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SOUND SCULPTURE: A COLLECTION OF ESSAYS BY ARTISTS SURVEYING THE TECHNIQUES, APPLICATIONS, AND FUTURE DIRECTIONS OF SOUND SCULPTURE, edited by John Grayson
A.R.C. Publications, 1975 (\$14.95 or \$11.95)
ENVIRONMENTS OF MUSICAL SCULPTURE YOU CAN BUILD: PHASE 1, by John Grayson
A.R.C. Publications, 1975 (\$14.95 or \$11.95)
BIOFEEDBACK AND THE ARTS: RESULTS OF EARLY EXPERIMENTS, edited by David Rosenboom
A.R.C. Publications, 1975 (\$14.95 or \$11.95)

The higher prices listed above represent the cost at retail: these books are now available in Britain from the Record Department of Dillons University Bookshop, 1 Malet Street, London, WC1. Alternatively, all A.R.C. material can be ordered directly from A.R.C. Publications, P.O. Box 3044, Vancouver, B.C., VCB 3X5, Canada, at the lower price. We hope to publish further reviews of A.R.C. material as we receive it, including the records issued in connection with the above books, Michael Byron's Pieces anthology, the Journal of Experimental Aesthetics and two more books.

RICHARD ORTON

The Aesthetic Research Centre of Canada has been established upon a broad base. It was originally proposed in an article written by John Grayson in 1970 as 'a centre devoted to the study and reification of the visual and aural senses in aesthetics'. A year later a research programme was set up at the Cowichan Centre for Gestalt Learning on Vancouver Island, and the Aesthetic Research

Centre became registered as a non-profit educational and research Arts Organisation. Other branches have since sprung up, notably in Toronto; and during 1976 a series of local research projects is being conducted, applying various aspects of the Centre's work.

The A.R.C.'s endeavour appears one of the most impressive of recent attempts to integrate experimental work in the arts and commends itself especially to musicians. The publications under review, the first of a series of books and discs recently announced, eloquently persuade us both of the need to collect and document these new researches and of the value of doing so. All three volumes are attractively designed, well illustrated and adequately bound books, clearly printed on a good quality paper.

Sound sculpture is a fairly new term, and its content is by no means clearly delineated. It can refer to three-dimensional kinetic art works which happen to make noises through their movement; or, more usually, to sculptures designed to sound — automatically, powered by natural forces like the wind or by electricity, or through human interaction, as 'audience participation'. Or the term can refer to a constructed sound environment, where the 'sculpture' is identical with the sounds occurring, often electronically produced standing wave patterns articulated by the shape of the environment including, of course, the people within it. Or it can refer to musical instruments, as a special case of the sound sculpture in which an intended manner of performance is embodied in the form of the instrument.

All of these, and more, are to be found in John Grayson's *Sound Sculpture*. The book's great value lies in its documenting the work of many different artists, largely through their own words and through excellent photographs and drawings. It opens with Bernard and François Baschets' 'Structures Sonores'. Two short articles previously available only in French set out the philosophical as well as the practical base to their work, suggesting their individual differences and acknowledging their many collaborators and assistants. The illustrations range from simple musical constructions to the interactive 'Hemisfair Musical Fountain' in San Antonio, Texas, in which jets of water controlled by the public may be directed to different sets of tuned metal rods and flanges. Their work embodies visual and aural elegance and a refreshing lightness of touch, shown in the 'Piano with two ears', especially when contrasted with François' statement 'The grand piano is a heavy musical wheelbarrow'. Other brief quotations will serve to indicate their dedication and range of ideas. 'It is the hands which discover and the completely unconditioned ear which listens attentively.' '... we instinctively search for the harmony which exists between shape, sound, sculpture, light, poetry, music... but is it not first necessary that this harmony exist in ourselves before we are able to realize it?'

Apparently close to the concerns of the Baschet brothers are Harry Bertoia's musical rod constructions, to house which he has built a special 'sound-box' barn, and Harry Partch's instruments. The scant four pages devoted to Partch should not be taken as representing his relative importance; the editor's decision to restrict the material mainly to a short article called 'No Barriers' (previously published but long out of print) was presumably justified by the ready availability elsewhere of material on this giant of instrumental development.¹

One of the most delightful contributions is from the American Reinhold Pieper Marxhausen (sic!), who describes his involvement with sounds at different times in his life: 'The yet unheard of, unearthly, indescribably beautiful and haunting sounds came from the hollow chamber of a door knob. Intimate sounds only heard by the player. Sounds that have made a nun dance, old people laugh, and everyone smile'. The discovery led to a series of head-bands and door-knobs with spikes, shown in use in accompanying photographs.

