



An Expedition in Search of the Adaptive Function of Music

A Review of

Music, Passion, and Cognitive Function

by Leonid Perlovsky

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Reviewed by

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Stephen J. Gould once criticized sociobiologists for falling into the trap of “just-so stories,” a term taken from Rudyard Kipling’s children’s book that provided fanciful backstories for the origins of things. Gould argued that, with evolution, it is too easy to fall into such *ad hoc* fallacies, and hypotheses are far too rarely able to be tested. (Gould, 1977; Kipling, 1902/2010) In *Music, Passion, and Cognitive Function*, Leonid Perlovsky implicitly lodges the same complaint at researchers studying the adaptive role of music. The book jacket argues that “this theory is unique in making experimentally verifiable predictions,” and the accompanying blurbs follow suit. There are clearly many questions about music that need to be tested. Is music a byproduct of mating calls? Did it originate to facilitate group cohesion? Or is it, as Stephen Pinker has famously asserted, simply “auditory cheesecake” (Pinker, 1997)?

There are quite a few theories on the adaptive purpose of the arts, already, which Perlovsky might argue would fall into the category of untestable. Dissanayake (2008) reviews many of these theories, categorizing them into five groups. There are the theories that argue that the adaptive function of music is found in its ability to serve as propaganda, being used to manipulate and deceive others for the greater good. Sugiyama (1996), for example, argued that storytelling arose as a way to politically manipulate others in a group, which would, in turn, enhance the fitness of the group as a whole. There are also theories about how the arts are used for sexual display to demonstrate fitness for procreation. Aside from Darwin’s (1871) hypotheses on the complex songs of male birds, there has been a great deal of work on the role of “costly signals”; elaborate songs convey a fitness that weaker animals would not be able to convey, so increased ornamentation would be a signal of increased vitality (see Miller, 2001; Zahavi and Zahavi, 1997). Thirdly, there are the theories that discuss how the arts serve to facilitate social cohesion. For example, Coe (2003) has conducted extensive fieldwork, and has proposed an “ancestress hypothesis,” in which the arts transmit traditions within groups, encouraging cooperation amongst those known to be descended from a common ancestor. The final two groups of theories—improving cognition and stress reduction—are perhaps most closely aligned with Perlovsky’s theory. The notion

that the arts serve an adaptive purpose because they contribute to problem-solving abilities and decision making, and that the arts allow us to cope with uncertainty, are central to Perlovsky's hypothesis.

The author's theory rests upon the notion that language and cognition follow a similar, yet distinct, hierarchy: sensory signals ground the perception of objects or words, which in turn facilitate an understanding of situations and phrases, which generate abstract ideas, phrases, and thoughts (p. 27). According to the author, language is our "main tool of differentiation," allowing us to distinguish reality from representation (p.28). Humans require synthesis, says Perlovsky, which is where music comes in. Language leads to an increasingly fast-paced accumulation of knowledge, which in turn leads to a general sense of contradiction with what is previously known. Music, originally in the form of an emotional spoken—and later sung—voice, allows for the necessary suspension of disbelief, which therefore facilitates consciousness at the level of abstract reasoning beyond linguistic strictures. It is a succinctly Hegelian theory (although never explicitly so—the author only cites Hegel once, regarding a matter other than his dialectics), and one that provides a satisfying explanation to the casual reader.

In laying out a theory with such explanatory power, one should be expected to meticulously detail the previous literature, discussing in depth why previous theories should be discounted. Surprisingly, Perlovsky dismisses many of the theories rather offhandedly. For example, when discussing Dissanayake's theory that music elicits strong emotional responses because it activates the same regions of the brain involved with emotional satisfaction, such as sex and hunger, he writes that "I am not convinced by this argument: hunger and sex are common among all higher animals, but music is unique to human [sic]" (p. 13). The argument, as far as the reader should be concerned, ends there. In fact, this is an extremely complicated question that involves an entire discipline of research focusing on cross-species studies of music. Fitch (2006) has discussed how non-human primates engage in music-making behavior in the form of drumming; parrots entrain to human-produced beats (Patel, Iversen, Bregman, & Schulz, 2009); McDermott and Hauser (2007) demonstrated that monkeys can discriminate between fast and slow tempi; and Jarvis (2009) argues that birds can engage in complex vocal learning very similar to humans. Perlovsky leaves the majority of this literature uncited. There is an entire field focusing on cross-species studies of music, and such studies can not only tell us a great deal about music, but can also be a useful tool in understanding our own evolution. These studies constitute *the* most testable form of evolutionary hypotheses. Perlovsky obviously means organized, structured music in the Western Art Music sense, which seems limiting, to say the least.

