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Applying the Theory of Linguistic Relativity to Music: An Initial Exploration

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ABSTRACT | Language and music are essential facets of the human experience and, as such, are unique in being ubiquitous throughout cultures. This paper is a new attempt to apply the theory of linguistic relativity, which holds that language and culture are mutually reflective and generative, to the relationship between music and culture. Since both language and music are communicative devices and often affect one another, this paper compares and contrasts these two cultural products as well as suggests implications for further exploration of the interface of these two universal social constructs and the human cultures which produced them. The discussion entertained and the conclusions drawn in this paper may be of particular interest and value to a spectrum of scholars and practitioners ranging from linguists and musicologists to language and music educators.

Keywords: Sapir-Whorf Hypothesis, Cultural Theory, Musical Relativity, Folk Music, Communication

1. LANGUAGE, MUSIC, AND CULTURE: A UNIQUE RELATIONSHIP

All known human cultures exhibit two common practices: language and music (Williamson, 2009). This is significant – many concepts which may be taken for granted in one culture are entirely absent in another. For example, among the Piraha tribe in the Brazilian Amazon, there are no creation myths, no fixed terms for colours, nor are there linguistic mechanisms for counting.

Nevertheless, the Piraha have language, and an abundance of music in the form of songs (Patel, 2010). The universality of these two cultural phenomena has led to centuries of speculation as to the interrelationship between language and music. The tradition of interpreting music in rhetorical terms flourished during the Renaissance, when the renewed interest in the art of rhetoric led to the publication of an estimated 2,000 books on the subject between 1400 and 1700 – many of these were published in editions which numbered 250 to 1,000 copies (McCreless, 2007). In the 18th century, instrumental works were not exclusively interpreted as auditory pleasantries – they were wordless orations which consisted of carefully ordered sequences of thoughts (Bonds, 1991). Parallel studies of music and linguistics have led many academics to wonder as to the true nature of the relationship between the two. In order to best understand this connection, we must first understand the individual communicative nature to both language and music.

When the human species evolved into being, we were equipped with several adaptations which distinguish us from other primates and animals: bipedalism; the long, opposable thumb; and a vocal tract, unique to us, which enables us to speak and sing (Hodges, 1996). Language is much easier than music to define and identify – as the principal form of human communication (Patel, 2010), it is regarded as the most important human "invention," although it was never actively invented (Deutscher, 2005). As the human species differentiated itself from our primate cousins, language developed with us. One of the great evolutionary mysteries is the source, origin, and purpose of language. What we do know is this: without language, no aspect of human society would exist. Furthermore, it appears that language is something which is specific to the human genome.[1]

Is there a deeper, communicative purpose to music? This is a question which remains unresolved, and is the subject of considerable debate. Steven Pinker claims that music is merely "auditory cheesecake," without any adaptive function in human evolution. He argues that it emerged by taking advantage of the systems used to create language, without serving any inherent communicative need itself (Pinker, 1997). Charles Darwin, however, suggested that musical behaviours may have developed in humans and other animals as part of the complex pressures of sexual selection, and that music served as a sort of protolanguage (Darwin, 2009). Many contemporaries of Pinker responded to his controversial dismissal of music, rising to its defence. Ian Cross, Elizabeth Tolbert, Nicholas Bannan, and Robin Dunbar are only a few of the academics who support the belief that music played an integral role in the development of human culture, and go so far as to suggest that the relationship between music and language is more intimate than may have been previously believed (Mithen, 2006).

Surely, any communicative role that music might play in human socialization and interaction is much more abstract than the spoken word – if indeed it is a language, then it is an inchoate one, appealing to our pathos, first and foremost. Music is understood through the senses, not through

[1] See also: Cavalli-Sforza (1997), Fisher (2005), Takahashi et al. (2009).

logic. Indeed, the human brain does not interpret music as simple auditory phenomena, as it might process random noise and aimless sound; rather, it is understood on an emotional level (Weinberger, 1998), indicating that music *means something* to the human brain.

