

Paul Howard Mason - *The neuroanthropology of non-verbal communication*

MARCS Auditory Laboratory, University of Western Sydney, Australia
p.mason@uws.edu.au

If music has been largely disregarded by contemporary research, then dance has almost been entirely neglected. It is contended that an understanding of music and dance can contribute greatly to our understanding of human communication.

Neuroanthropology, a multidisciplinary field integrating neuroscience and anthropology, answers the need to analyse cognition, communication, self, society and culture as deeply imbricated physical and cultural processes. It is the study of the cultural basis of mind and the biological basis of cultures – recognising that mind is a process embedded in the dynamic interactions between embodied creatures and the world.

Anthropology provides a wealth of information regarding the variety of ways people process and interpret information from the external world, while neuroscience explains the various forms of mental processing that have evolved. Cross-cultural research adds to our data on neurological ethnoepistemology. The fundamental processes of culture and cognition can be identified through observing the cultural differences of cognition and through them the parts that don't change. Such studies must be context-sensitive. It is important to study the brain in context and the context of the brain, acknowledging that it is the context that evolves.

The present study is a comparative cross-cultural investigation into two holistic systems of music and dance, Capoeira and Pencak Silat. Both are a mixture of dance, martial arts and music. They have distinctly different origins, vastly different ways of moving and totally different musical structures.

Capoeira is an Afro-Brazilian mix of dance and martial arts created by African slaves who weren't allowed to train fighting skills. Therefore they disguised potentially lethal movements in the form of a dance. Changes in the music were used to signal the approach of slave-masters and to alter the pace and nature of the movement. The music and movement of Capoeira originated simultaneously and, in keeping with tradition, cannot be separated.

Pencak Silat is found throughout the Indo-Malayan archipelago and has been influenced by other Asian martial arts. The martial art developed through warfare from ancient to modern times. The music is borrowed from pre-existing musical ensembles and may vary according to the type of ensemble playing in the area. It can be practiced with or without music. There is often no musical accompaniment in daily practice; the music is provided generally for official occasions. To an outside observer the music and movement, when performed together, appear inextricably linked. This may suggest that the way of moving and the way of hearing and producing sound is related to the biological relationship a culture has to its environment, and/or the socially sanctioned networks of meaning we used to structure reality.

The numerous ways different cultures have created a palette of musical sounds from an otherwise continuous auditory environment demonstrates how different cultures have created different ways of categorising auditory space. The repertoire of music of any society arises from the relationship between innate exploratory behaviour and the accumulated materials of a cultural tradition. It is also dependent on the way a society organises itself to provide opportunities to develop cognitive potential and human creativity. The instruments of capoeira, the berimbau (wooden bow), the tabac (drum) and the pandero (tambourine) were created using the limited materials available to the African slaves. The Indonesians, who also use drums (gendang) for Pencak Silat, have also been able to draw upon the more sophisticated technology of brass to build instruments like the kenong (suspended gongs), gong (hanging gong) and ceng-ceng (small cymbals). While the material available to a culture determines the musical instruments available and the sounds they are able to create, dance is ultimately determined by one principal factor, the range of movement possible using the human body.

Capoeira and Pencak Silat both have their own distinct vocabulary of movements. The grammar of the body developed by performers of both arts is dependent upon shared meanings and upon deeper shared ways of perceiving. Human universals, such as language, music and dance, exist at the interface of brain and culture. They are created by the mind and shaped by culture. Music and dance are ideal experimental tools to understand the retroactive causality between brain and culture. Music and dance involve perceptually discrete elements organised into structured sequences. Unlike language, they are well definable in physical terms and don't have the experimental confound of semantic meaning.

Contemporary brain research has been criticized for minimising the importance of cultural experience in the selection and development of sensory capacities. A neuroanthropological approach enables researchers to situate the physical properties of human behaviour in relation to cognitive content and cultural context.

Future research will incorporate a mixture of ethnographic field-work and context driven laboratory experiments. New approaches such as neuroanthropology can expand our understanding of the co-developmental and co-evolutionary inter-relationship between brains and cultures.