enrico Fubini, *History of Music Aesthetics* (qtd. in Dissanayake, 2006).

Music is a peculiar phenomenon. Each person has their own individual relationship with music, a unique library of favorite songs that accompany significant stages and moments in their lives and define their tastes and allegiances. Music that to one person constitutes the highest form of art is seen as senseless garbage to another. Music has tremendous power to unite people, but can also serve as the delineation between social movements and cultural groups. Recent evidence indicates that musical performance with instruments has been a feature of human cultures for at least 44,000 years, yet we still lack a reliable definition of what music *is*, much less a concrete idea of how it developed or the functions it performs for individuals and in societies. It is fairly uncontroversial to claim that music can elicit emotions, but, as Juslin and Västfjäll (2008) point out, “a defining feature of emotions is that they involve intentional objects: they are ‘about’ something.” What, then, are musical emotions about? For something we interact with on such a frequent and intimate basis, there is a startling lack of consensus as to the true nature of music, its origins, or its impact on our lives.

As suggested by the opening quote, these questions have puzzled great thinkers for millennia. Central to their investigation is the role of emotions. The fact that music can produce

profound emotional experiences is the driving force behind the desire to study it; it captures our attention, but nobody has quite been able to articulate the reasons why.

Modern scholarship surrounding the question of music and its role in our lives traces its roots back to the late nineteenth century, with the birth of comparative musicology. This marked the first systematic attempt to collect and analyze a broad range of musical styles in the search for common features to explain its power. I will leave the specific history for the next two sections, but the comparative musicology of this era birthed both of the disciplines that I will compare in this thesis: ethnomusicology and evolutionary musicology. While there certainly exists overlap and some degree of collaboration between these two fields, the approaches they take to the study of music and the assumptions that underlie those approaches often set them in opposition.

Ethnomusicology might be best characterized by the study of music in its cultural context. Ethnomusicologists seek to uncover the nuances of how individual cultures understand their own music and how they use it to create meaning and culture. Rather than probing into the history or origins of music, an enterprise many ethnomusicologists view with skepticism, they seek to gain insight into the variety of ways that music shapes societies and people today. The field is driven largely by the assumption of cultural relativism, the idea that a given culture's ideas, practices, and beliefs can only be accurately understood from within that culture, and not from the perspective of universal norms. In practice, this leads to the prioritization of immersive fieldwork during the course of ethnographic study. Ethnomusicologists spend extensive time learning about the cultures whose music they study, developing close relationships with the people they meet and generally making every reasonable attempt to experience the music they study as a member of that culture would. This level of specificity is considered crucial for accuracy – even with this rigorous study, the biases and assumptions of an individual ethnographer have the potential to shape the types of

questions asked and the information deemed relevant, thereby distorting the picture. In the context of ethnomusicology, musical emotions might be understood as cultural systems that create complex metaphors and provide contexts that endow music with its particular emotions. Communicated through music, these emotions in turn have a profound influence on the organization of cultures.

On the other hand, evolutionary musicology places the joint study of music and human evolution at its core, using evolutionary theory and its associated methods of scientific inquiry to shine a light on the development of the human capacity to create and share music. At the same time, researchers in the field expect the study of music to be fertile ground for new insights into our species' history, hoping that clues about the factors that shaped our musical capacity might reveal untold stories about our past. While consideration of the specific form and structure of musical expression enters the picture in various ways, the more central focus is on the development and function of the underlying mechanisms that allow us to interpret sounds as meaningful sources of emotions. The approach of evolutionary musicology is to study music first and foremost as a shared human capacity. Differences across culture promise to pose interesting questions and help guide research, but the features of music that are generally more salient to an evolutionary musicologist are those that are widely shared. Musical emotions are difficult to describe concisely in the context of evolutionary musicology, but could perhaps be classified as markers of significant interactions; any instance of music eliciting an emotion is a starting point for further inquiry.

One topic that highlights the tensions between ethnomusicology and evolutionary musicology is the discussion of musical universals. The precise definition of a musical universal is somewhat a matter of debate. The concept of musical universals as conceived by early comparative musicologists was based on the belief that tonality and musical scales were based on

the laws of nature, and therefore musical scales across all cultures should share some underlying features. This idea however has been thoroughly disproven, and the search for universals now occurs along different frontiers. François-Bernard Mâche, a French composer, claims that “the search for musical universals now seeks to understand on which bases different musical cultures can communicate and interact” (Mâche, 2000). In this sense, musical universals are features of songs or musical performances that are shared across all cultures. Evolutionary musicologists use the concept of musical universals as a guide to identifying aspects of music that arise from biological structures or environmental pressures rather than from specific cultural systems. These universal features then provide the starting point for further inquiry into the development of music as a shared human capacity. Ethnomusicologists, on the other hand, generally do not subscribe to the idea that any such universal features exist. As Bruno Nettl relates, “when I was a student I was taught that any attempt to generalize about the music of the world should be countered by an example falsifying that generalization” (Nettl, 2000). While there are some features of music that are nearly universal, there seem to always exist exceptions. If certain features typify an overwhelming majority of musical expressions but are not truly universal, what is their use as tools to investigate the origins of music? Any definition of music based on a feature that is not truly universal would exclude real-world examples of music and would therefore not be a valid definition.

The discussion of musical universals introduces a key concept that I argue underlies some of the conflict between ethnomusicology and evolutionary musicology. There is a subtle distinction in the study of music between the analysis of musical form and the analysis of musical function. Any discussion of music can be understood to fall somewhere along a continuum between these two ideas. The extreme end of musical form is the study of music as system of

sounds, focusing on their specific arrangements and articulations and the ways these give rise to meaning. On the other hand, in a pure investigation of musical function, the “music” being discussed is often an abstract idea meant to apply to musical expressions irrespective of their particular form. It should be noted that most discussions do not exist entirely at either of these extremes, but rather somewhere in the gray area between. Musical form, for example, can be more broadly understood to include the details of musical performance and some of the contexts surrounding musical expression alongside the strict analysis of the music itself.

Both ethnomusicologists and evolutionary musicologists ask questions that span both ends of this continuum, albeit in very different ways. The primary source of confusion is the lack of clarity about whether a particular discussion seeks to address music in terms of its form or in terms of its functions. As it relates to the discussion of musical universals, this distinction is very consequential. Universals in form refer to structural features of music that can be found across all cultures or in every musical expression, while universals in function refer to commonalities in the ways different cultures use music in their societies. It is certainly possible for one of these types of universals to exist separately from the other. This distinction not only affects the interpretation of the debate surrounding musical universals, but also the larger context within which ethnomusicology and evolutionary musicology come into opposition. I argue that adequately identifying and separating considerations of musical form from those of musical function can resolve certain aspects of the conflict between the two disciplines.

In their introduction to *The Origins of Music*, Steven Brown, Nils L. Wallin, and Björn Merker address the topic of universals in music. In their view, there are many musical qualities that, while not entirely universal, are so commonly observed that they merit further investigation. They present a selection of musical traits that fit this description:

“octaves are perceived as equivalent in almost all cultures, virtually all scales of the world consist of seven or fewer pitches, most of the world’s rhythmic patterns are based on divisive patterns of twos and threes, and emotional excitement in music is universally expressed through loud, fast, accelerating, and high-registered sound patterns” (Brown, Merker & Wallin, 2000).

One way to explain the difference in opinion is that evolutionary musicologists are looking for clues to serve as starting points for further testing and observation. If a feature does not apply across cultures, this should theoretically become apparent through the ongoing process of scientific inquiry. On the other hand, ethnomusicologists look with skepticism at the prospect of defining anything universal about music, with one eye on the past and its demonstration of the tendency for definitions to narrow the scope of what is considered music, excluding real and valid examples of musical expression.

In his article discussing the validity of musical universals, Bruno Nettl does identify a number of universals that he is willing to stand behind:

“I mentioned the importance of music in ritual, and, as it were, in addressing the supernatural. This seems to me to be truly a universal, shared by all known societies, however different the sound. Another universal is the use of music to provide some kind of fundamental change in an individual’s consciousness or in the ambiance of a gathering. Music “transforms experience,” in the words of David McAllester (1971). Also music is virtually universally used to mark the importance of an event—birthday party, political rally, appearance of the king, the coming-together of tribes. And it is virtually universally associated with dance; not all music is danced, but there is hardly any dance that is not in some sense accompanied by music. (Nettl, 2000).

What sets these types of universals apart is that they “do not involve musical sound or style” (Nettl, 2000). This makes all the difference, and some of these universals Nettl outlines represent current areas of research in evolutionary musicology that I discuss later this paper. In fact, in the very small sampling of evolutionary musicology research I examine in this paper, musical universals of the sort that run afoul of Nettl’s definition are mentioned very sparingly. Most of the evolutionary musicology studies I examine do not involve any analysis of music at the

level of song structure, instead focusing on any one of a wide variety of other topics involved in the study of musical expression. In this sense, while ethnomusicologists and evolutionary musicologists might disagree on the topic of musical universals, it does not always affect their research and the conclusions they draw.

Ethnomusicology and evolutionary musicology each have a distinct way of approaching what ultimately amounts to the same question: how do we give shape to music, and how does it shape us in turn? By choosing to focus critical attention on certain details while ignoring others, the two disciplines arrive at different yet mutually intelligible conclusions regarding how best to understand and describe the peculiar phenomenon that is music. In this thesis, I will examine the methodological approaches of ethnomusicology and evolutionary musicology, exploring the ways in which critical engagement with their differences gives rise to a more nuanced and comprehensive view of the study of music.

II. Ethnomusicology

A Historical Perspective on Ethnomusicology

Ethnomusicology does not lend itself to concise definition. Bruno Nettl, a prominent ethnomusicologist and former president of the Society for Ethnomusicology, opens his book *The Study of Ethnomusicology: Thirty-One Issues and Concepts* with a fourteen-page discussion about the difficulties of providing such a definition. To outline the issue, he offers four broad lenses through which to approach a definition of ethnomusicology: in terms of the material that is considered; the various types of activities performed by ethnomusicologists; their ultimate goals; and the identity of the discipline itself (Nettl, 2005). To complicate the matter further, each one of these categories encompasses a range of competing opinions, eventually amounting to a total of twenty-one different ways to reasonably describe the work of an ethnomusicologist. The chapter culminates with an offering of his own definition, which itself is comprised of four separate assertions, each accompanied by a paragraph of context. His definition focuses on ethnomusicology as the study of music in culture, specifically with the use of fieldwork to better situate music within the cultural context that it was created. At the same time, he emphasizes the relevance of cross-cultural comparison to ethnomusicology, provided the musics in question are understood from the standpoint of their respective cultures. Even this careful and measured attempt at definition, he admits, is only “probably acceptable to at least some of my colleagues” (Nettl, 2005).

To gain some insight into the source of this ambiguity, it is helpful to examine the history of the discipline. Ethnomusicology traces its roots back to the late 19th century, when musicologists first began to acknowledge a distinct subfield of musicology they initially termed comparative

musicology. The emerging field was described by Guido Adler, an early pioneer of musicology, as “comparing tonal products, in particular the folk songs of various peoples, countries, and territories, with an ethnographic purpose in mind” (qtd. in Toner, 2007). This interest in folk music marked a deviation from the traditional focus of musicology, which until that point had dealt almost exclusively with the study of Western art music. It expanded the scope of musicological inquiry to an almost inexhaustible variety of musical styles and traditions that challenged existing paradigms and would eventually bring musicologists to reconsider the validity of traditional definitions of music.