Is this emotional response based on some common human value system, or is our understanding of music – and music's effect on us – the result of generations of cultural conditioning? If the latter is the case, what values and cultural elements are preserved and transmitted through the medium of music? Perhaps there is already a precedent to answer these and other such questions – the hypothesis of linguistic relativity. In the course of the following paper, we will explore the application of this theory to musical communication in the hopes of beginning to answer these questions. We will begin by comparing and contrasting the cultural phenomena of language and music, both on historical and biological levels, followed by an exploration into the theory of linguistic relativity. Our paper will conclude with the application of this hypothesis to musicology, drawing evidence from various musical practices in traditional cultures. By tracing the organic development of folk music and culture, we will explore the relationship between music and language, and the potential for an entirely new way of approaching musical communication.

2. LANGUAGE AND MUSIC: WHAT IT MEANS TO BE HUMAN

Before any attempt can be made at comparing language and music, we must first understand these two characteristically human constructs. What is language? What is music? Neither question produces simple answers. The definitions of language and music are diverse, ranging from the very specific to the abstract. Both are highly complex sequences of discrete structures which unfold over time, which are then interpreted by the brain as a communicative whole (Williamson, 2009). Aniruddh Patel points out that both language and music consist of similar elements: rhythm, which he classifies as patterns of timing, accents, and grouping; melody; and syntax, or the principles which guide the construction of comprehensible sequences out of discrete elements. Furthermore, as Patel informs us, both have an affective goal (Patel, 2010).

In spite of these similarities, language and music are very different both in their presentation, as well as in their neurological pathways. Most significantly, language is a referential form of communication while music is largely a-referential, characterized by a "floating intentionality" (Cross, 2001) that engages individual responses and interpretations which vary from listener to listener.

On a neurological level, it has been found that the two hemispheres of the brain both process sound, but each selects a different variety of sound combinations. The right half of the brain, directed and largely responsible for our emotions, interprets the world in terms of spatial relationships and non-verbal communication. Here, concordant sounds are processed. The left half of the brain, however, which processes input sequentially and is associated with the development of language, processes primarily discordant sounds (Robertson, 2004). Although each governs very different components of interpretation and cognition, it is evident that we require both halves of our brain to

communicate most effectively. Without the emotional, musical right brain, a speaker cannot understand nuances which underlie vocabulary. Paul Robertson provides an example of such a case. A patient, who had had a large portion of his right hemisphere removed, was asked the question, "How do you feel?" The patient's response, literal in meaning and unmusical in tone, was: "With my hands." Alternatively, Robertson discusses an individual who, following a massive stroke which damaged his left hemisphere, found himself without the ability to speak, read, or write. In spite of the loss of his verbal self, this man was still able to communicate through music, composing and improvising at the piano (Robertson, 2004). Clearly, in spite of several differences in formation and function, language and music are connected and interrelated within the human communication system. While the loss of one faculty does not necessarily affect the other, effective self-expression often requires both.

Jean-Jacques Rousseau claimed that language was the first social institution,[2] without which none of the later developments of human society could ever have occurred. Without language, there would be no creation myths, no trade, no stories, no empires, no revolutions, no teaching or learning, no questions or answers. Whether spoken or signed, language is the primary mode of communication and interaction between individuals and societies. It is dynamic and reflexive, in a constant state of evolution, so long as a language has native speakers (Bonvillain, 2003). There are differing opinions on what a true definition of language is, but it is generally agreed upon that language must have meaning; productivity,[3] or the ability to remix and reassemble a finite number of discrete words to form endless new communication; and displacement, which is the ability to discuss things or abstract ideas that are not present (Grandin, 2005).

The origin of language is still being discovered, and remains the source of considerable consternation and debate in scholarly circles. Linguistics as a science blossomed in the 19th century, although the origin of languages was a taboo subject. The Linguistic Society of Paris, founded in 1866, forbade any discussion of the *origin* of language, a prohibition which continued for nearly a century (Mithen, 2006). Today, theories abound among linguists and anthropologists as to the origin and purposes of language. One postulation asserts that the use of tools triggered brain development in humans, which led to the necessary acquisition of language (Mithen, 2006).