While Perlovsky argues that his is an experimentally testable theory, the chapters that follow require more development and connection to the broader literature. He begins by discussing how music relieves cognitive dissonance, demonstrating that students taking music lessons excel in their studies in non-music related activities, perhaps facilitating "consciousness." There has been a great deal of research, however, on how such studies need to take other factors into account, such as socioeconomic status, the educational background of the parents, etc. (see Schellenberg, 2006; Schellenberg, Corrigan, Dys, and Malti, 2015). Perlovsky ignores this literature, instead favoring the results that support his theory.

A second test of the theory focuses on beauty and meaning by examining music and frisson (which Perlovsky refers to as “aesthetic chills”). The abstract states nothing less than in this chapter “Kantian aesthetics is made simple. Courses on aesthetics will have to change their contents” (p. 57). There is a great deal of research on music-induced frisson predating this chapter: For example, Panksepp (1995) found that female listeners were more likely to experience frisson than male listeners, and Litle and Zuckerman (1986) found that those experiencing chills were likely “less adventurous” or less “thrill-seeking” than those who didn’t. Huron (2006) also discusses frisson at length when discussing his theory of musical expectation. Perlovsky’s study adds to this literature by examining excerpts from films, and discussing the elements of the chill-inducing scenes with both quantitative and qualitative data. The chapter addressing this issue seems to be a verbatim reprint of an earlier study (Schoeller and Perlovsky, 2016), and its explanatory power seems limited, despite the authors’ claim to the contrary.

Perlovsky turns from the lab experiments on frisson and musical training toward an examination of music and culture (referred to as “empirical support for this theory,” p. 84, although the reader should be careful not to conflate “empirical” with “systematic”). There has been a great deal of work on the evolution of culture: how the methods of evolutionary biology can be applied to culture, and how understanding how culture evolves can assist us in our understanding biological adaptation. Perlovsky ignores all of this, and instead focuses on the evolution of Western Art Music, primarily citing a commonly-used undergraduate music history text (Weiss & Taruskin, 2007), which, according to the author, “analyzed the evolution of musical styles, using available data during [sic] the last 3000 years” (p. 86).

It’s difficult to see the direct applicability of this chapter—which constitutes more than a third of the book—to the broader theory. Instead, it reads at times like a reading of the music history curriculum; the author discusses the well-worn tropes of the classicist/rationalist aesthetic, followed by the expanding tonality of Romanticism, and the “lost synthesis” of the modernists. Perlovsky argues that the evolution of music mirrors the evolution of consciousness and culture. When discussing how we might best view music history (and more specifically, the history of music theory), Thomas Christensen warns against a teleological approach, “wherein the past is seen as part of some determinist process directing to, and culminating in, the present” (Christensen, 1993, p. 11). It’s difficult at times to see exactly how this chapter is anything other than such a reading.

On a slightly more pedantic note, the book does not seem to adhere to a traditional citation method or style—the author simply discusses researchers’ broader theories, leaving it to the reader to determine which study in the bibliography is being discussed. The index will note that a certain author has been discussed on a certain page, but the reader finds no actual mention of the author at that point, instead just phrases such as “studies have shown.” This, along with the seemingly hasty copyediting, makes for a sometimes cumbersome, yet interesting, read. Hopefully, future research will further explore many of the avenues Perlovsky hypothesizes, allowing this ostensibly experimentally-testable theory to go beyond just another “just-so” story.

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