propose that emotions (and their visceral concomitants) are generated in phylogenetically ancient structures, including the hypothalamus and midbrain. However, abstract processing of music is subserved by structures, in particular the neocortex, that are not shared by lizards.

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Structures of the Mind and Universal Music

IS THERE "MUSIC PLATONISM"—UNIVERSAL music—awaiting discovery? The Perspectives by P. M. Gray *et al.* (*1*) and M. J. Tramo (*2*) are relevant to this question. In searching for music platonism, should we pursue a unified theory of external effects (involving whales, birds, etc.)? Does the key to discovery lie in the analysis of genes and brain structure, or is it embedded in a defined set of abstract structures that governs our response to music?

Natural sounds, such as the communication signals used by whales and birds, are no more than external stimuli that influence compositions and our musical tastes. In addressing the question of why some sounds are accepted as being "musical" and others not, the scientific query should focus on the filtering process of our cognitive system. Much in the same way that birds and whales represent an environmental influence, other sounds dictate formation of music composition and responses just as well. If we consider the impact of urban sounds on our music, external stimuli effects appear unlikely to underlie music platonism.

Alternatively, might music platonism stem from genes and brain structure? Indeed, a good sense of pitch is an inherited trait, and people vary in tonal memory, sense of timbre, sense of consonance, and auditory memory (*3*). However, neurobiological research suggests that there is no music center in the brain, no dominant brain structure that is activated solely during music cognition, and that the structures involved in the processing of music can be understood only in their contribution to other forms of cognition.

Platonism is also not likely achieved by analyzing the contents of music. Key objective parameters in the theory of harmony fail to predict some of the outcomes that strive for explanation. For example, the average rate of pitch vibrato and average extent of a step shared by prominent singers such as Caruso, Chaliapin, and Gigli are undistinguishable from other, much less known, singers (*3*).

Search for universality should gain from analysis of the interplay between external stimuli and internal deep structures or templates (*4*), already shown to be universal and definable mathematically in creative behavior. It can be shown that Botticelli's Venus rising from the waves, Dali's Christ of Valles, a Bally's shoe ad, and Watt's first steam engine are all primed by a simple underlying structure. Several prominent artists, Stravinsky for one, noticed the advantage of musical rules and adopted self-imposed limitations (*5*).

The correlation between external stimuli and internal structures stems from two complementing mechanisms. In one direction, information is categorized through surface structures that lead to formation of deep internal structures, serving as the sources for spawning creative ideas. In the other direction, the internal dynamics, based on self-organization rules, form deep structures such as creativity templates into which external stimuli are assigned.

In illuminating the way to discovering music platonism, a distinction should be drawn between the numerous external stimuli that are received and registered, molding the idiosyncratic styles of music, and the well-defined and generalizable templates of creativity that are adaptable in their contents but enduring structurally. Music platonism will emerge by inferring evolution-based templates and by examining how they weld with other templates found in different forms of human creation.

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