Hauser, Chomsky, and Fitch discuss the evolution of language at some length, and they point out three primary issues which plague this debate: first, the "shared versus unique" distinction in the presence of communicative systems in non-human animals; second, whether language evolution was gradual or saltational; and, third, whether language evolved out of extant animal communication systems, or if aspects of language were exapted from a previous adaptive purpose, a perspective

[2] Jean-Jacques Rousseau, *Essay on the Origin of Languages which treats of Melody and Musical Imitation*,: 5.
[3] Hauser et al refers to this component as *recursivity*. Marc D. Hauser, Noam Chomsky, and W. Tecumseh Fitch, The Faculty of Language: What Is It, Who Has it, and How Did It Evolve? *Science*, *298*, 5593 (22 November 2002): 1569.

which the authors call the "continuity versus exaptation" issue (Hauser, Chomsky, & Fitch, 2002). Hauser et al. divide the concept of language into two categories: FLB (the faculty of language in its broadest sense), which includes a sensory-motor system and a conceptual-intentional system, as well as the mechanisms necessary to combine a finite set of linguistic components into an infinite number of utterances; and FLN, which includes only this final quality of recursivity, and is identified as a uniquely human component of language.[4]

Noam Chomsky, a leader in the field of linguistics, is a champion of the innatist perspective for first-language acquisition and the theory of the Universal Grammar. Children, he argues, do not simply learn a language by repeating linguistic elements to which they are exposed, since adult language is rife with false starts, incomplete sentences, grammatical flaws and errors. Chomsky suggests that all humans are born with an innate predilection for language acquisition, which manifested itself as a template which contains all the principles universal to human languages. This biological construct is called the Universal Grammar, and is directly coded into the human genetic sequence (Lightbown & Spada, 2006). The ease and natural tendency for human children to acquire language, especially when compared to non-human primates and other animals, suggests that language is a mechanism which evolved after humans diverged from a common ancestor some 6 million years ago (Hauser, Chomsky, & Fitch, 2002). Some scientists perceive language as the by-product of distinct, hybrid regions of the brain evolving, such as Broca's area; others feel that language is a more complex, but nevertheless analogous to the communication systems of other primates, whose brains include homologous regions to Broca's and Wernicke's areas (Geary, 2005).

These two regions, Broca's and Wernicke's areas, are both found on the left hemisphere of the brain. Broca's area was discovered in 1861 by Pierre Paul Broca during an autopsy of a patient named Monsieur Leborgne, nicknamed "Tan" after the only syllable with which he could respond to a question. Tan had lived without the ability to speak for 21 years. During the autopsy, Broca found that a neurosyphilitic lesion had destroyed a part of Tan's brain, now named after Broca himself. It is this region of the brain that is associated with speech (Karpf, 2006), and, along with its right homologue, is specialised to quickly and automatically parse syntax (Maess, Koelsch, Gunter, & Friederici, 2001). In 1873 Carl Wernicke, a German neuro-psychiatrist, made an analogous discovery with the brain of a man whose faculties for speech and hearing were unaffected by a stroke, but who was nearly incapable of *processing* and *understanding* anything said to him. Wernicke found a lesion on the

[4] This is a topic which is still hotly debated. Much research has been done in the communication systems of non-human animals, including a very interesting study analyzing the distress calls of Gunnison's prairie dogs conducted by Con Slobodchikoff. The result of this study what that prairie dog colonies have communication systems which consist of discrete elements including nouns, verbs, and adjectives. Temple Grandin discusses his research in her book *Animals in Translation*; for further reading into this study, see C. N. Slobodchikoff, "Cognition and Communication in Prairie Dogs," *The Cognitive Animal: Empirical and Theoretical Perspectives on Animal Cognition*, Marc Bekoff, Colin Allen, and Gordon M. Burghardt, Eds. (Cambridge, MA: MIT Press, 2002): 257-264.

brain near to the auditory centre of the brain, thus, leading him to conclude that this region of the brain was responsible for processing speech comprehension (Karpf, 2006).

