

## ESSAY



## Lost in music

Music provides unique opportunities for understanding both brain and culture. But globalization means that time is running out, warns **David Huron**, for the quest to encounter the range of possible musical minds.

**N**ever has so much music been so easily available. Go online, and you can download millions of recordings, from Spanish flamenco to Inuit throat singing. As a consequence, people are aware of the diversity of 'world musics' as never before.

But this rich cacophony is the soundtrack to a collapse in the diversity of musical minds. A Nigerian group might sing in Yoruba, but the harmonies are thoroughly Western. Native American Navajo singers make valiant efforts to preserve their traditions, but to the trained musicologist, their singing bears the unmistakable imprint of Western scales. The casual listener hears a wealth of variety; the musicologist detects a rapidly spreading monoculture — albeit expressed in many forms.

Music scholars have long been aware of the homogenizing effects of globalization<sup>1</sup>. Of course, musical cultures have always hybridized. The Silk Road, which connected Asia with the Mediterranean for nearly 2,000 years, had marked impacts on the music of Persia and Mesopotamia. The Atlantic slave trade brought people from West and Central Africa to the Caribbean and the Americas for 300 years, and the vibrant musical consequences of this human tragedy are all around us.

Today, one musical culture, that of the West, is influencing all others. What do we risk losing? Well, suppose that we find a musical behaviour present in all the world's cultures. This could reveal some universal in human behaviour. But if all the world's musics are influenced by a single dominant culture, universals become uninterpretable. A behaviour might be an innate cognitive disposition, or just an artefact of westernization. We won't be able to work out, for example, whether people

in different cultures perceive dissonance — an unpleasant combination of notes — in a similar way, or whether similar responses arise from exposure to Western music.

As the diversity of musical minds disappears, researchers will increasingly turn to Plan B: mining the recorded archives, assembled over the past century by the heroic efforts of ethnomusicologists. Fortunately, much of this was recorded before westernization took its toll. Unfortunately, Plan B looks less tenable than previously thought. The situation is alarming to those studying the cognitive neuroscience of music.

### Spandrel or foundation?

Music provides unique opportunities for understanding both brain and culture. Scientifically, we know relatively little about the peculiar human obsession with music. Perhaps music is a spandrel — an artefact of the developmental foundations of language. Or perhaps music has a unique phylogenetic origin<sup>2</sup>. We don't know. Emotionally, music and language seem to share a single code: a pitch contour that sounds sad when spoken will also sound sad played on an instrument<sup>3</sup>. Yet other research suggests that the neural mechanisms involved in rhythm are unrelated to language<sup>4</sup>.

There are innumerable pitfalls to understanding music and musical experience. Consider a simple aspect of melodic organization. Like the movements of the stock market, the up-and-down meandering of melodies has been the object of sustained statistical study<sup>5</sup>.

In many cultures, including Western, melodic pitches are normally distributed, and like all values drawn from such distributions, successive values regress towards the mean. When you encounter a tall person on the street, you might successfully predict that the next person you encounter will be shorter. But the presence of a tall person did not cause the next person to be shorter. The operative principle is simply that most people are of average height.

Something similar happens in melodies. But Western-enculturated listeners, anticipating whether the next pitch will be higher or lower, do not appreciate this. Instead, they expect large changes of pitch in a melody to be followed by a change of direction (this is called post-skip reversal). Listeners do not expect regression-to-the-mean even though this is the underlying principle<sup>6</sup>.

This, and similar research with Western listeners has taught us an important lesson: the objective organization of sounds is only loosely related to how minds interpret those sounds. A piece of music may exhibit features A, B and C, but only careful experimentation will show that listeners interpret A as

X, hear B imperfectly as B2, and are completely oblivious of feature C. Western melodies, for example, have an objective tendency to rise and then fall in pitch. Although enculturated listeners expect the ends of melodies to descend, they are curiously insensitive to the initial ascent. For centuries, Western music scholars wrongly assumed that common objective patterns in the scores were directly apprehended by listeners. If thoughtful West-

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**D. PARKINS** erners could be so wrong about interpreting their own music, imagine the capacity for self-deception regarding the music of another culture. When we observe an objective pattern in the music of some culture, we cannot assume that the pattern has any significance for culturally knowledgeable listeners.

Like linguists trying to make sense of sound recordings from an extinct language, music psychologists have realized that the archives of ethnomusicological field recordings will tell us little about the minds behind those musical cultures. One cannot do experimental studies with pre-existing data, and so causality cannot be inferred. Correlational studies are no substitute for true experimental manipulation.

### Difference engine

Variance is the lifeblood of empirical research. Without variability, data tell us little. In the case of musical behaviours, such variability has been found between the sexes, according to age and with respect to musical training. But these experiments have been largely limited to the lab rat of psychology — Western undergraduate students. Music psychologists have belatedly realized the importance of carrying out experiments with rapidly disappearing non-Western cultures. We don't yet know whether cultural differences dwarf the differences we see within Western culture.

When Paul Ekman did his classic studies of human facial expressions<sup>7</sup>, he rightly sought out people who had limited contact with Western people, movies and even photographs. Working with isolated cultures was essential, otherwise any behavioural similarities could be discounted as artefacts of cultural contamination. Comparable cross-cultural

experiments in sound are rare. In fact, few of the most basic musical concepts proposed by scholars have been tested in non-Western cultures.

Last year I joined an expedition of biologists to the remote Javari region of the Amazon. The biologists were censusing the wildlife. I was interested in the people. We encountered subsistence hunter–farmers with transistor radios. Even in the western Amazon, people listen to Funk Carioca and Christina Aguilera.

Linguists know how fast languages disappear. Musical cultures may be an order of magnitude more fragile. It will be many centuries before the whole world speaks Mandarin. Meanwhile Western music has swept the globe faster than aspirin. Robust musical cultures remain in China, India, Indonesia and the Arab world, but even in these regions, most people are thoroughly acquainted with Western music through film and television. Less robust musical cultures are disappearing rapidly or are showing deep infiltration by Western musical foundations. Many have already disappeared. There remain only a few isolated pockets, such as the highlands of Papua New Guinea and Irian Jaya.

Regrettably, most cognitive scientists are ill-equipped to do remote field work, and few ethnomusicologists know how to do an experiment. This situation must change rapidly if we are to have much hope of glimpsing the range of possible musical minds. We have perhaps just a decade or so before everyone on

the planet has been brought up with Western music or its derivatives.

Of course, we shouldn't underestimate future researchers' methodological cleverness in separating hybrid cultural experiences into their prior constituents. And it may be that all of the important lessons to learn about music can be found in Western music. But it would be rash to rely on these hopes.

In future centuries, music scholars may well curse our generation. We have the technical means to study different musical cultures and we still have a few isolated cultures to study. In the long span of music research, we live at a unique but fleeting moment. ■

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