At the outset, there existed two fundamentally distinct yet sometimes competing approaches to the comparative study of music: one musicological, the other anthropological. The musicological approach took the theoretical tools traditionally prioritized in the analysis of Western music – pitch, intervals, scales, and tonal system, for example – and applied them to the study of new musics. It was widely believed among musicologists at the time that certain fundamental musical characteristics were shared across cultures. A central task of comparative musicologists was to record and transcribe music from disparate cultures and scour them for common features. This search was partially driven by its implications for psychology: some researchers believed that the existence of certain intervals and ratios between pitches in a scale spoke to an innate order within the human mind (Toner, 2007). Erich von Hornbostel, one of the earliest comparative musicologists, believed in the existence of “natural” traits built into the “psycho-physical constitution of man” that should be present across cultures and could be uncovered through the careful analysis of musical structure (Toner, 2007). A prominent example of the type of inquiry driven by this belief is A. J. Ellis’ 1885 article “On the musical scales of various nations.” His research involved gathering instruments and musicians from a wide range of

musical traditions around the world and meticulously recording the exact frequencies of the notes that comprised their scales. He then compared the ratios between the frequencies of pitches, exploring regional differences and similarities and the use of different intervals to produce varying effects. He ultimately concluded that “the Musical Scale is not one, not ‘natural’... but very diverse, very artificial, and very capricious” (qtd. in Toner, 2007). While Ellis’ conclusions point away from the belief in a single fundamental musical scale, his method of inquiry and the types of data he considered (and neglected to consider) illustrates the musicological focus on studying the fundamental characteristics of music as sound, and of attempting to draw conclusions about music as a whole through the cross-cultural analysis of music.

The anthropological perspective within comparative musicology traces its roots back to around the same time as Ellis’ study on musical scales in the late 19th century. One of the first substantial works viewing music from an anthropological perspective was *The Central Eskimo*, written by Franz Boas in 1888 (Toner, 2007). In this work, he includes an analysis of Eskimo music as one relevant cultural artifact against the backdrop of a larger ethnographic undertaking. As a result, his descriptions of musical practice are colored by the context within which the music was performed. Features such as lyrical content, rituals involved in musical performance, mythology surrounding musical practice, and identities of performers provided him insights into the roles music played within a culture. This represents an attempt to describe and understand music through the lens of the culture creating it, rather than to study music with the purpose of analyzing how it fit within a larger theoretical framework. Edward Sapir, a student of Boas’, captures much of the difference in approach between the anthropological and more strictly musicological sides of comparative musicology in his review of a book by Carl Stumpf, one of the pioneers of comparative musicology:

“I am inclined to doubt whether a purely musical study of this problem would be as fruitful as when taken in connection with song-texts, dance forms, and other features as musical execution is wont to be associated in practice. The peculiarities of melodic forms are often due to factors that have no direct relation to musical problems as such, as witness our masses, lullabies, and bugle calls. These remarks are meant to indicate the necessity of studying the more complicated problems presented by primitive music in connection with associated cultural features. Stumpf’s relative neglect throughout the book of all features that are not strictly musical in character is naturally to a large extent unavoidable, but we must not fail to realize that such one-sidedness may lead us astray in our interpretations.” (Toner, 2007)

The study of music as a cultural artifact characterizes the anthropological approach to comparative musicology. A number of Boas’ students went on to become influential contributors to the cross-cultural study of music, and their influence played an integral role in shaping what ethnomusicology has become today.

While it is possible to outline characteristic differences between the musicological and anthropological approaches to comparative musicology, it bears noting that the delineation was not always clear cut in practice. Franz Boas and Carl Stumpf, each respectively pioneers of the anthropological and musicological branches of comparative musicology, worked together closely to transcribe and analyze Northwest Coast indigenous music. During their collaboration, they were certainly informed and influenced by each other’s approach. A. J. Ellis studied the physics of sound, devoting great energy to the investigation of musical scales, yet recognized the shortcomings of the assumption that there existed a single, culturally independent musical scale. George Herzog, an influential ethnomusicologist and teacher of Bruno Nettl, worked first under Erich von Hornbostel – who believed in the unity of all music – before coming to the United States to study anthropology under Franz Boas. Subdividing ethnomusicology between anthropology and musicology proves useful as an analytical framework, but the two should not be taken as rigid categories in direct opposition. In combining elements of both, ethnomusicology becomes the

study of how music can teach us about human society and culture and conversely how human culture and society can teach us about music.

Ethnomusicology formally came into being in 1956 with the establishment of the Society of Ethnomusicology. The preference to use the term ethnomusicology rather than comparative musicology reflects an acknowledgement that the field “is no more comparative than others, that comparison can be made only after the things to be compared are well understood in themselves, and that, in the end, comparison across cultural boundaries might be impossible because the musics and cultures of the world are unique” (Nettl, 2005). This highlights one of the driving forces behind ethnomusicology – if we are to compare music across cultures, we must first be able to define what it is that we are comparing. It is a truism that any definition of music is necessarily limited in its application to the types of music known and understood by those doing the defining. From this imperative comes the centrality of ethnography to ethnomusicological inquiry. The anthropological study of music revealed the degree to which cultural factors influence the interpretation and understanding of music. Bearing this in mind, the only way to truly do justice to describing another culture’s musical tradition is to make every attempt to understand and experience it as they themselves do. This is what ethnography is about.

I have outlined some of the historical and theoretical forces that shaped the field of ethnomusicology into the discipline it is today. To return to the initial question of providing a useful definition, I turn again to Bruno Nettl. At the end of his discussion about the challenge of defining ethnomusicology, he ventures his own attempt at a definition:

1. *For one thing, ethnomusicology is the study of music in culture.* A concept that has its problems, when examined carefully (as by Martin Stokes in *The New Grove Dictionary of Music and Musicians* 2001,8;386-88), but in the end I think it holds up. Ethnomusicologists believe that music must be understood as a part of culture, as a product of human society, and while many pieces of research do not directly

address this problem, we insist on this belief as an essential ingredient of our overall approach. We are interested in the way in which a society musically defines itself, in its taxonomy of music, its ideas of what music does, how it should be, and also in the way a society changes its music, relates to, absorbs, and influences other musics. We stress the understanding of musical change, less in terms of the events than in the processes.

2. *Just as important, ethnomusicology is the study of the world's musics from a comparative and relativistic perspective.* We endeavor to study total musical systems and, in order to comprehend them, follow a comparative approach, believing that comparative study, properly carried out, provides important insights. But we study each music in its own terms, and we try to learn to see it as its own society understands it. Our area of concentration is music that is accepted by an entire society as its own, and we reserve a lesser role for the personal, the idiosyncratic, the exceptional, differing in this way from historians of music. We are most interested in what is typical of a culture.
3. *Principally, ethnomusicology is study with the use of fieldwork.* We believe that fieldwork, direct confrontation with musical creation and performance, with the people who conceive of, produce, and consume music, is essential, and we prefer concentration on intensive work with small numbers of individual informants to surveys of large populations. And we hope that this association will lead to some kind of benefit for the people from whom we learn.
4. *Ethnomusicology is the study of all of the musical manifestations of a society.* Although we take into account a society's own hierarchy of its various kinds of music, and its musicians, we want to study not only what is excellent but also what is ordinary and even barely acceptable. We do not privilege elite repertoires, and we pay special attention to the musics of lower socio-economic classes, colonized peoples, oppressed minorities. We believe that we must in the end study all of the world's music, from all peoples and nations, classes, sources, periods of history. We just haven't yet got around to all of it (Nettl, 2005).

From this extended definition arise a few key concepts that will provide the basis for much of my analysis of ethnomusicological work in the remainder of this chapter. For one, the idea of cultural relativism; that music ought to be understood as a product of the culture within which it was produced, and that this type of understanding leads to a deeper and more accurate view of music's meaning. Next is the role of fieldwork in ethnographic study. Interacting with and learning from the people who create and perform music helps ensure that the story of a culture's music is told in terms of the people who understand it most intimately. Finally, there is the tension between cultural relativism and cross-cultural analysis. The desire to learn something about music more

generally by comparing the music of different cultures goes back to the birth of comparative musicology. While the lens of cultural relativism helps ethnomusicologists draw more truthful conclusions about specific musical styles, the field as a whole creates a body of knowledge that provides the foundation for meaningful discussion about music as a shared human practice.

To illustrate these general remarks, in this section I consider two ethnographies: Steven Feld's *Sound and Sentiment*, and Martin Stokes' *Republic of Love*. These two books are paradigmatic works in ethnomusicology, and each deals centrally with the connection between music and emotion, exploring the ways that cultures use music to construct and convey meaning. In keeping with the idea of cultural relativism, I will attempt to paint a picture of the cultural dimensions surrounding musical practice in both cases, exploring the ways in which the consideration of broader cultural themes leads to a deeper and more nuanced interpretation of music. In the following sections I will explore how the parallel investigation of music and human society provides fertile grounds for understanding both music and the cultures that produce it.

Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression

The first ethnography I will examine is Steven Feld's book *Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression*. In doing so my aim is not to present a comprehensive picture of the Kaluli people, but rather to demonstrate how the knowledge of even a fragment of their culture can transform the understanding of their musical expressions.

The Kaluli are one of four groups of people who inhabit the tropical rainforest north of Mt. Bosavi, an extinct volcano in the southern highlands province of Papua New Guinea. The four groups, consisting in total of about 1200 people, collectively call themselves *Bosavi kalu*, or

‘people of Bosavi’. Feld became interested in the Kaluli musical tradition after hearing tape recordings of their music. He traveled to Bosavi in 1976 to perform fieldwork for his doctoral dissertation, joining Edward and Bambi Schieffelin, who had been in the area on and off for the past decade performing ethnographic research and who were integral in introducing him to the Kaluli people and guiding his work.

As the title suggests, the central purpose of his work is to explore the mechanisms that allow the Kaluli to meaningfully convey emotion through sound, particularly in the instance of mourning. He focuses his study on a version of song, unique to the Kaluli, that they refer to as *gisalo*. *Gisalo* is sung as part of ceremonies and seances, where the song serves as the central aspect of a performance that weaves singing together with storytelling, dancing, costumes, and vocal weeping on the part of the audience. The purpose of the ceremony is to move listeners to tears or shouts of anguish – to use music and the rituals surrounding it as a means to communicate emotion. Feld offers the following description of a typical *gisalo* ceremony:

“Once it turns dark, the dancers enter the longhouse and begin their performance. They dance up and down the hall, singing with the accompaniment of rattle instruments and a chorus. The songs are sung in a plaintive voice, and the texts are sad and evocative, reflecting on loss and abandonment. They cite places and events familiar to all or specific groups of the hosts and are composed with the intention of making the hosts nostalgic, sentimental, and sad. The hosts listen intently, identifying with the map that the singers construct by weaving together place names, metaphors, and onomatopoeic devices. At points in the songs where they become overcome with sadness and grief, the hosts burst into tears and loud mournful wails. This may set off a chain reaction of wailing throughout the house. Angered by the grief they have been made to feel, one of the hosts jumps up, grabs a torch from a bystander, and rushes onto the dance floor to jam the flickering torch into the shoulder of a dancer. The dancer continues as if unaffected by the burn and may be burned repeatedly. Hosts either sit down again and cry or move to the rear veranda of the longhouse to weep alone. In the aftermath of the ceremonies, food prestations are made. Discussion recalls how the songs made the hosts cry and burn the dancers. For Kaluli generally, it is not the burning that is central, rather it is the extent to which the compositions and their manner of performance were effective, as judged by the extent to which they moved the hosts to tears” (Feld, 1990).

One of the key aspects of *gisalo* is the prominence of the bird as a metaphor. The melody of *gisalo* mimics the call of the *muni* bird, a fruitdove whose call is associated with the “image of a hungry child calling for its mother” (Feld, 1990). The dancers wear bird feathers, move like birds, and use tricks of lighting and darkness to “prepare the audience to see the performer as a lone bird” (Feld, 1990). Finally, “when people are moved to tears by a performance, they are said to have heard the ‘voice of someone who has become a bird’” (Feld, 1990). Deconstructing the meaning of the bird metaphor is central in attempting to unravel the intricacies of *gisalo*. To do so, Feld turns to a prominent Kaluli myth: “the boy who became a *muni* bird”. This myth provides the structure for his book, and he argues that “the myth is a crystallization of relations between Kaluli sentimentality and its expression in weeping, poetics, and song” (Feld, 1990). Therefore, to properly understand *gisalo* requires an understanding of this myth, and to accurately interpret the myth requires knowledge of several fundamental aspects of Kaluli society. The myth goes like this:

Once there was a boy and his older sister; they called each other *ade*. One day they went off together to a small stream to catch crayfish. After a short while the girl caught one; her brother as yet had none. Looking at the catch, he turned to her, lowered his head, and whined, '*Ade, ni galin andoma*' (*ade*, I have no crayfish). She replied, 'I won't give it to you; it is for mother.'