Here, in the brain, the most concrete connections between language and music are present. Although the two are evidently not completely linked (as exhibited by the presence of musicality in an aphasic individual, or of language in a person with amusia), these two processes certainly share many neurological substrates and pathways. For instance, Maess et al. established that Broca's area processes musical syntax in addition to linguistic syntax, implying that the brain understands music as a relative of language (Maess, Koelsch, Gunter, & Friederici, 2001). The importance of this discovery is strengthened by the fact that the subjects studied were all "non-musicians," which is suggestive of an implicit musicality in human cognition (Jenstschke, Koelsch, Sallat, & Friederici, 2008). Additionally, children who struggle with linguistic syntax face similar challenges with understanding musical syntax.

What is music? This is a question which has proved over and over again to be incredibly difficult to satisfactorily answer. The discovery of traditional music, as well as exploratory approaches to art music throughout human culture have produced a wide variety of opinions as to what is, and what is not, music. An oft-cited example of this difficulty is 4'33" (1952) by John Cage – can this piece, a study in ambient sound and musical reticence, be considered music? Often music is broken down into its requisite components. Hroar Klempe cites four necessary characteristics of music: sensuality, distinct pitches combined with rhythmic structures, the subversion of clear meaning, and harmony (Klempe, (2009). Aniruddh Patel points out the presence of rhythm, melody, syntax, and affect as key elements of music, which are notable for having parallels in linguistic expression (Patel, 2010). Victoria Williamson describes music at its most fundamental level as a collection of sounds produced by the human voice or an instrument (Williamson, 2009). Bruno Nettl, one of the foremost figures in ethnomusicology, defines music as "human sound communication outside the scope of language" (Mithen, 2006). Finally, McDermott and Hauser identify music on three levels: as structured sounds produced by humans either directly or through instrumental proxy, the sounds produced are often made to convey emotions and enjoyment, and often (but not always) consist of a complex structure (McDermott & Hauser, 2005).

As evidenced by the above attempts to define and explain music, this is a challenging concept to pin down. For the purposes of this exploration, we will propose our own definition of music. First, it is a structured entity balancing some proportion of intentional sound and intentional silence.[5] The resulting sound is the product of a finite number of discrete elements that can be combined into a potentially infinite number of permutations, of which the composer uses a select number to satisfy the aesthetic goals of a piece. Furthermore, the produced sound uses both elements of rhythm, melody,

[5] The inclusion of intentional silence is of particular importance, as composed art music as well as folk music often depends largely on the balancing powers of negative space provided by rests or silence. In the case of John Cage's *4'33"*, the "composition" is entirely of negative space, and the projections of self which the audience then produces.

and harmony in proportions which vary from culture to culture[6]. The purpose of music is to communicate some concept or ideal for which spoken language is inadequate, even if this may be reduced to simply providing pleasure.

There are other questions to consider: at what point or points in human history did music begin to emerge; where does it come from, from an evolutionary standpoint; and what purpose does it serve? These questions have been receiving an increasing amount of attention over the past several years, and the proposed theories and hypotheses have been met with an unsurprising amount of debate. On one end of the continuum, Steven Pinker dismisses music as "auditory cheesecake," claiming that it arose by taking advantage of structural processes used in language production, but serving no other evolutionary purpose (Pinker, 1997). Such an opinion is supported by the observation that unlike other human functions and activities such as eating, sleeping, talking, and sex, music production yields no obvious benefits (McDermott & Hauser, 2005).

There is evidence both for and against Pinker's "music as cheesecake" theory. In many respects, music appears maladaptive to early *Homo sapiens*. Musical practice requires a large amount of energy, and would potentially attract predators or enemies while simply providing entertainment Fitch, 2006) – a generally useless development for a species which was still eking out an existence against all the odds in a harsh environment, battling starvation, the elements, and predators. While the shared mechanisms of musical ability and language support Pinker, there is evidence provided by current research that music does not rely exclusively on structures dedicated to language. These separate structures have been demonstrated by aphasic patients who have musical skills left intact, or conversely, in individuals with amusia who are able to communicate through spoken language, proving that language and music are at least partially independent (Fedorenko, Patel, Casasanto, Winawer, & Gibson, 2009).

