

# ISSUES AND PROSPECTS IN STUDYING COGNITIVE CULTURAL DIVERSITY

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## ABSTRACT

Should cognitive musicologists be worried about the imminent disappearance of most of the world's musical cultures? In this discussion paper, it is suggested that the goal of understanding the musical mind necessarily presupposes an exploration of possible cross-cultural differences in mental operation. It is suggested that ethnomusicologists and cognitive musicologists need to set aside their differences in order to take advantage of a unique era in human history.

Those who study music should be concerned about the loss of cultural diversity for the same reason that biologists worry about the loss of biodiversity: we don't yet know what the loss will mean, but we do know that the loss will be irreversible.

## 1. CULTURAL DIVERSITY

For nearly all of human history, people have lived in groups separated by physical distances that limited the amount of between-group contact. Over a long period of time, such physical isolation led to small genetic differences -- primarily differences arising from genetic drift (Cavalli-Sforza & Cavalli-Sforza, 1995). But more importantly, such isolation contributed significantly to linguistic and cultural divergence that led to a plethora of cultural expressions including a wealth of musical expressions (Titon, 1996). With the advent of rapid long-distance travel and relatively inexpensive communications technology, the isolating effects of distance are being erased (Fitzhugh, 1985; Nettl, 1985).

In the future, cultural differences are less likely to be an artifact of geographical barriers -- the barriers of mountains, bodies of water, and large distances. Cultural differences are more likely to be sustained because of patterns of trade, fashion, linguistic barriers, governmental policies, economic impediments, social inertia, and the purposeful efforts of groups of people to retain a distinct identity.

We are living in a period of human history that is unprecedented. A century ago, most people were largely unaware or unacquainted with the music of other cultures. A century from now, it is not inconceivable that certain musical works or styles will be familiar to nearly every person on the planet. In the long span of human history, we are living in a brief period of transition between an epoch of cultural pluralism and an epoch in which certain cultural experiences will be shared worldwide.

For over a century, linguists have observed the unrelenting disappearance of human languages. There now exist sound

recordings of human speakers whose utterances are understood by no living person. In many ways, language provides a more effective barrier to enculturation than music. Music may not be the universal language, but its flow around the world is less impeded than the products of language. Yet it is possible that comprehension of a musical utterance may involve a degree of mental processing that is no less sophisticated than the comprehension of a spoken utterance.

In the case of music, Western popular and art forms have been propelled around the world. Some major cultures -- notably those of India, China and Indonesia -- have resisted the encroachment of Western music largely because of the size of their populations. Other cultures, such as those that exist in the Amazonian and Papuan regions, have resisted Western musical expansion because of the combination of physical isolation and the cruel beneficence of poverty.

## 2. COGNITIVE CULTURES

Should cognitive musicologists be worried about the immanent disappearance of most of the world's musical cultures?

Experimental research suggests that there are different ways of apprehending or experiencing the same musical sounds. Some of these differences pertain to age or stage of development, level of musical training, sex, or personality (Hargreaves, 1986). Other differences appear to originate in cultural background (Castellano, Bharucha & Krumhansl, 1984; Kessler, Hansen & Shepard, 1984).

Over the past century, ethnomusicologists have endeavored to document the rich diversity of cultural expressions. However, little research has been carried out to determine whether the variety of cultural expression is matched by an equivalent variety of cognitive experience (Brinner, 1995). How do non-Westerners experience the music of their own and other cultures?

## 3. RESEARCH VACUUM

While there are notable exceptions, music psychologists historically have tended to assume that people are broadly similar in how they experience sounds. On the other hand, ethnomusicologists have tended to assume that people are broadly different in how they experience sounds, and that the principle source for these differences is to be found in differences of cultural milieu. While both of these views are plausible hypotheses, neither of these views has much supporting research.