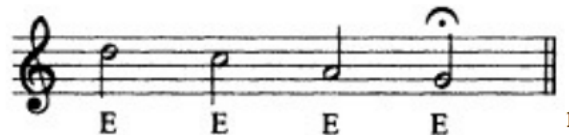
Later, on another bank of the stream she again caught one; her brother was still without. Again he begged, '*Ade ni galin andoma*.' Again she refused, 'I won't give it to you; it is for father.' Sadly, he continued to hope for a catch of his own. Finally, at another bank, she again caught a crayfish. He immediately begged for it, whining, '*Ade*, I really have nothing.' She was still unwilling: 'I won't give it to you; it is for older brother.'

He felt very sad. Just then he caught a tiny shrimp. He grasped it tightly; when he opened his palm, it was all red. He pulled the meat out of the shell and placed the shell over his nose. His nose turned a bright purple red. Then he looked at his hands; they were wings.

When she turned and saw her brother to be a bird, the older sister was very upset. 'Oh *ade*,' she said, 'don't fly away.' He opened his mouth to reply, but no words came

out, just the high falsetto cooing cry of the *muni* bird, the Beautiful Fruitdove (*Ptilinopus pulchellus*).

He began to fly off, repeating the *muni* cry, a descending *eeeeeeeeee*. His sister was in tears at the sight of him; she called out, 'Oh *ade*, come back, take the crayfish, you eat them all, come back and take the crayfish.' Her calling was in vain. The boy was now a *muni* bird and continued to cry and cry. After a while the cry became slower and more steady:



Then it turned to sung crying:



(Feld, 1990)

Feld breaks the myth down into three distinct sequences: provocation, mediation, and metaphorization. At the outset, the boy is provoked by his older sister's repeated denial of food, an act that breaks Kaluli social norms and leaves the boy feeling alone and abandoned by his closest companion, his *ade*. His transformation into a bird, a representation of death, is a response to his state of abandonment. Finally, birdsong becomes a metaphor for the expression of sorrow when the boy repeats, in the call of the *muni*, "I have no *ade*, I'm hungry." A deeper investigation, then, of Kaluli social norms and culture sheds light on depth of the boy's abandonment and sorrow, the meaning behind becoming a bird, and the process by which weeping and poetry combine to form song. Each aspect of this process is integral both to the understanding of the myth and the ability to properly interpret *gisalo*.

The first crucial piece of this myth is the abnormality of the interaction between younger brother and older sister. The relationship between an older sister and younger brother, called the *ade* relationship, has particular significance to the Kaluli. From a young age, the older sister takes care of her younger brother, and the brother is taught to express his needs to her to get what he wants. The boy's begging, "I have no crayfish," represents a typical form of communication taught to boys at a young age:

For the Kaluli, saying "I have no X" implies three things quite directly: 1) You obviously have something that I don't have. 2) I want some of it and believe that I have rights to it. 3) You should not only give some to me, but feel sorry for me because I have none. Interactions of this form are a daily feature of Kaluli social intercourse and are not limited to any age segment of the society. Moreover, they are particularly typical of *ade* interactions. A basic part of a boy's socialization is the acquisition of these communicative skills, combining verbal, intonational, and gestural channels simultaneously, for demanding attention from his *ade* (Feld, 1990).

In the myth, the sister denies her brother's request three times, worsening the betrayal by offering the food to other members of the family to whom she is less responsible. Moreover, the

sharing of food in particular “is the major vehicle in expressing, developing, and validating social relationships in Bosavi” (Feld, 1990). In fact, Feld observes that “to deny food to a child is unthinkable” (Feld, 1990). In refusing the requests of her brother and neglecting to share food with him, the sister has abandoned her younger brother in an explicit and painful manner. Companionship and community are central values to the Kaluli people, and “the imagined possibility of loneliness, no companionship, no assistance, no one to share food with, is perhaps the most awesome human state, the one Kaluli are likely to think about at their lowest, most depressed moments” (Feld, 1990). In the myth, the boy’s transformation into a bird is a direct response to his experience of this state of abandonment and sorrow.

The meaning behind becoming a bird is revealed through Kaluli mythology surrounding birds and their voices. Living in a tropical rainforest, the Kaluli interact constantly with birds and their songs, and incorporate bird calls into many of their daily routines and habits. The appearance of the *bili* marks the transition from spring to summer; the songs of the *belo* and *sagelon* wake them up in the morning; the call of the *bas* signals dinner time; the locations of bird calls orient them in the forest; the presence of certain species of birds denote the boundaries between the hunting areas of different groups (Feld, 1990). This intimate relationship between the Kaluli and the birds they cohabitate with has resulted in a rich mythology surrounding birds and their calls.

To the Kaluli, the world is made up of “two coextensive realities, one visible, one a reflection” (Feld, 1990). Each person has a reflection in the unseen world, represented for men as wild pigs and for women as cassowaries, each living on the slopes of Mt. Bosavi. When a person dies, their *mama*, or ‘reflection’, disappears from the unseen world, and an *ane mama*, or ‘gone reflection’, appears in the visible world, most often in the form of a bird. To the Kaluli, “birds appear as people, and ... their calls are vocal communications from *ane mama*” (Feld, 1990). When

the Kaluli say that the call of the *muni* sounds like a child crying for its mother, it is to be taken literally; the bird is seen as the spirit reflection of a deceased person, communicating sentiments through birdsong.

Once the boy in the myth turns into a bird, he begins to cry out the song of the *muni* bird. He then gives words to his song, but the words he chooses are not typical of the usually-direct Kaluli language; they are deliberately metaphoric. The word *imolabo*, roughly translated to ‘hungry’, translates more closely to ‘isolated’, and is a word that is not used in normal Kaluli conversation. The Kaluli call this type of indirect language “bird sound words”, with the implication that “to talk like that means you feel like a bird” (Feld, 1990). The boy’s use of birdsong and poetic language to communicate his sorrow at his abandonment sets up the “cultural equivalence between sound and sentiment, linking the condition of being a bird (dead/abandoned) to the sounds of weeping, poetry, and song” (Feld, 1990).

With the understanding of the myth as a background, I return now to the *gisalo* song, the initial object of study. During his stay with the Kaluli, Feld was invited by a spirit medium to attend a seance, at which a spirit medium sung thirteen *gisalo*-s. The context of a seance is slightly different from the previously described *gisalo* ceremony; it involves a lone spirit medium, rather than a group of dancers, and the spirit medium acts as a conduit for various spirits to speak and sing *gisalo* to the assembled audience. Both ceremonies, however, center musically around the *gisalo* song. Feld provides a detailed description of the seance, including the setting in which it occurred, the analysis of one *gisalo* song, and an account of the reception of the song by the audience. The sequence of events at a seance occurs as follows:

“The medium leaves his body and journeys into the invisible. Throughout the course of the evening, different spirits, including the medium's spirit child, spirits of places, and spirits of the dead, come up through his mouth, sing *gisalo*, and talk

with the audience. Each spirit's appearance is marked by a special breath, a *gisalo* song, and statements directed to or conversations with the audience.”

In his description of the setting, he relates a series of small details that add depth to the picture. The seance is a communal event, preceded by an evening of socializing in anticipation. Men and women begin to gather in crowds at opposite ends of the longhouse after nightfall, and just before the onset of the ceremony all torches are put out. The spirit medium lays at the edge of the longhouse, the sounds of his deep breathing signaling the commencement of the seance. As each spirit sings *gisalo*, they incorporate clues about important places in their lives, creating tension by slowly guiding the audience towards their identity, upon recognition of which audience members close to the spirit may burst into tears. In the song that Feld transcribes, the spirit is a bird representing the son of one of the audience members who recently passed away; when his father ascertains the identity of the spirit, he is moved to tears.

In this description of events, we find details that allow us to gain a clearer understanding of what it might be like to experience *gisalo* firsthand. It is a communal experience, where the anticipation, the seance itself, and the ensuing discussion all take place among friends and family. The darkness contributes to the consummate sonic experience, immersing listeners in the sounds of song and speech. The songs are sung by spirits of loved ones, communicated through bird-sound-words, a language of poetry and sadness. The songs are punctuated by the wails of friends and relatives mourning their deceased loved ones. Each of these factors plays an integral role in shaping the emotional impact of *gisalo*. On a more granular level, an individual’s particular relationships with the spirits who sing *gisalo* undoubtedly affects the way each audience member emotionally interprets the seance.

When Feld first heard *gisalo*, it was through a tape recorder. Heard in that manner, he experienced the song absent the context within which it was performed. Even so, he found himself

compelled to follow the music to its source to uncover its mystery. It would certainly be possible to perform a musicological analysis of *gisalo* without any exposure to the Kaluli people or their culture. It might be possible to make general statements about the tone or emotion, but these would not be specific enough to qualify as ethnography. *Sound and Sentiment* details Feld's process of uncovering the depth of meaning and complexity contained within *gisalo* and within the people and culture that perform it.

In the context of interpreting how ethnomusicologists study music, the aspect of *Sound and Sentiment* that stands out to me the most is the depth and detail with which he describes the world of the Kaluli people. Bruno Nettl opens his definition of ethnomusicology with the assertion that ethnomusicology is "the study of music in culture." *Sound and Sentiment* places this idea at its core, delving deeply into the people, places, lifestyle, and mythology of the Kaluli people to give color to the description of their music. The end result is an account of Kaluli music whose engrossing effects rest on the claim it makes about ethnography providing a faithful account of both the ethnographer's experience and the Kaluli's understanding of the world they live in and create for themselves. The exploration of this understanding brings new levels of interpretation to light that combine to demonstrate the complex communicative capacity of music.

The Republic of Love: Cultural Intimacy in Turkish Popular Music

In this section I will study Martin Stokes' 2010 book, *The Republic of Love: Cultural Intimacy in Turkish Popular Music*. Stokes describes the book as "a cultural history of Turkey since 1950 told through its popular music" (Stokes, 2010). He paints a picture of Turkey as a nation that has, for over 60 years, been gripped by intense struggles between competing ideals: tradition

versus modernity, secularism versus Islam, East versus West, globalism versus nationalism, urban versus rural. The discourse around these competing visions of Turkey's past and future has at times involved violence and radical political change, and Turkish history has often been presented in terms of these contentious conflicts. Stokes seeks to offer an alternative history, weaving these debates together with the story of popular music and musicians to construct a historical narrative that focuses on love as a central theme of Turkish cultural identity.

Throughout the book, Stokes draws on the idea of cultural intimacy. He borrows a definition from Michael Herzfeld, who defines cultural intimacy as a “recognition of those aspects of a cultural identity that are considered a source of external embarrassment but that nevertheless provide insiders with their assurance of common sociality” (Stokes, 2010). Stokes asserts that love is the most fundamental source of Turkish cultural intimacy, and as a result, the “failure of Turks to live up to their own high ideals about love is truly a source of embarrassment” (Stokes, 2010). The violence and authoritarianism stoked by ideological competition stands in contrast to the Turkish ideal of love, resulting in dissonance and cynicism. The central thesis of *The Republic of Love* is that popular musicians have, through both their music and public personas, led a sustained public discourse that relies on the ideal of love to present Turkey in sentimental terms, offering a competing narrative to the conception of Turkey as a polarized nation consumed by conflict.