Music has been suggested to be a biological adaptation which functions in a variety of arenas. It may be associated with courtship and sexual selection (McDermott & Hauser, 2005), or with social cohesion (Hodges, 1996) within cooperative groups such as religious networks, prehistoric tribes, or warriors.[7] Lullabies, which are extremely common (McDermott & Hauser, 2005), aid considerably in the mother-infant bond, and would play a large role in language acquisition for babies. Children attain linguistic faculties by interacting with this communicative system – however, not all cultures use the "motherese" speak so common in North American homes. Among the Kaluli and Inuit peoples, for example, adults do not converse with young children (Lightbown, & Spada, 2006). As a result, children would first be exposed to their mother tongue through lullabies, which would train the infant ear to

[6] Although melody and harmonic elements are most important in the Western music as a whole, McDermott and Hauser point out that these elements are of much less significance in other world musics. In their place, rhythm is the primary method of musical expression. (McDermott and Hauser, "The Origins of Music: Innateness, Uniqueness, and Evolution,": 32.)

[7] See also: Cross (2001), Huron (2001), Merker (2001).

the prosody of their language. As children in such cultures begin to babble and talk, they would begin to interact with other siblings and peers, only entering the social and linguistic realm of adults as they reached maturity.

A number of theories and hypotheses have been put forward regarding musical development in the human species, particularly with regard to its relationship to language. Charles Darwin postulated that, before the onset of either music or language in their modern incarnations, humans communicated via a system which exhibited characteristics of both. From this primitive system, he suggested, music and language emerged as separate entities.[8]

Steven Brown, a musicologist, made a similar proposal in 2000, naming this protolanguage "musilanguage" (Brown, 2001). According to Brown, musilanguage exhibited the shared features of language and music, including phrase units and formations, as well as functional purposes on both a phonological level and a meaningful one. Musilanguage, Brown suggests, evolved out of the vocalizations of primates which he names "referential emotive vocalization," or REV; these vocalizations were calls, not songs, which communicated emotive responses to environmental stimuli, and are exemplified by the alarm call system of the African vervet monkey (Brown, 2001).

Steven Mithen proposed another model for the development of language and music, which he called "Hmmmmm" communication, an acronym for a communication system that was: "Holistic, manipulative, multi-modal, musical, and mimetic in character" (Mithen, 2006). Again, this model proposes a sort of musical protolanguage from which capacities for both language and music evolved.[9]

Instrumental music, as an element of human culture, is estimated to be at least 36,000 years old, due to the discovery of ancient bone flutes; however, it is likely that instrumental music is much older than this – possibly 4,000 years older. The existence of contemporary instruments, primarily percussion instruments, which are made out of perishable materials, suggests that their primitive ancestors were similarly susceptive to the environment, easily destroyed by the elements or unable to withstand the ensuing millennia (Fitch, 2006). There is tantalizing speculation that music – instrumental music – is even older than this: an artifact supposed to be a Neanderthal flute which was radiocarbon dated to 43,100 ±700 years old was discovered in Slovenia in 1997. The presence of two clearly preserved holes led its discoverers to conclude that the artifact, made out of a bear's bone, was a flute. The instrument was damaged by a carnivore's chewing at some point, however, which may have been the cause of three other holes on the object; this damage has resulted in considerable scepticism on the function of the object. In the case that this item was used for musical purposes, however, it would suggest that music was utilized even before humans or Neanderthals had fully developed spoken language (Fitch, 2006), as well as evolutionary divergence between these two

[8] Charles Darwin, *The descent of man and selection in relation to sex.* (London, UK: John Murray). Cited in W. Tecumseh Fitch, "The biology and evolution of music: A comparative perspective," 198

[9] See also: Livingstone (1973), Marler (2000), Merker (2001), Merker (2002), Richman (1993).

hominid species, supporting the notion that music and language evolved out of a proto-communicative system that was founded upon the homologous elements which form the backbone of these two unique modes of expression.

