

contact

Contact: A Journal for Contemporary Music (1971-1988)

<http://contactjournal.gold.ac.uk>

Citation

Higgins, Robin. 1977. 'Review of *Music and the Brain*, Eds. Macdonald Critchley and R.A. Henson'. *Contact*, 17. pp. 34. ISSN 0308-5066.

MUSIC AND THE BRAIN, edited by Macdonald Critchley and R.A. Henson
Heinemann, 1977 (£11.50)

ROBIN HIGGINS

Neurology is that branch of medicine concerned with the nervous system. Since the nervous system merges at one end with the psyche, at the other with muscles and sense organs, and is connected through the autonomic nervous system with respiratory, cardiovascular and hormonal mechanisms, neurology provides us with a picture of the whole human machine seen from the vantage point of its central organising networks. This book is about how our machines receive and express musical sounds.

Parts of the machine particularly involved in music making — ear, hands and voice — are isolated and examined in some detail. In all three instances, the descriptions move beyond the traditional review of structure and function. The chapter on the ear and hearing ends with some valuable points about the localisation of sounds in space and the subjective aspects in our perception of loudness. The chapter on the hand develops the idea of hierarchical organisation in the nervous system along a scale from 'most automatic' to 'least automatic' responses. Analogies are drawn between such a scale and the 'subroutines' and over-riding 'programmes' of computer engineers. Hand movements, like any other movements, may draw on any point on this scale. We may have automatic subroutine-like movements dependent on constant feedback, or we may have ballistic movements, launched from an internal programme and not subject to external modification during their course. Such analyses open up the connections between studies on technical dexterity and creative expression in movement (or movement as symbolised in music). The chapter on voice production includes a section on the phenomenal voice, the extension of range which goes with the singer's training, and which bears similarly on this boundary of technique and creative expression.

The more central parts of the machine receive attention in chapters on how we memorise pitch and sequences of pitches, and how we build up abstractions such as a 'semitone', or a duple rhythm, or a proportional lay-out. Such studies have links with those on cerebral dominance, i.e. on the idea that certain areas of the brain may be particularly involved with musical faculties just as certain (by no means necessarily the same) areas are involved with speech. Pitch-memory, levels of symbolic abstraction and cerebral dominance all have links with another issue, synaesthesia, the simultaneous experience of more than one sensory modality. The suggestion that synaesthesia is a faculty we possess when young and often lose is examined critically since it clearly carries important implications for musical education and indeed our imaginative development in general.

An equally pregnant observation occurs in a chapter on music, emotion and autonomic functions, namely that under tranquillisers the autonomic responses that usually accompany an emotion when we listen to music cease to do so. Under tranquillisers a wedge is driven between body and mind in a direction quite contrary to the embodying function of music. Though initially this observation might seem of interest primarily to music therapists, on reflection it begins to carry the same expanding significance as the events described in Oliver Sacks' *Awakenings*.

Other chapters deal with different stages in the machine's conception, growth and decay. On the genetics of musicality, any interpretation in biochemical terms is seen to have little to offer. Similarly, anatomical dissection post-mortem of the brains of musicians yields little clue as to why their owners differed from the non-musical. Beside these negative findings at the extremes of a life-span, many more positive results emerge from the second part of the book, dealing with events which occur when the machine breaks down; the amusias (or the specific impairment of a musical capacity), deafness, musicogenic epilepsy, the occupational disorders of musicians.

Combined with the observations in the first part of the book, these results emphasise three features which are perhaps neurology's most significant contribution to musical understanding. The first feature is the enormous individual variation in perception and execution of sounds by our machines. The second is the provision of some means of classifying these variations in strictly machine-like terms. The third feature arises from the first two and concerns the change over time of these individual (or grouped) variations. One striking example of this may be seen in the shift of cerebral dominance from right to left as a musical faculty becomes more sophisticated.

The book displays two limitations. Perhaps because it was written by neurologists and not musicians the definition of the human machine was often more informed than that of musical sounds, which for the most part tended to be conceived in the context of Western European music only, including its notation, basic structures, modes of learning and dissemination, etc. The nervous system is notoriously adaptable. While it may well be necessary, for a start, to limit our study of its adaptability to one particular cultural setting, the dangers of generalising from such a study, as well as the dangers of being thrown off course while immersed in it, will be obvious.

In the light of a musical view which expands beyond our Western European heritage, many of the tests for musical ability for example seem at best parochial and at worst misguided. To focus on the

relation between such abilities and our nervous system may throw light on our capacity to adapt, but not necessarily to adapt musically. To select children for further musical training on the basis of these tests may be to conserve an ultimately limited or even un-musical milieu rather than an expansive, musical one.

The second limitation is related to the first. In neurology, the human machine tends to be studied not merely as a piece of mechanism, but as such a piece, isolated from its fellows. Again this may be an essential phase in our exploration. But music, usually, is made and experienced in a social context. We write or play it for some sort of social group, however small. The nuances of musical sounds are intimately tied to this social setting. It is open to question what precisely we are measuring when we lop off the social roots of the experience in the cause of scientific experiment.