He highlights three musicians who “have, each in turn, dominated the popular cultural landscape in Turkey”: Zeki Müren, Orhan Gencebay, and Sezen Aksu. All three commanded significant public attention, first and foremost due to their musical prowess but also as a result of roles in film and other public appearances that served to expand the reaches of their stardom. All three made conscious use of musical style to political effect. All three have complex backgrounds and public images that allow them to resist simple categorization with a single ideology or political

affiliation. Stokes examines the lives of each of these musicians, including musical analyses of their most pivotal songs, and explores how their stories interact with the history and transformation of Turkey over the past six decades. In order to cover the topic with proper depth within the scope of this paper, I will focus my analysis on just one of the three artists he explores in *The Republic of Love*: Zeki Müren. In his depiction of Müren alone, he traverses nearly 50 years of Turkish history, exploring how Müren's musical style, depiction in film, unique voice, and publicly ambiguous sexual orientation come together to shape his image as Turkey's "Ideal Citizen".

Zeki Müren entered the public sphere in 1951, just one year after the first democratic elections were held in Turkey. Born in 1931 in the provincial city of Busa to a moderately wealthy father, he moved to Istanbul at the age of 15 to continue his studies. While there, he became acquainted with a number of musicians associated with the local radio station, Turkish Radio. He took lessons from them, going on to compose songs for other artists to perform on air. The break that catapulted his career occurred on this radio station, when he was asked to fill in for a vocal soloist who fell sick. He delivered a performance that has since ascended to the realm of myth, showcasing the unique vocal prowess and musical command that would make his voice a Turkish institution for the next forty years. His subsequent cassette recordings allowed his voice to reach beyond the limits of radio, quickly elevating him to a household name throughout the nation.

Building on his musical success, he made his move into the film industry in 1953. His movies all centered around the character "Zeki", blurring the lines between character and actor. The plot of his second movie, *Son Beste* (1955) established a thematic trajectory that he would replicate and emphasize for the majority of his acting career. In this movie, Zeki, an as-yet-unsuccessful musician, falls in love with a local girl in an unlikely sequence of events. However, before their love has a chance to flourish, the two are forced to separate. As Zeki finds the

beginnings of success as a musician, the pair attempt fruitlessly to find each other, and ultimately his lover suffers a tragic early death before they reconnect. He repeated this formula to great success, building his image as a “young musician struggling to do the decent thing and find love against the odds” (Stokes, 2010). In subsequent films, he also took on the role of composer, allowing him to broadcast his musical talent while simultaneously building a public persona through his character on-screen. He made a total of sixteen films between 1953 and 1970, coming together as a whole to reinforce “the public myth of Zeki as a serious and sensitive artist” (Stokes, 2010).

At the same time his cinematic career was taking off, he began establishing his place among the giants of another popular scene: the *gazino*, or nightclub. *Gazino*-s were “places of conspicuous consumption” (Stokes, 2010), representative of the economic prosperity and rural-urban migration occurring in the 1950s and 1960s. They were central to the live music scene; venues to “elaborate battles for prestige and attention” that “dominated the popular culture journals of the period” (Stokes, 2010). They also constituted the most significant arena within which Müren solidified his public image.

Müren’s technical command of his music, over-the-top costumes and set designs, and unrivaled stage presence soon carried him to the top of the *gazino* world. His repertoire combined late eighteenth and early nineteenth century urban and palace music, early twentieth century art music, and contemporary art, popular, and folk music. Aside from revealing the range of his mastery, his choice to represent such varied musical styles allowed him to straddle the ideological divide in music between modern vs traditional and rural vs urban. The *gazino* was also the venue for another move that was indicative of Müren’s sensitivity to the public consciousness. On New Year’s Eve in 1959, he was set to perform at the rival establishment of another popular singer,

Mualla Mukadder. Unbeknownst to most, that night also marked Regaip Kandili, a minor festival related to Ramadan that was observed primarily by women. Instead of putting on a spectacle meant to rival Mukadder, he broke from his traditional flamboyance and opted for a “restrained, classical, and severe” performance (Stokes, 2010). Stokes makes much of this choice, stating that “such sensitivity to women’s religious practice, a complex and contradictory field during this period of aggressive secularization and Islamist reaction, allowed him and his managers to cultivate a female audience as no other nightclub singer had previously succeeded in doing” (Stokes, 2010).

After this analysis of Müren’s career trajectory, Stokes turns his attention to a particular song, “Menekselendi Sular” (The Waters Went Violet). The song was composed in the 1930s and originally popularized by an artist named Safiye Ayla, whose version of the song is still found in notations that exist today. The song is of a genre known as *fantezi*, which Stokes notes for its characteristic “lurching changes in style and affect” that combine “melancholy and vocal virtuosity” (Stokes, 2010). The lyrics build upon the melancholic themes, depicting a lover’s forlorn musings over the impossibility of love. It references the rose and the nightingale, “stock figures in Ottoman poetics” for the dualities they represent (Stokes, 2010). Stokes describes Ayla’s performance of the song as “short and, modally speaking, to the point” (Stokes, 2010). He draws a connection between this stylistic choice and her popularity with the republican intelligentsia and political classes of the 1930s and 1940s, setting up the musical and political juxtaposition of her original recording with Müren’s rendition.

Müren’s version is “strikingly different” (Stokes, 2010). He draws heavily on a musical style called *nihavent*, an emerging style that he helped popularize which has a “Western” feel, celebrates virtuosity, and evokes melancholy. This style can be found across many of Müren’s most popular songs, and he drew upon it frequently at the end of *gazino* performances to

“mesmerize a *gazino* audience and establish an emotional rapport with it” (Stokes, 2010). He layered this style on top of the already expressive and melancholic Menekselendi Sular, maximizing its impact and allowing him to “generate an emotional and vocal exchange with listeners” (Stokes, 2010). Seen in the political context that Stokes suggests, this stylistic difference captured Müren’s appeal to sentimentality that aligned him with the liberal reaction to the authoritarian regimes of the 1930s and 1940s.

Perhaps the most discussed and distinctive aspect of Müren’s musicianship was his voice. Stokes devotes a full seven pages to depicting the worlds of meaning and metaphor ascribed by fans and scholars alike to his vocal qualities. Edip Ozisik, a popular artist and music critic, “felt the need for a completely new language to describe Müren’s voice,” devoting a section of his book on musical artists to an elaboration of the “internal” and “external” qualities of his voice and their relation to his character and persona (Stokes, 2010). The novel quality of his voice had its roots in Müren’s unorthodox musical training; Müren grew up during the emergence of radio and cassettes, allowing him to develop his style through emulation of artists whom he listened to and admired. This imparted an unidentifiable quality on his voice that distinguished him from the styles traditionally developed through “one-on-one mentor relationships typical of the Ottoman [repertoire transmission] system” (Stokes, 2010). Not only did this allow him to separate himself musically, it added to his mythos as a new kind of musical artist, appropriate for a changing nation.

Other descriptions of his voice verge upon reverence and mysticism: “wild lyrics would be tamed, uttered with ease and facility;” “it would put people in a state of ‘enchantment,’ part melancholy, part joy, part spiritual intoxication;” it “set out not to ‘burn’ or otherwise assail listeners...but rather to caress, to cajole and persuade” (Stokes, 2010). It was held to possess “the quality of *uyum*,” a term with “citizenly connotations, implying reasonableness, thoughtfulness,

and social-mindedness,” a feature that his voice maintained even as his career declined (Stokes, 2010). Another defining feature was his preoccupation with diction and clarity. This Müren acknowledged himself: “I used to say that if I were to be a singer one day, that those listening to me should understand the words in these lines, that they should be able to write them down” (Stokes 2010). It is almost difficult to imagine how a voice could contain such a depth of meaning to so many. Regardless of the specific qualities referenced, it is abundantly clear that Müren had the ability to convey deep sentiments through his voice, a capacity that secured his place in the hearts of listeners.

Finally, Müren’s voice was described by many as androgynous. This quality was manifest not through high vocal register, but rather in terms of tone quality and diction. Thus, his voice was considered to have “feminine” elements in the sense that it avoided “physical effort and assertiveness, an unambiguous index of rural-urban masculinity in that period” (Stokes, 2010). This dimension of his voice references a final, unresolved aspect of his public image: his sexuality. He consistently avoided the matter in interviews and in public, but it formed an undercurrent of discussion throughout his career, only emerging as an open debate after his death in 1996. Some chose to use his ambiguity on the matter to cling to notions of his heterosexuality, but most acknowledge his queerness, using it as a platform for discussions of the role of identity in Turkish citizenship. Among those who chose to engage with questions of his sexuality, the discussion took two broad forms. Some saw his refusal to engage the question as a “reasoned and civil maintenance of a line between public and private behavior” that underscored the strength in his resistance to the “authoritarian and unreasonable” forces that sought to place him neatly in one category or another (Stokes, 2010). Others saw his avoidance as a lack of conviction and bravery, indicative of an inability to stand up for and take pride in who he was. Stokes emphasizes the fact that, regardless

of the content of the discussion, “Müren’s queerness – or denials of it – constituted a way of talking about other kinds of identities and the relationship between identities and citizenship in the 1990s” (Stokes, 2010). Again, we see Müren exhibiting qualities that forced people to engage with relevant and contemporary political ideas, encouraging them to do so in terms of his image as a person and artist.

Stokes titles the chapter about Zeki Müren, “Zeki Müren: Sun of Art, Ideal Citizen.” What exactly was it about Müren that qualified him so unequivocally to carry this mantle? The official definition of Turkish citizenship throughout his public life was in constant flux, with multiple groups struggling to impose their ideologies on the nation. Competing visions of Turkey’s place in a modernizing and global world varied along multiple dimensions: secularism vs. Islam, Turkish folk culture vs. cosmopolitanism, and West vs. East, among others. Leadership of the nation swung violently between opposing regimes, with three coups d’état punctuating the political turbulence during Müren’s lifetime. One common theme throughout was the coordinated attempt of the state to dictate culture from above. Stokes traces this tendency back to a quote from a speech given by Atatürk, engraved above the entrance to the main recording hall in the Turkish Radio and Television buildings: “the ability to accept, to grasp change in music is the measure of a nation’s progress.” Taken in conjunction with official efforts to “[orient] the music of the nation to the Turkish folk and to a European modernity,” Stokes reads this quote as an imperative to the people to go along with the government’s attempt to use music to push Turkish culture away from Islam, Arab influence, and cosmopolitanism (Stokes, 2010).

By manipulating popular music through the apparatus of Turkish Radio and Television and by constricting the repertoire of the main conservatory, state officials attempted to enforce their vision of Turkish nationality onto the citizenry (Stokes, 2010). What Zeki Müren represented,

and arguably part of what made him the “ideal citizen,” was that he represented a cultural identity, originating from his popularity with the people, that did not seek to participate in the traditional political game. His representation of national identity did not rely upon class, ideals of modernization, religious beliefs, or other commonly construed dichotomies. Instead, his was a cultural identity of authenticity, love, and intimacy. His image was that of the “young musician struggling to do the decent thing and find love against the odds,” to reiterate the persona of the character he forged for himself in his career in film (Stokes, 2010). In this light, the difficulty of locating him with the political categories of the day is a positive attribute. What he represented was not an answer to these questions, but rather a defiant choice not to accept them as the right questions to be asking. Zeki Müren allowed people to construe Turkish identity not as a matter of ethnicity, ideology, religion, or origin, but of the capacity to strive for impossible love.

In the introduction of his book, Stokes lays out his argument in simple terms: “*The Republic of Love* points to a sustained and consequential imagination of public life in affectionate terms, and to popular music as the vehicle of this imagination” (Stokes, 2010). Zeki Müren’s abundant musical talent thrust him into the public consciousness. His capacity to touch the hearts and minds of listeners through his musical expression forged his status as a cultural icon. His songs and *gazino* performances broadcasted his image and ideas across the nation. In attempting to control the popular music of the nation, the Turkish government acknowledged the power of music to forge a national identity. Stokes would surely agree with this assessment, and in *The Republic Love* he presents a compelling narrative of how music indeed played a defining role in allowing the Turkish people to maintain and celebrate a culture of love in the face of decades of political turmoil and repression.