Peter Fletcher sums up the relationship between these two essentially human characteristics by stating: "Language is seen as a cognitive mode, its capacity deep in the mind, while music is not essentially cognitive, and extends beyond mind, beyond the body" (Fletcher, 2001). Although the origins of language and music remain largely theoretical at this juncture, it is clear that there is a connection between the two. The likelihood that both of these faculties are functionally related, and may have developed out of a common ancestor is strongly supported both by characteristics of the two systems and shared pathways in the brain. A number of studies suggest that, although language and music are produced independently of one another, the syntactic structures of both are processed together (Fedorenko, et al., 2009). The correlation between the two opens the possibility that language and music may be of similar value in understanding the worldview and experience of a culture.

3. LINGUISTIC RELATIVITY: LANGUAGE AND CULTURE AFFECT ONE ANOTHER

In the middle of the 20th century, a number of linguists observed a unique relationship between language and culture. Linguistic anthropology in American scholarship was part of a "four fields" approach, where anthropology as a whole was approached holistically – as a discipline, it incorporated a study of the physical (or biological), linguistic (or philological), cultural, and archaeological records. The study of language itself was championed by Franz Boas (1858-1942), who is largely credited with founding the American field of anthropology (Duranti, 1997). Boas was among the first to recognise the unique role language played in indigenous cultures. As an educator, he trained his students to develop grammars and dictionaries of traditional languages based on culturally significant texts (Mithun, 2004).

Having studied the Eskimos and Kwakiutl Indians, two Native American tribes located on the Northwest Coast, Boas came to conclude that it was not only of theoretical interest, but practical and necessary to study a culture's language. Without an understanding of the linguistic expression of a people, one would have an incomplete knowledge of the culture in which the language was spoken (Duranti, 1997). Different languages, he found, would classify and explain the world and human experience in culturally unique ways, a discovery that has been used to bolster the argument for cultural relativism, which states that cultures ought to be understood on its own terms, as opposed to being related to foreign cultures (Duranti, 1997). These contributions would be perpetuated by one of Boas's students, Edward Sapir (1884-1939), whose further research would have profound ramifications upon the field of linguistic anthropology.

Sapir and his student, Benjamin Lee Whorf (1897-1941), were largely responsible for the early development of linguistic anthropology in the early 20th century, focusing much of their study on the languages and cultures of Native American tribes (Bonvillain, 2003). Their research led to the formation of what is known today as the linguistic relativity principle.[10] Sapir claimed that human experience was mediated through both language and culture: only items, events, and forces of cultural significance would be labelled. Comparatively, once labelled, the identified element would become culturally significant (Bonvillain, 2003). As such, language and culture were mutually reflective and mutually generative, existing in a perpetual state of give-and-take between the two, each mediated by the force of the other.

Language's cultural specificity is illustrated by Thomas Widlok, who pointed out the erroneous approach to the languages of hunter-gatherer tribes in the African bush. The languages of the various "Bushmen" were reduced into one lexicon, an act which Widlok claims "implicitly collapsed the landscape and its people" (Widlok, 2008). George Orwell also noted the incredible power words have over the thoughts of the speaker: in *Nineteen Eighty-Four*, Newspeak not only took away the linguistic tools to dissent, but also the cognitive seeds of individuality.

Language and culture are in a constant state of ebb-and-flow. Culture, both the human manifestation, as well as the natural environment in which a language is spoken, affects language. Language use, in turn, clues in the human mind to important elements, influencing culture, and so on. It is well-known that the human brain develops a sort of filter on stimuli – we can "tune out" sounds, smells, or visuals which appear to be unimportant, freeing up our consciousness to focus on relevant stimuli. Similarly, the linguistic component to our interaction with the world around us is selective for elements of importance. The increased importance of various facets of a culture may be expressed in a variety of ways, often with the most important factor being described with a greater variety of nuanced terms.

What happens when music replaces language in this model? How do cultural norms and values gravitate toward musical expression, and how is music moulded and modelled after the aesthetics and beliefs of a people? Do scales and cadences vary from one culture to the next, in accordance to inherent values? How do the interactions between musician and instrument, the relationship between music-makers, or restrictions on who may or may not participate in musical expression reflect a society? The relationship between music and psyche of the people who produce it would most likely be clearest in traditional culture, and less so in the art music of society. This includes the art music of the Western Classical tradition, as well as the art music of what are commonly referred to as "folk" cultures. Art music, music which is produced for aesthetic pleasure and entertainment, is present in a variety of cultures across the globe. As a genre, it has a tendency to be much more self-aware and

[10] Also referred to as the Sapir-Whorf hypothesis, although the accuracy of this term has been contested.

refined than music intended for communication. For this reason, we will focus our discussion in this paper away from art music.

