Available online at www.sciencedirect.com
ScienceDirect
Physics of Life Reviews 8 (2011) 106–107
PHYSICS of LIFE reviews
www.elsevier.com/locate/plrev

Comment

Music, meaning, and the brain
Comment on "Towards a neural basis of processing musical semantics" by Stefan Koelsch

Gunter Kreutz

Institute for Music, School of Linguistics and Cultural Studies, Carl von Ossietzky University Oldenburg, Ammerländer Heerstr. 114–118, 26129 Oldenburg, Germany

Received 12 April 2011; accepted 21 April 2011

Available online 30 April 2011

Communicated by L. Perlovsky

It is impossible to convey meaning equivalent to "this is an apple" by using purely musical means. Musical sounds (without lyrics) do not denote specific objects or events. Yet, many would insist that music does have meaning. We *make* sense of it, although it is not always clear, to what extent musical sounds and their intrinsic features give rise to such meaningful attributions, or whether music becomes meaningful as a result of situational and contextual factors. This is the starting point of Stefan Koelsch's search for the neural basis of meaning in music. Over more than a decade, Koelsch has devised a series of experiments, in which he was able to systematically investigate neural correlates of cognitive processes which appear to reflect the decoding of (in his terms) "extra-musical" and "intra-musical" meaning. Perhaps surprisingly, according to Koelsch, those processes allegedly related to extra-musical meaning can be detected within neural activations slightly earlier than those related to intra-musical meaning. In other words, it appears that during music listening, listeners initially contextualize musical information with other sensory information or information that is retrieved from memory. This process of extra-musical meaning attribution is identified in the so-called N400 potential. Koelsch believes that intra-musical meaning, i.e. the cognitive interpretation of intrinsic relations between musical sounds in a sequence does only arise after 500 ms as reflected in the so-called N5. Koelsch's ingenious experimental approach has provided important preliminary and positive answers to long-standing philosophical questions of meaning in music. However, I am not sure whether the current interpretations of his observations can be accepted without some hesitation. For once, the starting point of the whole endeavor is grounded on the assumption of a direct comparability of the speech/language-system on the one hand, and the musical sound system, on the other. This comparability, however, is compromised in a number of important respects. For example, there is no way to transform an active clause into a passive clause in music, as it is possible in many languages including English or German. Secondly, most individuals in a given society are active speakers, but not nearly as many individuals consider themselves as active musicians. Thirdly, most people learn language by ear in early childhood, when critical periods determine language acquisition. No such critical periods appear to exist for music acquisition according to reviews of the literature. Fourthly, there seems much consensus when it comes to defining speech and language, while there is endless debate on any attempts to define music.

DOI of original article: 10.1016/j.plrev.2011.04.004.
E-mail address: gunter.kreutz@uni-oldenburg.de.

1571-0645/$ – see front matter
doi:10.1016/j.plrev.2011.04.003

Nevertheless, Koelsch may be correct in assuming that parallels in language and music are sufficient to entertain the search for neural correlates of potentially overlapping key concepts including issues of meaning and meaning attribution.