Stokes' work in *The Republic of Love* highlights the dynamic relationship between music and culture. Where *Sound and Sentiment* delves deeply into the details of one snapshot of musical expression, *The Republic of Love* tells the story of how Turkey's popular music has developed in tandem with the nuanced sociopolitical climate of the past sixty years, guiding the interpretation and evolution of that climate in turn. The immersive historical and personal context he provides serves not only to explain the popularity of each of the artists he studies, but also to situate their music as part of a larger story. Zeki Müren's songs reprise musical traditions and individual artists that came before him, each with a story whose details contribute layers of meaning to the interpretation of his music. When unraveling the emotional impact of a song, every detail about the artist, the lyrics, the genre, and the time and place of its creation acts as a lens through which an individual might view the song and develop an emotional connection with it. Stokes' work in this ethnography develops these contexts extensively, weaving them into a broader narrative that portrays the depth of the relationship between music, culture, and the emotions that mediate between them.

III. Evolutionary Musicology

An Introduction to Evolutionary Musicology

The genesis of the field of evolutionary musicology and its attempt to describe music as an evolved behavior can be traced all the way back to the birth of evolutionary theory. As Charles Darwin wrote in *The descent of man, and Selection in relation to sex*:

“... it appears probable that the progenitors of man, either the males or the females or both sexes, before acquiring the power of expressing their mutual love in articulate language, endeavoured to charm each other with musical notes and rhythm.” (qtd. in Miller, 2000).

Here, Darwin draws an analogy between the use of music in human society and the role of birdsong in avian mating rituals. Both, he suggests, are displays of selective fitness that are best understood as mechanisms for sexual selection. Since Darwin’s time, our understanding of the roles music might play in human culture and society has become much more nuanced. As the field of evolutionary theory has matured, new methods of analysis have emerged that allow us to collect better data and ask more refined questions. Yet while the body of research has grown substantially since Darwin’s time, the driving assumption of evolutionary musicology remains much the same: that music is “a behavior that evolved in ancestral humans because it contributed to their survival and reproductive success” (Dissanayake, 2006). Further, just as our understanding of music stands to gain from an analysis through the lens of evolutionary theory, our understanding of our own evolutionary history is sure to be enhanced by a clearer picture of the role music has played in our development as a species.

Central to the study of music is the study of musical emotion. “Some kind of musical experience is the basis for every musical activity, regardless of whether it involves composing, performing, or listening to music. Several studies have suggested that the most common goal of

musical experiences is to influence emotions” (Juslin & Västfjäll, 2008). If music evolved to serve an evolutionary imperative, and emotions are the medium through which music interacts with our conscious experience, then musical emotions can be understood as mechanisms that evolved to associate complex auditory stimuli in our environment to evolutionarily advantageous physiological responses. In other words, a cause-and-effect relationship exists between musical form and emotional experience, where certain acoustic features in music reliably induce specific emotional responses, and the affective qualities of these emotional responses serve to motivate our behavior in specific ways.

While there exists general agreement that musical emotions are central to musical experience, there is remarkably little consensus about anything else. As one study comments, “despite a recent upswing of research on musical emotions, the literature presents a confusing picture with conflicting views on almost every topic in the field.” (Juslin & Västfjäll, 2008). This confusion makes it difficult to present the field of evolutionary musicology as a cohesive unit, with unified goals and a clear path forward. Articles that seem to address the same general topic often relate to each other only tangentially. In light of this, it is helpful to first take a step back and view the field of evolutionary musicology from as wide a perspective as possible. From that broad viewpoint, it will then be possible to focus in on the specific methods of research, a few prevailing theories, and the role that emotion plays in shaping the discussion.

The Resurgence of Evolutionary Musicology

While the application of evolutionary theory to musicology dates back to Darwin, the field of evolutionary musicology has a disjointed history. This owes primarily to the history of comparative musicology and the attempt to explain differences in musical style and complexity in

evolutionary terms. The majority of early scholarship in the field originated in what came to be known as the Berlin School of Comparative Musicology. This included early pioneers such as Carl Stumpf and Erich von Hornbostel, mentioned previously in the introduction to the ethnomusicology section. One of the issues with their work was the tendency to use Western art music as a measuring stick to compare all other musics of the world. This is evidenced by the use of the word “primitive” as a moniker for many non-Western forms of music. Some researchers were overly dismissive of the merits and complexity of non-Western music, viewing it as an earlier evolutionary stage of music that the Western world had evolved past. The prevalence of racism in early scholarship in comparative musicology led to the field largely falling into disrepute, being almost entirely supplanted by ethnomusicology by the mid-twentieth century.

The recent reemergence of the field of evolutionary musicology was understandably met with a certain skepticism. Researchers in the field have sought to address these concerns. In the introductory chapter of *The Origins of Music*, Nils L Wallin, Björn Merker, and Steven Brown devote a section to a discussion of racism in early comparative musicology:

“It is very important that musicology come to terms with its own history and see it in proper perspective. There is no question that much scholarship in comparative musicology was permeated by racist notions about the superiority of European tonal music, and that much faulty reasoning was used in creating “unilinear” evolutionary arguments about the origins of musical systems. This was no less true of much theorizing in sociology or anthropology at the time. Yet, this comment must be balanced by the realization that the comparative musicologists succeeded in bringing recordings and analyses of non-European musics to the European public for the first time, thus educating Western people about these musics in a way that no scholarly anthropological text could have done. It must be emphasized that despite their use of dated terms such as ‘primitive cultures’ and ‘primitive music,’ the comparative musicologists wrote about the musics of non-Western cultures with nothing less than respect. It is a credit to the members of the Berlin school that they were attempting to develop a general theory of music, one that applied to all human beings and all musics. The spirit of this universalist approach to music and musical behavior unquestionably permeates this entire volume” (Wallin, Merker, Brown, 2000).

In their view, there is much to be learned from the study of music in conjunction with human evolution, both for our understanding of music and as a means of shedding light on the evolutionary origins of our species. Only very recently has there been rekindled interest in applying the tools of evolution to the study of music, and the history of the discipline helps shed light on some of the tension that exists between ethnomusicology and evolutionary musicology.

The reemergence of the study of evolutionary musicology begins with the work of Nils L. Wallin, Björn Merker, and Steven Brown. Together, they helped organize a symposium in 1994 called “Man, Mind and Music,” at which a group consisting of “neuroscientists, mathematicians, systems theorists, musicologists, ethnomusicologists, a composer, and a conductor” came together to discuss the topic of biomusicology (Brown, S., Merker, B., & Wallin, N.L., 2000). This symposium set the wheels turning for further collaboration, the end result of which was a workshop and a subsequent book both entitled *The Origins of Music*. The book is a collection of articles written by researchers spanning a wide range of disciplines including linguistics, evolutionary science, neuroscience, psychology, ethnomusicology, musicology, and zoology. Taken as a whole, *The Origins of Music* constitutes a basis for the field of biomusicology, and “if its essays suggest nothing else, it is that music and musical behavior can no longer be ignored in a consideration of human evolution” (Brown, S., Merker, B., & Wallin, N.L., 2000).

The term biomusicology was coined by Nils Wallin, who used it in the title of his book, *Biomusicology: Neurophysiological, Neuropsychological, and Evolutionary Perspectives on the Origins and Purposes of Music*. As the title suggests, biomusicology is a broad term that encompasses all of the ways in which the tools used in the study of biology can be applied to the investigation of the origins of music. Within the umbrella of biomusicology, Wallin, Brown and Merker identify three main subcategories: evolutionary musicology, neuromusicology, and

comparative musicology. Evolutionary musicology, the topic of interest in this thesis, “deals with the evolutionary origins of music, both in terms of a comparative approach to vocal communication in animals and in terms of an evolutionary psychological approach to the emergence of music in the hominid line” (Brown, S., Merker, B., & Wallin, N.L., 2000).

Methods of Analysis

Evolutionary musicology is first and foremost a scientific discipline. As such, its methodological approach involves forming testable hypotheses and designing experiments that gather data that either supports or disproves these hypotheses. This places certain constraints on the types of questions that can be asked. The principal object of study – the evolutionary origins of music – occurred far in the past and therefore cannot be tested directly. Studies that hope to shed light on these events must do so by identifying certain proxies that allow us to glimpse what the world was like tens if not hundreds of thousands of years ago. Brown, Merker, and Wallin identify five principal methods of collecting evidence relevant to the study of evolutionary musicology: (1) The comparative method and analysis of animal song; (2) Physical anthropology and musical archaeology; (3) Music-language comparative analysis; (4) Comparative musicology; and (5) Human brain imaging. In what follows, for each method I will establish the relevance to evolutionary musicology, present one or a number of examples of contemporary research, and discuss the implications of the conclusions they draw from their research.

Analysis of Animal Song

The comparison of human music to animal song is the oldest and most broadly applied of the five methods. When Darwin speculated on the origins of human music by referencing the

purpose of bird songs, he engaged in this type of analysis. But Darwin was certainly not the first person to draw this type of analogy. I would suspect that as long as humans have lived among birds, people have found music within their songs; the study of Kaluli music and its deep connection to birdsong demonstrates the compatibility between the two.

The comparative analysis of animal song breaks down into three main areas of research: acoustic analysis of song, neurobiological analysis of song production and perception, and behavioral-ecological analysis of singing behavior and its associated displays (Brown, S., Merker, B., & Wallin, N.L., 2000). Acoustic analysis of song involves taking the tools developed to analyze and describe human speech and music and applying them to animal vocalizations to search for structural similarities. For example, in describing the song of *Sarothrura lugens*, the chestnut-headed pygmy rail, François-Bernard Mâche identifies “the universal link among accelerando, crescendo, and rising in pitch” (Mâche, 2000). These shared characteristics then form the starting points for further analysis. Any musical features shared between humans and birds, species that diverged evolutionarily over 250 million years ago, suggests that some reason likely exists for their separate development.

Neurobiological analysis of animal song is similar to neurobiological analysis of human song, a topic that will be discussed further in the section on human brain imaging. It involves the identification of the “neural pathways underlying song production and song perception.” This specific field of study has made significant advances in the realm of bird song, but has yet to be applied to other animal species (Brown, S., Merker, B., & Wallin, N.L., 2000).

Finally, behavioral-ecological analysis takes into account the physical environment and social circumstances within which animal vocalizations occur, and seeks to investigate the connection between the perceived function of a song and its acoustic structure. For example, “low,

broadband sounds are often honestly tied to body size and hostile intent, and can induce fear in receivers. Conversely, high pitched tonal sounds are related to appeasement, and are often produced to reduce fear in listeners” (Bryant, 2013). In this way, certain acoustic features of animal vocalizations can be tied to specific motivations.

A fascinating example of research that explores these dimensions is the study by Gregory A. Bryant, “Animal signals and emotion in music: coordinating affect across groups.” His study incorporates both the acoustic analysis and the behavioral-ecological analysis of song. A key principle in the acoustic analysis of animal signaling is the idea that the “production of a signal is necessarily tied to a systematic response by target listeners” (Bryant, 2013). That is, animals do not make signals for their own sake, but rather as a means of communication. As a consequence, the physical form of the signal must carry information that relates to the response it is intending to evoke from the audience. Bryant uses the acoustic-startle reflex as an example:

“Many animal calls consist of loud bursts of acoustic energy with rapid onsets, loudness variation, and nonlinear spectral characteristics that often give the signals a harsh or noisy sound quality. These features serve to get the attention of a target audience, and can effectively interrupt motor activity. The direct effect of this kind of sound on the mammalian nervous system is a function that has been phylogenetically conserved across many taxa” (Bryant, 2013).

For example, to prevent your dog from jumping on the couch, you might yell “No!” in a loud and stern voice. The dog does not understand the meaning of the word “no”, but your intent is effectively communicated through the acoustic features of your vocalization.