4. SINGING OUR WAY TO BECOMING HUMAN: HOW MUSIC AND CULTURE EXPRESS ONE ANOTHER

Musical practice, especially in traditional cultures, has the power to encapsulate the values, beliefs, and social structures which characterise a people. Music gives definition to the boundaries of thought and values to the culture which has produced it. These cultures might be national or ethnic, at other times based on the shared experience of gender, work, or any other common identity shared by people. The Hungarian composer and scholar Béla Bartók (1881-1945) firmly believed that musical expression was related to the location in which it was produced (Ramnarine, 2003). Even the most cursory of glimpses into musical traditions from around the world reveals that the performance and function of music in everyday life is rich with meaning, both implicit and explicit.

Often, music mimics the patterns and rhythms of the local language. In his lecture "The Music of Language and the Language of Music," Aniruddh Patel spoke of the relative lengths of vowels in spoken French and English, and their parallels in French and English music. English language and music was characterized by greater contrast in adjacent vowels or note values, while French was much more evenly spaced out.11 The implications between music and language – and linguistic relativity – reach far beyond this.

Obviously, one of the most immediately observable links in the relationship between the Sapir-Whorf hypothesis and musical relativity would be in the analysis of song texts, as the topical material of songs is often indicative of the value of various themes in a culture's life. While some concepts are more universal than others, as with love songs or laments, others are more culture-specific. Musical relativity, however, extends far beyond song. Musical textures and preferred tonalities, for example, are unique to various cultures and regions. The pentatonic scale and three-part polyphonic singing are ancient musical approaches, and are widely used in the folk music of southern Albanians, Epirote Greeks, and western Macedonians, among others (Rice, 2000).

Performance practice also indicates cultural values and experiences. Alan Lomax hypothesized that specific song structures were indicative of social functions within a society. According to him, solo song was expected to be found in centralized societies, and cultures with a simpler political structure would have an abundance of leaderless performances; and cohesive societies would have unified choirs, while the music in cultures which emphasized the individual would have diffuse choirs (Lomax, 1968). This particular perspective has been criticized for being overly simplistic, reducing the complex

[11] These findings were later replicated with a much larger sampling of French and English music in 2003 by David Huron and Joy Ollen.

nature of a society to a minimal rubric. Nevertheless, Lomax's suggestions are indicative of the potential relationship between ensemble structures and various social norms.

Although this field is yet young, there are already tantalizing glimmers of research which indicates that music is culturally relative – that the ways in which a people choose to or are able to express themselves through song, dance, and instrumental music are reflective of the environment in which they were created. Similarly, the notion that musical expression can in turn affect its creators has begun to receive more attention. Issues of gender roles, age, social structure and stratification, geography, lifestyles and professions, and natural resources are all expressed through the medium of music.

5. AN ENCROACHING SILENCE: CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

The purpose of our paper has been to lay the foundations for further research into the unique relationship between music and culture. Through the course of this paper, we have endeavoured to illustrate not only the connection between music and language, but the joint connection of these two universal social constructs and the human cultures which produced them. We have seen how music, like language, has the ability to reflect cultural norms and values, which brings one to the inevitable question: *so what*?

What does this all mean? Is Steven Pinker right – is music just "auditory cheesecake" without which the human species would be virtually unchanged? As is often the case, the answer is both yes and no. Yes, music is a construct which is not essential to the survival of the human species – we would be able to gather and hunt for food, find shelter, and procreate without it, much like other species inhabiting out planet. However, these functions would likely be able to be carried out without the benefit of language, and it is likely that the earliest ancestors of humans did exactly that. As human *beings*, though, we would be radically different without music.