Consider, for example, the venerable issue of consonance and dissonance. In the field of psychoacoustics, experimental research has linked the phenomenon of sensory dissonance to critical-band-related interference along the basilar membrane

(Greenwood, 1961, 1991; Plomp & Levelt, 1965; Kameoka & Kuriyagawa, 1969a/b). By contrast, most music scholars believe that consonance "has something to do with simple integer frequency ratios, but is mostly a product of learning." Since psychoacousticians have linked sensory dissonance to a physiological account, most hearing scientists would argue that there is little to be gained by testing the theory by soliciting the experimental participation of people from other cultures. Since the physiology of the auditory system differs little between cultures, people should experience sensory dissonance in a very similar manner.

Most music scholars find this view implausible. Given the diversity of tuning systems and the variety of organizational structures evident in the world's music (not to mention the extreme range of dissonance treatments evident in different Western styles), the phenomenon must be related to socio-musical norms (Cazden, 1945, 1980; Ellis, 1885).

The entrenched views in both scholarly communities have impeded efforts to test these notions experimentally. In the case of sensory dissonance, the theories are based entirely on experiments carried out with only Dutch, American and modern Japanese listeners. In the case of socio-cultural learning, there are no experimental studies related to consonance or dissonance (Tenney, 1988).

Despite the absence of any pertinent experimental research, speculative and didactic claims about consonance and dissonance continue unabated.

The situation in music may be contrasted with efforts in other disciplines. Consider, for example, the phenomenon of facial expressions. For centuries, scholars argued whether various facial expressions (e.g., smile, frown, sneer, disgust, surprise, etc.) were culturally normative or were cross-cultural universals. Charles Darwin attempted to address this problem by distributing a survey to Western missionaries around the world (Darwin, 1872). However, it was the experimental work of Paul Ekman and his colleagues that has most illuminated the question (see Ekman & Friesen, 1998).

Ekman understood the importance of finding a group of people whose contact with Western culture had been highly restricted -- people who had rarely interacted with Westerners and had never seen Western films. If Ekman had studied a less isolated people, any evidence consistent with a purported "universal" might be attributable to some form of cultural contamination. Using a clever experimental protocol that limited the need for language translation, Ekman showed that a handful of facial expressions appear to be universal, but that these expressions are susceptible to modification through culture-bound "display rules."

In the case of music, there are no comparable cross-cultural experiments that attempt to establish whether certain experiences are shared in common. Regrettably, we have very little idea of whether non-Westerners experience sound in a similar fashion to Westerners, or whether the sound experiences are dramatically different. While a number of pioneering efforts have been made, the results remain modest in comparison to the volume of

outstanding questions (Arom, 1997; Baily, 1992; Brinner, 1995, 1999; Kippen, 1987; Moiala, 1995; Tolbert, 1992).

As more non-Western cultures come into contact with a dominant exogenous musical culture, it will become increasingly difficult to test purported cross-cultural similarities and differences. If we wish to investigate these matters, time is now of the essence.

While cognitive musicologists are typically inexperienced with research in non-Western cultures, ethnomusicologists are typically inexperienced in experimental methodology. If we wish to study the range of potential musical experience, it follows that progress will require a commitment to collaboration between ethnomusicologists and cognitive musicologists that has hitherto not been evident.

#### 4. MUSIC vs. MUSICALITY

In the past few decades, research in music cognition has documented a number of subtle differences in mental processing that are not easy to detect without special observational techniques. Recent research has reinforced and sharpened the psychological distinction between the objective organization of music and the subjective correlates of musical sounds. These differences are not limited to socio-cultural knowledge or to awareness of allusion, metaphor, quotation, parody or social function. There are auditory patterns that are objectively present in musical sounds that are not apprehended by culturally-knowledgeable listeners, and conversely there are common patterns of listening that are only indirectly correlated with the musical materials (Aarden, 2003; von Hippel, 2002; von Hippel & Huron, 2000). This means that studying the artifacts of music (such as sound recordings) cannot reliably allow researchers to infer how culturally-knowledgeable listeners mentally represent and process these artifacts.