Another study discussed by Bryant involves a group of researchers who synthesized music designed to mimic features of affiliation and threat signals of adult tamarins. The synthesized music did not contain any actual instances of bird calls, but rather imported structurally similar acoustic features meant to provide a close approximation. In the study, “musical stimuli based on threat calls resulted in increased movement, and huddling behavior shortly after exposure.

Conversely, the tamarins reacted to affiliation-based music with calming behavior and reduced movement” (Bryant, 2013). The behavior of the tamarins supports the notion of a “systematic response by target listeners” in response to structured acoustic stimuli. It demonstrates the capacity for music to elicit a predictable response, at least in the case where the music was designed to carry information relevant to the species in question.

The next aspect of Bryant’s study focuses on the function of coordinated signaling in both humans and non-human animals. The ability to perform coordinated signaling is observed in a number of species, including primates, birds, and canines, and is displayed at different levels of complexity. Chimpanzees, for example, engage in coordinated territorial displays, but have not shown the ability to coordinate rhythmically with other members of their species or with a human. This suggests that the human ability to perform coordinated rhythmic song and dance evolved after the split with our last common ancestor with the chimpanzee. Certain species of birds, however, including the sulfur-crested cockatoo and the African gray parrot, show extensive ability to coordinate responses to rhythmic stimuli (Bryant, 2013). Future studies of these abilities have the potential to shed light on the development of the human capacity for rhythmic entrainment.

The performance of coordinated signals carries a great deal of implicit information about a group. It “honestly communicates their numbers, and many other properties of their health and stature,” and conveys “information about time investments with fellow performers, individual skills related to practice time investment, and creative ability indicating cognitive competence” (Bryant, 2013). These observations are applicable both to non-human animal groups and to a band you might see performing a live concert.

Bryant presents evidence for two claims: that certain acoustic features of sound have the potential to induce predictable responses, and that humans and other animals have the capacity to

use acoustic signals both to coordinate behavior within a group and to communicate information. Considering these two claims together, Bryant suggests that music could have functioned in part as a social signaling mechanism. A group participating in coordinated signaling might experience similar emotional states that “assist in communicating affect between group members, and help build social bonds” (Bryant, 2013). In other words, one of the adaptive benefits of music might have been its ability to induce a shared emotional state that facilitated the creation of bonds of trust between group members.

Physical Anthropology and Musical Archaeology

Physical anthropology and musical archaeology involve the attempt to reconstruct aspects of our musical past through the study of fossils and physical artifacts. On the one hand, this involves piecing together our history as instrument-makers and players through the discovery and identification of prehistoric instruments. On the other, it seeks to reconstruct the history of our musical capacity as evidenced by transformations in the hominid vocal tract and brain anatomy visible in our fossil history. The study of the hominid vocal tract has proven successful as a means of investigating the development of language, and the same methods offer insight into our ability to create vocal music.

To elaborate on the methodology involved in this type of investigation, I will reference a article written by Drago Kunej and Ivan Turk, entitled “New Perspectives on the Beginnings of Music: Archaeological and Musicological Analysis of a Middle Paleolithic Bone ‘Flute’.” Their article describes the process of identifying what is currently thought to be the oldest known musical instrument: a 44,000-year-old bone flute that they unearthed at the Divje babe I cave site in Slovenia. The article primarily details the evidence considered in the process of determining

whether or not the object in question can reasonably be considered to be a flute. The object in consideration is made of the “left thigh bone of a one-to-two-year old cave bear,” and bears a “regular string of artificial holes in the wall of the posterior side” (Kunej & Turk, 2000). Detailed analysis questions the methods of construction of the holes, considering two hypotheses: the holes were intentionally crafted by a human with stone tools, or were the result of a carnivore gnawing the bone. The authors present a detailed analysis of the jaw construction, bite strength, tooth shape, and eating habits of wolves, hyenas, canines, and bears. They ultimately conclude that it is exceedingly unlikely that any of these animals could have created such holes, which implies that the object is almost certainly a human artifact.

After establishing the holes to be of human origin, the authors turn to the question of the object’s function. Given its structural similarity to other prehistoric flutes, this presented an obvious starting point for exploration. To test their hypothesis, the authors took precise measurements of the object and made a number of reconstructions out of similar materials, some containing certain slight variations in form that could have been possible given the changes in the object due to chemical and mechanical wear over the years. They tested the acoustic properties of each, and were “surprised to find that [they] could produce a fairly wide range of tones with all reconstructions,” even succeeding in “[producing] individual popular tunes” (Kunej & Turk, 2000).

Their finding offers us a glimpse of the musical landscape of human societies deep in our past. Such findings are rare, and represent “only the tip of the iceberg” in terms of the possible instruments of our ancestors. Unfortunately, “what is hidden from archaeologists is the far larger mass of flutes made from plant stems, which are lost forever” (Kunej & Turk, 2000). This highlights the inherent difficulties in any attempt to reconstruct a human musical history. However,

what their finding succeeds in doing is offering strong evidence for the idea that the act of making music is deeply rooted in our species' history.

Music-Language Comparison

Music and language are the two prominent forms of vocal communication in humans. Given the considerable overlap in both the anatomical systems and neurological functions involved in speech and music, it follows that the two might share common evolutionary origins. Three broad theories exist regarding the evolution of music and language: “that music evolved from speech, that speech evolved from music, or that both evolved from a common ancestor” (Brown, Merker & Wallin, 2000). All three cases point to an interaction, at some level, between the development of music and language. If this is the case, the study of language and its origins promises to shed light on our understanding of music.

In his article, *Musical emotions: Functions, origins, evolution*, Leonid Perlovsky presents an argument for the co-evolution of music and language. Language, he argues, “gives our mind a culturally evolved means to differentiate reality in great detail,” allowing for the “exchange of specific and complicated knowledge” (Perlovsky, 2010). The ability to describe the world in increasing detail and transmit that knowledge undoubtedly conferred a massive adaptive advantage on our ancestors, but Perlovsky argues that it came at a high cost:

“Language contributed not only to differentiation of conceptual ability, but also to differentiation of psychic functions of concepts, emotions, and behavior. Whereas for animals every piece of “conceptual knowledge” is inextricably connected to emotional evaluation of a situation, and to appropriate behavior, satisfying instinctual needs, this is not so for humans. Human knowledge accumulated in language is not automatically connected to instinctual needs; sometimes culturally developed conceptual knowledge contradicts instinctual needs inherited from the animal past. Also various parts of knowledge may contradict each other” (Perlovsky, 2010).

This condition of internal contradiction, which could alternatively be termed cognitive dissonance, has the potential to lead to “internal crises” that manifest as a “lost feeling of meaning and purpose.” If enough members of a group suffer from such a mental state, “knowledge loses its value, including cultural knowledge, and cultural calamities occur, wars and destruction” (Perlovsky, 2010). Herein lies the evolutionary imperative for the development of a mechanism to prevent this dissonance. Because the development of language allowed for the differentiation of concepts at a rate much faster than biological evolution could keep pace with, a need arose for a similarly powerful mechanism to maintain cognitive synthesis. The hypothesis of Perlovsky’s paper is that “music evolved along with language for maintaining the balance between differentiation and synthesis” (Perlovsky, 2010).

Much of his argument rests on the existence of a cognitive hierarchy within the mind, a concept he develops with reference to “mathematical models of the mind” that are alluded to but not outlined further in this paper. To strengthen his position, he offers historical examples and proposes experiments that could test his hypothesis. His historical evidence seeks to support the argument that “advances in consciousness and cultures were paralleled by advances in differentiation of musical emotions” (Perlovsky, 2010). He references a number of significant shifts in consciousness: the emergence of “contemporary consciousness” in Ancient Greece, Israel, and China; the Renaissance; the Reformation; the shift in consciousness caused by the diversity of contemporary culture. Each he pairs with the development of a respective musical style: antiphony, tonality, Baroque music, and rap music. Another supporting example would be the musical revolution that accompanied the “consciousness revolution” of the 1960s and 1970s.

Finally, he proposes a method for experimentally verifying his hypothesis. He suggests a two-part experiment. First, subjects would be induced to experience certain types of cognitive

dissonances. Then, experimenters could assess the efficacy of a variety of musical styles at resolving these dissonances using neuroimaging techniques. Perlovsky's hypothesis certainly defies simple categorization as an example of "music-language comparison," but represents an elegant attempt at using the tools of evolutionary analysis to study the origins and function of music.

Comparative Musicology

As the name suggests, this methodology shares the most overlap with ethnomusicological inquiry. Comparative musicology refers to the "scientific discipline devoted to the cross-cultural study of music," and in particular to the application of the ideas and methods of evolutionary psychology to the study of the role music plays in different cultures (Savage & Brown). By observing certain aspects of the way music is performed in different societies, we might be able to observe patterns that reveal important features of the role of music across cultures. Brown, Merker, and Wallin (Brown, Merker & Wallin, 2000) suggest five specific features for comparison: the selection of who the musicians in a given culture are; the contexts and contents of musical rituals; the social arrangement of musical performance; musical reflectors of this social arrangement, and; the mode of transmission of musical knowledge from generation to generation. These five criteria are very similar to the types of data Steven Feld gathered during his ethnographic study of Kaluli music. This represents a departure from the comparative musicology of old, though, which sought to compare primarily on the basis of the physical characteristics of sound.

In her essay *Ritual and Ritualization*, Ellen Dissanayake focuses her study on the contexts and contents of musical rituals. She approaches this study with the idea that human ritual bears revealing similarities to animal ritualization, and that the processes involved in animal ritualization

prove to be useful analogies for understanding the development of and significance behind human ritual. Ritualization is a term coined by Julian Huxley in 1914 to denote “the process by which selection gradually alters certain behaviors into increasingly effective signals” (Dissanayake, 2006). Dissanayake describes the process in greater detail:

“In ritualization, components of a behavior that occurs as part of normal, everyday, instrumental activity—such as preening, nestbuilding, preparing to fly, or caring for young—are, as it were, “selected” or taken out of context, “ritualized,” and used to signal an entirely different motivation—usually an attitude or intention that may then influence (affect or manipulate) the behavior of another animal. For example, the head movements used by gulls to pluck grass for building a nest may be co-opted and ritualized to signal aggression (thus driving another gull away), or behaviors derived from feeding young (e.g., touching bills, offering a token with the bill, coughing as if regurgitating) may become ritualized and used for courtship (attracting a mate).

In the course of ritualization, particular changes occur in the original behavior pattern so that the resulting signal becomes prominent, distinctive, and unambiguous, and consequently is not confused with its precursor (Smith, 1977: 328; Eibl-Eibesfeldt, 1989: 439-40). Compared to the original instrumental or “ordinary” precursor behavior, ritualized movements become “extraordinary” and thus attract attention. They typically become (a) simplified or formalized (stereotyped), and (b) repeated rhythmically, often (c) with a “typical” intensity (Morris, 1957)—that is, with a set regularity of pace. The signals are frequently (d) exaggerated in time and space, and (e) further emphasized by the development of special colors or anatomical features” (Dissanayake, 2006).

Whether or not human ritual can be said to have emerged from this type of process, there are certainly suggestive parallels between the two. Dissanayake analyzes the ritual of a traditional North American wedding in this context. The formal attire, flower arrangements, and ornate decoration exemplify “the development of special colors or anatomical features;” the bride and her father walk down the aisle to the pace of the music, taking the normal action of walking and performing it “rhythmically” and “with a set regularity of pace;” guests seated in accordance with their social relation to the wedding party sit and stand at prescribed times, a “formalization” of normal social interaction. These features combine to endow the ceremony with significance above and beyond that of everyday activity.