Language and music are essentially human, and research is beginning to suggest that one, if not both, of these functions has a biological precedent. The two, however, manifest themselves in culturally distinct ways, with prosodies and lexicons, grammars and syntaxes, which vary from one group of people to the next.

We take pride in our ability to know things – we are, after all, *Homo sapiens*, the "knowing man". An understanding of musicality, while essential to many of the nuances to spoken language which make human cultures possible, allows us to reach into a deeper, more emotional realm of ourselves. Musical expression is beyond the explicit descriptions of self, and is grounded in a subconscious understanding. Music, much like language, is one of those essential components of our humanity.

There is a need to understand who we are as individuals, as members of a culture, and as members of this diverse and complex species. And yet, tragically, the rich and multifarious tradition of music which permeates human cultures throughout the world is gravely endangered. With the loss of indigenous languages and traditional musical styles, the cultures associated with them are dying out as well, choked out of existence by an encroaching push for homogeneity.

For social, political, religious, or economic reasons, popular and commercial music is supplanting the songs which have accompanied people of the world since time immemorial. Children are learning languages of trade and mainstream society, vestiges of the havoc wreaked by European colonial powers in previous centuries. As a result, children are not only unable to communicate with older generations of their family, they are unable to understand the unique mindset associated with traditional languages. Ancient knowledge and wisdom are ceasing to be passed along, elegant song traditions and musical lore are fading away, and all that once was is being slowly forgotten.

Roughly every two weeks, one lonely light of consciousness, the last speaker of an indigenous language, is extinguished. With that voice, an entire way of life vanishes. Over the course of just a few decades, the number of languages spoken in our world has dropped precipitously – according to some figures, from 6,000 to less than 3,000 (Davis, 2003). Once a language is no longer spoken by native speakers it dies, and with it an entire culture, worldview, and way of life silently passes out of existence. If the implied connections between language and music are considered, then it is safe to conclude that the same fate threatens endangered music. The truth of disappearing music cannot be denied, whether it is part of a larger ethnic culture, or part of a smaller subculture, such as those associated with occupations.

Ted Gioia writes of the Gan people in Burkina Faso – in 1996, a sole surviving member of these people was found to perform upon the shepherd's side-blown bamboo flute. This performance was among the last of its kind, and was luckily recorded – when he died the next year, this tradition died with him, for neither the instrument nor the lifestyle it accompanied were passed on to later generations (Gioia, 2006). This is increasingly the case – only the older generations know their traditional songs, dances, instruments, and stories. The loss of these marks the loss of a way of life and a perspective with which to comprehend, interact with, and contribute to the world.

Understanding the relationship between music and culture is more crucial now than ever before – researchers can come to understand where a people had been, where they are now, and what the future may hold for them. Not only does this provide insight into an individual culture, this knowledge provides clues as to our own humanity, as we are all connected through evolution to a time when early man was scraping out a meagre existence in a world which only remotely resembles that in which we live today, before we had spread out of Africa to become the dominant animal on our tiny planet.

It is a matter of course that civilizations and cultures rise and fall, and that a culture which does not adapt to the influence of the changing world will very likely perish. It is unreasonable to expect that all human cultures remain and do not change through time. In an age where we are seeking out our identity, however, it is useful to understand the social and cultural foundations for the worldview of our global neighbours. Furthermore, in an attempt to better comprehend the values, perspectives, and origins of our own cultures, it is worthwhile to know our own histories. The influence of various cultures on present-day societies is present throughout the globe.

We must strive to understand the many manifestations of human culture and, perhaps more importantly, take steps to preserve them for future generations to experience. Certainly, to forget these songs and traditions is to lose a considerable amount of our humanness. When we begin to explore what it truly means to be a human being, in a world where intelligence can be created artificially and where craft is increasingly mechanized, it is all the more imperative that we hold on to a knowledge of where we once were. It is possible that what distinguishes us from other living things is not necessarily encoded within our DNA, and it is not what we have accomplished to date, but rather how we reached this point and where we intend to go. Studying the linguistic and musical traditions of contemporaneous and historical cultures sheds light upon the former part of this question; what we do with this knowledge determines the latter.

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