

Publication date: 23 December 2023

Pitch and Tone: Primacy of sound sources in auditory perception

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Link: <https://doi.org/10.18103/mra.v11i12.4828>

Abstract

The brain performs diverse and complex operations effortlessly. Its sensitivity to minute stimulus changes, and precision in scaling sensory magnitudes, are yet to be understood by scientists. Nevertheless, its vast vault is accessible through well-established psycho-physical principles for dealing with sensory, mental, and all intangible phenomena. However, hearing research is experiencing the scarcity of law-abiding scientists because the current generation of information-processing psychologists cannot discipline itself to abide by the laws that govern hearing research. Modern investigators hope to resolve all problems in auditory perception through random and effortless computations of endless varieties of meaningless variables without the concept of invariance. Consequently, pitch and tone in music or speech are still shrouded in mystery after 2,500 years of intensive inquiry. The failure augurs the existence of fundamental scientific errors. This paper describes a search for the origin of pitch which plays lexical and intonational roles in Yoruba, a tone language. The approach which is based on the ecological conception of sound, will furnish experimental evidence from speech surrogates (drums) and strings, guided by the concept of invariance. The investigations are designed to demonstrate that the brain does not perform any computations at all in pitch and tone perception. The results show that the brain measures a unique mechanical parameter of sound sources to which all physical and mechanical transformations lead. In every pitch/tone perception context, therefore, the brain discards all other factors which convey other attributes of sound outside pitch and tone. The finding accounts for constancy in auditory code perception despite overwhelming variability at the production and acoustic levels. The experimental data accord primacy to the sound source as the origin of auditory codes. Implications for future research at the mechanical, acoustic, and neurophysiological levels of investigations into pitch/tone and auditory analysis as a whole are discussed.

Thank you for your interest in auditory psychophysics.

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