Viewing ritual as a process designed to alert us to the significance of events has implications for the induction of emotion. Dissanayake proposes an understanding of emotions as our response to the perception of a relevant change in our environment: “We appraise a salient or novel cue, anticipating what it means for our vital interests. Salience, novelty, and change are themselves neither positive nor negative...but an unexpected or markedly salient event seems to trigger a readiness for emotion, if not a full-blown emotion’ (Dissanayake, 2006). Seen as a whole process, the formalization of otherwise normal events becomes ritual, ritual bestows significance upon that event, and our perception of this significance prepares us for an emotional response. With this as a backdrop, Dissanayake approaches the topic of musical emotions. Drawing on her observation of common features of ritual practices across cultures, she identifies four methods through which music elicits an emotional response. These methods do not represent distinct categories, but rather processes that can occur simultaneously and may share some amount of overlap.

The first method she outlines is through “appeal to inherent sensory and cognitive dispositions” (Dissanayake, 2006). This explanation relies on the existence of certain traits that humans find inherently valuable and beautiful either due to cultural conditioning or through an appraisal of their survival value. Examples of these traits for the Igbo people of Nigeria include “brightness, clarity, precision, balance, and harmony” (Dissanayake, 2006). Whatever the origin of these preferences, musical performances that exhibit qualities in line with these values elicit positive emotional responses.

The next method is association, a concept similar to evaluative conditioning, which I will discuss in more detail in the section devoted to musical emotions. The basic idea is that music consistently accompanies significant events such as parties, weddings, funerals, and other

ceremonies. These events produce highly emotional responses on their own, and by repeatedly hearing music in the context of these emotional events, people begin to associate music with the emotional context normally surrounding it. As examples, she notes that “in lowland regions of South America, ‘wherever music is heard, something important is happening’,” and similarly “for the Sambia of Papua New Guinea, the sounds of flutes may evoke the combined fear and excitement of ritual participation” (Dissanayake, 2006).

She classifies the third method as “intensification,” a process whereby music creates tension through slow and methodical buildup, culminating in a cathartic release that can produce states of “transfiguration or transcendence” (Dissanayake, 2006). She identifies this pattern in the music of the Eskimo/Inuit people, Cubeo people of the Northwest Amazon, Sinhalese, Kalahari !Kung, and Suyu (Dissanayake, 2006). Contemporary Western manifestations of this musical style can be found in the genres of trance music, house music, dubstep, and electronic dance music.

Finally, the fourth method can be understood as music either confirming or violating expectations. This method is analogous to musical expectancy, also discussed further in the musical emotions section. Dissanayake draws on the similarities between this method and a three-part organizational structure used to describe emotionally relevant infant-adult interactions. In this paradigm, expectable ongoing regulation refers to the degree to which an interaction unfolds as expected. Contrast, disjunction, and difference describes the response to violations of expectation, which can be either positive or negative. Finally, heightened affective moments refers to the possible occurrence of powerful transformations produced by the preceding two events.

After outlining these mechanisms, Dissanayake concludes with another appeal to how the understanding of animal ritualization can inform our understanding of musical ritual. In the study of ritualization, behaviors are understood in the context of their adaptive or survival benefits.

Dissanayake applies this methodology to the study of human musical ritual, arguing for the existence of six “general social ‘functions’ that appear to be achieved through these rituals” (Dissanayake, 2006): display of resources, control and channeling of individual aggression, facilitation of courtship, establishment and maintenance of social identity through rites of passage, and promotion of group cooperation and prosperity. She provides further justification for these functions, but these extend beyond the scope of this paper.

The model that Dissanayake proposes in her essay represents the fruit of just one category—context and content of rituals—of the five dimensions along which Brown, Merker, and Wallin suggest that comparative musicology can be studied. As evidenced by ethnomusicology, there is a wealth of knowledge remaining to be uncovered from studying music as it occurs across cultures.

Human Brain Imaging

Of all the research methods discussed in this paper, human brain imaging offers the greatest potential for transforming the way we understand our relationship with music. Technologies such as the electroencephalogram (EEG), positron emission tomography (PET), and magnetic resonance imaging (MRI) give us a modest ability to detect and record changes in brain activity both spatially and temporally. This gives researchers the tools to correlate neurological responses with specific stimuli, and to gather objective data about mental states that does not rely on a subject’s subjective self-assessment. By allowing us to directly observe neurological activity, brain imaging techniques have facilitated the creation of a framework for developing testable hypotheses about how our brains interact with the world and mediate experience.

As applied to the study of music, these techniques promise to develop our understanding of the neurological processes involved in both the creation of music and the experience of music listening. Brown, Merker, and Wallin (Brown, Merker, & Wallin, 2000) outline a sampling of the issues that could be studied through brain imaging techniques: “tonal, rhythmic, and emotive aspects of music processing;” “ontogenetic development, sex differences, musical performance, [and] the effects of musical training on brain structure;” “the neurobiology of metric timekeeping;” and “the relationship between the localizations of musical function and language function” (Brown, Merker & Wallin, 2000). Human brain imaging technology allows researchers to scientifically probe these questions in a way that none of the four methodologies previously described can. The other methods offer important insights into the purpose of music, the path of its development, its origins, its history of use within our species, and the roles it plays in our societies today. Human brain imaging contributes to these areas as well, but what is unique to this particular method of scientific inquiry is its ability to reveal exactly what it is that is happening within our brains and bodies during the peculiar experience of being moved by music. I will examine a study that relies on brain imaging techniques to reveal fascinating dynamics about our response to music.

The study, “Anatomically distinct dopamine release during anticipation and experience of peak emotion to music” by Valorie N Salimpoor et. al., sought to understand the neurological processes underlying intense emotional experiences caused by music. The first hurdle was developing a reliable method for objectively measuring emotional arousal. They hypothesized that the experience of chills would be an effective marker. To test this, they had subjects listen to music that would induce chills, and measured a number of metrics that are known to be indicative of sympathetic nervous system (SNS) activity. The SNS consists of neurons from the

central nervous system and the peripheral nervous system that communicate through a series of ganglia. When activated, presynaptic neurons from the spinal cord release the neurotransmitter acetylcholine. This binds to receptors on the postsynaptic neurons and effects the release of noradrenaline. Sufficient release of noradrenaline can stimulate the release of adrenaline, inducing the symptoms of the “fight-or-flight response,” including increased heart rate and respiration, sweating, and pupil dilation. (Hogan, 2014).

The study confirmed that “mean intensity of chills reported by each participant” were “correlated with psychophysiological measurements . . . indicative of increased sympathetic nervous system activity” (Salimpoor, 2011). The researchers confirmed that they could rely on the subjects’ reported experience of chills to denote emotional arousal, and began to focus in on the brain activity at these precise moments.

In a 2001 study by Anne J. Blood and Robert J. Zatorre, positron emission tomography (PET) scanning was used to measure changes in regional cerebral blood flow (rCBF) to map brain activity during pleasurable listening experiences. As in the 2011 study, this study used chills to denote maximum emotional arousal. Analysis of rCBF during subject-reported chills revealed two significant patterns: certain regions reliably experienced an increase in rCBF, while others saw a decrease in rCBF (Blood, 2001).

In particular, the increase was seen in the left ventral striatum and dorsomedial midbrain. Activity in these regions is consistent with other known pleasure-inducing substances, particularly “in response to cocaine administration in cocaine-dependent subjects” (Blood, 2001). In fact, the release of dopamine in these regions is thought to be our brain’s response mechanism for all naturally rewarding stimuli. These results implicate that music activates the same reward pathways as intrinsically valuable biological stimuli such as food and sex.

The decrease in rCBF in the amygdala and hippocampus that correlated with chills paints a similarly revealing picture. These regions are also involved in reward and emotion, but in a different capacity than the ventral striatum or dorsomedial midbrain. “The amygdala is known to be involved in fear and other aversive emotions,” implicating that “music may maximize pleasure, not only by activating the reward system but also by simultaneously decreasing activity in brain structures associated with negative emotions” (Blood, 2001).

Building on these results, the more recent study employed a combination of methods to create a much more precise and revealing map of the brain’s activity during peak pleasure moments induced by music. The study used PET scanning, taking advantage of the competition between [^{11}C]raclopride, which is visible with PET scans, and dopamine. They reasoned that an influx of dopamine would coincide with a decrease in the binding potential of [^{11}C]raclopride. In conjunction with this, fMRI scans created a temporal map of rCBF changes in the brain. This allowed researchers to measure where dopaminergic activity occurred along with when it occurred in relation to the subject’s reports of chills (Salimpoor, 2011).

The decrease in binding potential of [^{11}C]raclopride definitively demonstrated the release of dopamine in both the dorsal and ventral striatum. However, the researchers unearthed the most revealing aspect of the study through inspection of the “anticipation epochs, defined as 15 seconds before the peak experiences” (Salimpoor, 2011). Their results show that while peak emotional arousal correlates with a spike of dopamine release in the nucleus accumbens, the caudate releases more dopamine during the anticipation of peak arousal.

The caudate “has been typically implicated in learning of stimulus-response associations and in mediating the reinforcing qualities of rewarding stimuli” (Salimpoor, 2011). In essence, our brains recognize a pattern that causes them to anticipate a future reward, and this expectation

causes a pleasurable response in advance of the actual resolution or climax in the music. This response mimics the brain's reaction to prolonged drug abuse; it releases dopamine in anticipation of the drug, primarily in the caudate, rather than in the nucleus accumbens, as would be the case in the brain of a first-time user (Salimpoor, 2011).

In both studies, brain activity observed during musical stimulation closely resembled patterns and processes known to be associated with common essential biological activities such as eating and sex as well as with drugs specifically manufactured to elicit extremely rewarding experiences for the user. The first study demonstrated that musically stimulated arousal activated reward circuitry in the brain while simultaneously inhibiting fear and negative emotional responses. The second suggested strong similarities between the brain activity seen during music and the predictive and anticipatory patterns that have been seen to develop for stimuli that are known to be pleasurable, such as the use of drugs. These results add validity to the notion that music has a deep and profound effect on us. Additionally, it is fascinating to observe that the appreciation of musical expression can stimulate the same neural circuitry that provides motivation for engaging in acts of survival and reproduction. This represents one specific application among a vast array of possibilities for mapping the neurological correlates of musical experiences, and further research is sure to continue adding color to our understanding of our relationship with music.

Musical Emotions: A New Paradigm

Throughout the articles reviewed, researchers have made reference to the idea of musical emotions. Clearly, the idea that music provokes some significant emotional experience is a motivating and guiding force behind much of the research in evolutionary musicology. However, in their study, "Emotional responses to music: The need to consider underlying mechanisms,"

Patrik N. Juslin and Daniel Västfjäll argue that the field suffers from a lack of coherence surrounding the fundamental object of study: musical emotions. This incoherence, evidenced by the imprecise and varied language surrounding the discussion of musical emotions, has led to a body of work that cannot easily be compared or understood as a whole. They offer a survey of the landscape of scholarly opinions surrounding the ability for music to induce emotions:

A few examples may suffice to illustrate this point: Becker (2001, p. 137) notes that “emotional responses to music do not occur spontaneously, nor ‘naturally’,” yet Peretz (2001, p. 126) claims that “this is what emotions are: spontaneous responses that are difficult to disguise.” Noy (1993, p. 137) concludes that “the emotions evoked by music are not identical with the emotions aroused by everyday, interpersonal activity,” but Peretz (2001, p. 122) argues that “there is as yet no theoretical or empirical reason for assuming such specificity.” Koelsch (2005, p. 412) observes that emotions to music may be induced “quite consistently across subjects,” yet Sloboda (1996, p. 387) regards individual differences as an “acute problem.” Scherer (2003, p. 25) claims that “music does not induce basic emotions,” but Panksepp and Bernatzky (2002, p. 134) consider it “remarkable that any medium could so readily evoke all the basic emotions.” Researchers do not even agree about whether music induces emotions: Sloboda (1992, p. 33) claims that “there is a general consensus that music is capable of arousing deep and significant emotions,” yet Konecni (2003, p. 332) writes that “instrumental music cannot directly induce genuine emotions in listeners” (Juslin & Västfjäll, 2008).