Independently, ethnomusicologists have recognized that there are forms of expertise that cannot be inferred from conversations with an informant. As in the case of language fluency, we have musical propensities and skills that are not accessible to introspection and of which we are unable to speak.

The recent cognitive research has sobering repercussions for ethnomusicology since it suggests that important aspects of musical experience may not be apparent without careful experimental work. Acquiring facility with the language, knowledge of traditional mythology, poetry, and history, awareness of the social, political and religious contexts, expertise in performing the music on authentic instruments, and familiarity with traditional repertoire, may not, in themselves, allow a person to experience the succession of sounded events according to a psychological pattern that resembles a traditional culturally-knowledgeable listener.

Suppose that we were to visit the Indonesian island of Bali one hundred years hence. We are likely to find Balinese who are fully familiar with the music of the West. But we might be relieved to find young Balinese playing both traditional gamelan music as well as newer gamelan compositions. Our musicians might be highly skilled, conversant with traditional repertory, and knowledgeable

about the history and significance of various works. But what if we discovered that our Balinese performers were mentally indistinguishable from a caucasian student from Ohio who had taken a couple of semesters of Balinese gamelan?

Surely if "culture" has any meaning, it is a way of thinking -- a way of apprehending and interpreting the world. Like the portrayal of different cultures to be found at Disneyland, it is possible to convey the superficial trappings of a culture without the existence of the deep cognitive world that may best define cultural difference.

In short, there is a danger of preserving "the music," while failing to preserve the conditions in which the music might be experienced in a culturally congruent fashion. A century from now we may have assembled wonderful archives of cultural recordings and descriptive interpretations, but we will have lost the minds to experience them and even the knowledge that different minds once existed.

No one can prevent cultures from merging, developing or changing. Nor should we attempt to prevent such changes. However, we are in danger of never knowing just how different musical minds can be.

## 5. CALL FOR ACTION

Even if we are helpless to preserve other musical cultures, we have the opportunity to learn from them. They provide precious opportunities to understand some of the ways that musical minds *might* be. Anyone who cares about music's creative future should be aware of the potential importance of non-Western ways of experiencing music.

Of course it is possible that the lessons to be learned from other musical cultures will ultimately prove to be trivial or inconsequential. It may be that all of the important lessons regarding music can be found in Western music. But who would be so presumptuous as to assume this to be the case before we investigate the matter thoroughly? We should be concerned about the loss of cultural diversity for the same reason that biologists worry about the loss of biodiversity: we don't yet know what the loss will mean, but we do know that the loss will be irreversible.

It is important to note that I am not proposing that we essentialize cognition or culture. The goal is not necessarily to "preserve" culture or to dictate how people should think. The principal concerns relate to the possibility of self-deception and the potential failure to recognize the locus of cultural difference.

Ethnomusicologists and cognitive musicologists need each other. Whatever fears ethnomusicologists have shown in the past to quantitative experimental methods must be addressed and allayed. Any lack of cultural sensitivity or "lurking universalism" among cognitive musicologists needs to be confronted and discussed.

It is possible that future musicologists will condemn and curse our generation of scholars for failing to take advantage of the opportunities available to us. This is the one unique moment in history where we still have isolated cultural groups that have not

yet been exposed to Western music. And at the same time, we have the technical capabilities and expertise to carry out experimental studies in remote locations in the world.

Ethnomusicologists need to expand their skills beyond anthropological description and recognize how quantitative methods can help one gain a deeper understanding of how minds differ. Cognitive musicologists need to recognize that human difference is essential for understanding human nature. The life-blood of empirical discovery is variability. If a data set exhibits no variance, then there is nothing to discover. Cognitive musicology needs an expanded subject pool that goes beyond the convenience samples of Western undergraduate students. Finally, granting agencies need to recognize the urgency of such projects and provide the resources that will allow collaborative research programs to blossom.

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