

In Quest of the Natural Therapeutic Aspects in Indian *Raga* Music: A Computational Approach

Kaustuv Kanti Ganguli¹ and Ajoy Chakrabarty²

¹Dept. of Electrical Engg., Indian Institute of Technology Bombay, Mumbai, India.

^{1,2}Shrutinandan, Kolkata, India.

kaustuvkanti@yahoo.ie

ABSTRACT

Music appreciation is an innate phenomenon, one prominent example being, infants showing natural preference to lullabies. This in fact, is strongly indicative of the affective aspect of music which is referred to as 'Music Therapy' in Clinical Science. Music therapy is practically in the realm of an inter-disciplinary research. In the current work, we shall view it from a musician's and a signal processing engineer's perspective.

The quantitative facet of music therapy research commonly refers to clinical measurements of the human physiology like EEG, neuro-plasticity etc. From a technology view-point, we try to retrieve the 'musicality' of the stimuli in a computational musicology framework. We collect data from doctors/therapists about a possible mapping of tunes vs. patients' response. Then perception experiments are carried out to estimate an empirical relation between the tonal material and the behavioral dimensions (valence, arousal). Finally we see that natural preference to consonant tonal intervals pertains to the paradigm of biological hearing phenomenon.

The qualitative music therapy research aims to model the musical characteristics that makes the tune suitable as a therapeutic stimulus. We comment on certain salient aspects of Indian *raga* music melodies. Music therapy is essentially 'sound therapy' and hence sound-qualities like 'long held notes with energy dynamics', 'use of slow pitch glides like *meend* and *aandolan*' etc. have a calming effect on human brain impulses. Evidences show, Indian *nada yoga* is highly practiced as a natural substitute to music therapy.

Given that modern science is well-equipped with precise measurement techniques, we should complementarily utilize the interpretations across domains. Thus we can assure a direct societal benefit from 'quantitative and qualitative music therapy research'.

©Author's manuscript:

Submitted for "Quantitative and Qualitative Music Therapy Research Workshop 2015"

Universitat Pompeu Fabra, October 15, 2015