Juslin and Västfjäll interpret this lack of consensus as a symptom of the general neglect to address the question of precisely how music induces emotions. In the remainder of their paper, they set out to develop a preliminary framework of hypotheses regarding the mechanisms that underlie the induction of musical emotion. With this framework in place, future researchers can test, verify, refute, and update their hypotheses, thereby resulting in coherent and cumulative research in the field.

Their framework consists of six separately defined “psychological mechanisms” that each has the potential to induce musical emotions: (1) brain stem reflexes, (2) evaluative conditioning, (3) emotional contagion, (4) visual imagery, (5) episodic memory, and (6) musical expectancy. I will provide a short definition and description of each.

The brain stem reflex refers to “a process whereby an emotion is induced by music because one or more fundamental acoustical characteristics of the music are taken by the brain stem to signal a potentially important and urgent event” (Juslin & Västfjäll, 2008). This is similar to the acoustic-startle reflex discussed in the animal comparison section. Sounds with certain acoustic features, such as loudness or rapid change, indicate potentially relevant information in the environment, which induces arousal. Arousal involves increased activity of the autonomic nervous system, and is a feature of an emotional response but can also occur independently.

Evaluative conditioning refers to “a process whereby an emotion is induced by a piece of music simply because this stimulus has been paired repeatedly with other positive or negative stimuli” (Juslin & Västfjäll, 2008). Evaluative conditioning is a type of classic conditioning, with the salient difference that it can occur without awareness of the subject. A hypothetical example of this type of conditioning would be if your favorite restaurant played the same soundtrack each time you ate there. Even if you were not consciously paying attention to the music while you ate, your brain could create an unconscious association between the music and the pleasant experience of eating at that restaurant. Once this connection was established, that soundtrack would induce positive emotions even outside the context of the restaurant.

Emotional contagion refers to “a process whereby an emotion is induced by a piece of music because the listener perceives the emotional expression of the music, and then ‘mimics’ this expression internally, ... [leading] to an induction of the same emotion” (Juslin & Västfjäll, 2008). This type of emotional induction relies on research showing that “listeners are able to perceive specific emotions in pieces of music” as a result of musical features such as tempo, pitch, and volume (Juslin & Västfjäll, 2008). The phenomenon of emotional contagion outside of the context of music refers to the ability of humans to subconsciously mimic the emotions we perceive in

others, either through observing their facial expressions or hearing the sound of their voice. Juslin and Västfjäll propose that emotional contagion in music could occur through the same mechanisms by which we perceive emotion in vocal signals, though this hypothesis remains to be tested.

Visual imagery refers to “a process whereby an emotion is induced in a listener because he or she conjures up visual images (e.g., of a beautiful landscape) while listening to the music” (Juslin & Västfjäll, 2008). This process can be further broken down into two separate events: the process of music generating visual imagery, and the process of visual imagery inducing emotion. The mechanisms that account for the experience of visual imagery in response to music are not well understood, but “certain musical characteristics, such as repetition, predictability in melodic, harmonic, and rhythmic elements, and slow tempo, are especially effective in stimulating visual imagery” (Juslin & Västfjäll, 2008). Visual imagery produces emotional responses in the same manner as actual visual stimuli.

Episodic memory, also known as the “Darling, they are playing our tune” phenomenon, refers to “a process whereby an emotion is induced in a listener because the music evokes a memory of a particular event in the listener’s life” (Juslin & Västfjäll, 2008). Of the psychological mechanisms outlined, this one seems the most intuitive. When we have an especially positive or negative experience while listening to a song, the song becomes associated with the memory of that event. From that point on, hearing the song evokes the memory and its attached emotional content. The primary difference between episodic memory and evaluative conditioning is that episodic memory is conscious; the emotion is induced along with a recollection of the event accompanying it. Embarrassingly, the example of this that comes to mind in my own life is a particular song that I listened to immediately after I was dumped by a middle school girlfriend.

Every time the song comes on, I am graced with the pleasure of reliving my teenage angst over my unrequited love.

Finally, musical expectancy refers to “a process whereby an emotion is induced in a listener because a specific feature of the music violates, delays, or confirms the listener’s expectations about the continuation of the music” (Juslin & Västfjäll, 2008). This mechanism is related to music theory and the structure of songs. The central idea is that each person develops musical preferences based on the music that they have been exposed to throughout their lives. Their previous musical experiences come together to form a set of musical expectations, which can then be either met or violated by a composer or performer. Musical expectancy depends heavily on an individual’s past musical experiences, and therefore exhibits considerable variability from person to person. In other words, musical expectancy refers to a listener’s individual taste in music, and plays a role in accounting for the difference in responses to the same piece of music.

Finally, Juslin and Västfjäll provide a table that details relevant further information about each of the six mechanisms. For each, they outline: the survival value of the brain function; the information focus; the ontogenetic development; the key brain regions involved; the degree of cultural impact/learning; the induced affect; the induction speed; the degree of volitional influence; the availability to consciousness; the degree of modularity; and the degree of dependence on musical structure. This constitutes their perception of the salient features of an emotional induction mechanism, and represents a further attempt to systematize the study of emotions in order to provide a stable foundation for further research. Echoes of the mechanisms described in detail by Juslin & Västfjäll permeate the studies considered in this section, but their lack of common vocabulary complicates the analysis of how they fit together to form a cohesive story.

One common theme among the articles discussed is that they tend more towards the articulation of a novel framework for understanding musical emotion than a coordinated attempt to prove or disprove a specific set of hypotheses through the development of experiments. Part of this undoubtedly arises from the fact that I was attempting to present a somewhat comprehensive view of the whole field of evolutionary musicology, which necessitated the selection of broader articles. But I also suggest that it speaks to the vast scope of research that remains to be undertaken, and the relative infancy of the field. Many incredible insights have been achieved, but the lion's share of the work remains in the task of testing novel hypotheses and constructing a more cohesive body of thought throughout the discipline. The difficulty in creating interdisciplinary cohesion within evolutionary musicology might be best explained simply by observing the staggering variety of scholarly disciplines it includes under its umbrella, with all the implications that holds for appreciating the depth of our interconnectedness with music.

IV. Comparing Disciplines

After having surveyed the landscape of musical inquiry in both ethnomusicology and evolutionary musicology, I return to the initial question of my thesis: how might the consideration of their differences provide an enhanced understanding of the role of each discipline in the larger investigation of music? Is it possible to understand the two disciplines as operating in dynamic tension, rather than direct conflict?

I would argue that in the broadest sense, the conflict between the two disciplines boils down to the question of whether to view music as a product of biology or as a product of culture. This dichotomy manifests itself in a number of slightly different forms: musical universals vs cultural relativism; music arising through a cause and effect relationship with our environment vs. music as a fruit of the genius of individually creative and unique humans coming together to create culture; identification and categorization of broad global musical trends vs. celebration of the individuality and singularity of each musical tradition. Each retelling of this fundamental dichotomy introduces new dimensions.

If we view music purely as a biological phenomenon, where does that lead? From this perspective, humans are viewed as *Homo sapiens*, a single species of animals that share common DNA, a common evolutionary history, and common traits. Seen in this context, it is natural to make the leap in reasoning that there might exist aspects of our biology that predispose us to the creation and appreciation of music. Additionally, behavior is understood in this context as a response to underlying biological motivations that developed in response to evolution by natural selection. We eat because our bodies tell us we are hungry, which they do because food is a necessary source of energy for our survival. We get the urge to have sex because of the imperative to pass on our genes to the next generation. We develop social structures because a group working in coordination has

a better chance of survival than individuals operating alone. What, then, is the underlying biological motivation for creating music? What forces in our environment caused this to be an evolutionarily advantageous adaptation? Another consequence is that when viewing our species as a whole, any conclusions tend to be statistical in nature – they hold true for large groups, but variations on the level of the individual or even of a single culture factor in largely as noise. There is nothing inherently wrong with this view, provided it is understood within an appropriate context; it represents a specific way in which to approach an understanding of our relationship with music.

Viewing music as a cultural phenomenon leads to different conclusions. Imagine the complexity of a single human mind, and the world of experience lived by each individual human being. It is almost impossible to comprehensively describe the actions of a single person as a response to the complex web of relationships, experiences, emotions, and thoughts that combine to shape their motivations and desires. What is a culture but the interactions between these infinitely complex individuals? As the description of *gisalo* shows us, there is almost no point at which further details do not add depth to the understanding of a musical interaction. Each individual in attendance at a seance has a subtly different emotional experience, depending on a multitude of factors, some obvious, others hidden. When viewed this way, no attempt to make broad generalizations about music can capture the true variety, complexity, and beauty of a musical experience. Cultures are more complex than individuals, and the world is made up of a multitude of cultures. How can we hope to say anything meaningful about all of them at once? Guided by this logic, the only way to meaningfully interpret any musical expression is within the context of the culture that creates it.

My contention is that these accounts are both logically consistent, and that while they seem to exist in opposition, viewing the two in increased detail reveals levels at which they can interact

productively. In the course of my research, I encountered two particular ambiguities in language that, when clarified, allow for a new approach to reconciling the interaction between culture and biology. The first is the distinction between form and function, referenced in the introduction. Throughout this essay, I have consistently relied upon the term “music”. As discussed at the outset, an initial problem with the use of this term is that it does not come with a clear definition. Another problem arises due to its lack of specificity. Sometimes, when referring to the study of music, I referred to the study of musical *form*: aspects of the structures of the sound or details of the performance. Other times, I intended to discuss musical *function*: the uses of music, for example as a means of communicating emotion or as a way of uniting people. This distinction serves, to a certain extent, to clarify the contention surrounding the idea of musical universals. Ethnomusicologists denounce the attempt to search for universals in form, but readily acknowledge the existence of universals in function.

A second linguistic ambiguity comes from the term “music evolution”. Brown, Merker, and Wallin (2000) address this issue in the introduction to *The Origins of Music*:

“It is unfortunate that the term “music evolution” (like the term “language evolution”) has such an ambiguous meaning, as it refers both to biological evolution of a capacity and to cultural evolution of that capacity’s output. In other words, the term refers both to the biological emergence of music through evolution of the capacity to make it (an evolutionary psychological consideration) as well as to the historical changes in musical systems and styles that occur over time and place (a comparative musicological consideration).

Music evolution can refer to both cultural considerations and biological ones, placing it centrally along the divide between the two paradigms. A discussion about the evolution of music that does not consistently make clear delineations between these two competing definitions is sure to create confusion and consternation.

These examples do not by any means resolve all of the underlying tensions between ethnomusicology and evolutionary musicology. The fields are sufficiently different that it seems unlikely that such a resolution would be possible, regardless of whether it would even be desirable or productive. What these ambiguities do however suggest is that in the discussion of a phenomenon as broad and complex as music, nuance is paramount. With that in mind, I offer an understanding of the human capacity for musical creation that attempts to account for the complex interaction between biology and culture. All human beings share a set of underlying structures and functions in the brain that combine to give us the capacity to correlate structured sound to complex and specific emotional responses. The fact that we share this capacity suggests the existence of a common reason for its existence or a common path of its development. Music, in whatever form of structured sound it takes, arises through the interaction of these innate abilities with the indescribably complex ecosystem of human culture, maturing in conjunction with that culture over the course of millennia.

After a long discussion of music told in biological and cultural terms, in academic and abstract terms, and in terms of distinctions and contrast, I would like to end by reiterating the terms that make music worth understanding:

“As many myths about the origins of music tell us, what is important about the sounds of these voices is that they move us: to elation, to pride, to calm, to action, to tears, to new understanding. What is important about these sounds is that they change us, that they tell us who we are and give our lives some purpose” (Brown, Merker & Wallin, 2000).

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Ryan Clegg was born in Fort Worth, Texas on April 19th, 1995, and grew up in Houston. He pursued a dual degree in Plan II Honors and Mechanical Engineering at the University of Texas at Austin, graduating in 2018. His relationship with music was forged early on by his dad's love for classic rock, developed through playing piano, trumpet, bass guitar, and electric guitar, and broadened by Austin's vibrant live music scene. He hopes that music will continue to play a formative role in his life as he takes the next steps into life after college.