Stephan von Huene, David Jacobs and Charles Mattox are kinetic sculptors whose work has been extended to incorporate sound elements. Von Huene's sound-making automata strongly emphasise the human absence, as in the one-man-band without the man, or the tap dancing boots. An excerpted 'photo essay' shows the inside of some of his objects and suggests how they work. David Jacobs' Wah-wah objects are enormous pneumatic breathers rather wastefully documented in many pages of drawings, photographs and notes; while of Charles Mattox's work only the large, rocking 'Theremin Piece' seems to have had the sound element consciously designed. Similarly, Max Dean's 'Sound Sculpture' (which appears misplaced at the end of the book) is simply a large box that saws its own top off; the sound here is surely a by-product.

We move on to further conceptual and practicable possibilities. Murray Schafer's essay 'The Graphics of Musical Thought' relates the ways in which musical time processes are preserved through their coding in 'spatial screens' — notation. David Rosenboom's 'Vancouver Piece' is simultaneously 'an invisible static airpressure sculpture, changes in which can only be experienced by moving around the space' and a visual biofeedback work, which also receives some attention in his biofeedback book. David Rothenberg's frustratingly insufficient 'Visual Music' is presumably intended as a trailer to a complete volume on his work which is promised at a later date. Then we have 'corporeal sound sculpture': a brief reference to nada yoga, Corey Fischer's sound-acting and John Grayson's sensory workshops.

The last section of the book returns to musical instruments. There is an admirably clear account by William Colvig of the 'western gamelan' he built for Lou Harrison. We are reminded of the latter's

dictum 'Make an instrument — you will learn more in this way than you can imagine' (from *Lou Harrison's Music Primer* excerpted earlier in the book). There are also a giant 'Musical Carillon' built by Tony Price with a scrap from an atomic energy testing ground and Luis Frangella's 'Rain Music II' — large modules with tuned drums intended for large-scale assembly in the open air.

As an introduction to, and as an exploration of its subject, this book is excellent. There are many inspiring examples for anyone remotely interested in the area. I do not think the balance is quite right yet — the Schafer article and some of the kinetic works hardly qualify at all. In future editions a greater distinction needs to be made between those sculptures which require human agency — placing them in the category of the musical instrument — and those that do not. But the book is successful in drawing together the work of some interesting artists and musicians and allowing both their similarities and differences to demonstrate themselves. Let us hope that the many British artists one knows of working in the field will respond to the request to make their work available for documentation in future editions.

The companion volume *Environments of Musical Sculpture you can build* is an extension of the practical aspects of *Sound Sculpture*. Information is provided in the form of work sheets, references and analyses of materials to be used, to enable anyone to begin the invention and construction of his own musical instruments, all of which is based on projects initiated by the author. In an opening essay John Grayson proposes several areas of basic development: through rhythm, pitch, control of timbre, and through psychoacoustic aural illusions and infrasonics. But the core of the book is the collection of descriptions, drawings and photographs of new musical instruments that have been built. These include huge low-frequency instruments, called 'Big Boomers', 'Mushrooms', which are grouped tuned steel discs, a giant koto, marimba and steel drum instruments, gongs, bells and the 'Garden of Tears' — a collection of Pyrex coffee percolator tops in different sizes, set in a frame.

Several other sections follow. One gives a full-scale work sheet (blank for duplication) and reduced examples of completed sheets showing the research notes on materials that preceded the making of the instruments. A score showing the notation for the instruments was a good idea, but the reproduction of Douglas Walker's *Requiem* in its full 70 pages appears rather a luxury unless a recording of the work is also to be made available. There is documentation of a musical environment for handicapped children, a notable example of applying some of these ideas to social ends and, judging by the photographs, a very successful one; and, looking hopefully to the future, a proposed 'Sound Sculpture

Exploratorium' with plans and drawings of an environment to accommodate sound sculptures.

David Rosenboom, currently head of the Laboratory of Experimental Aesthetics at York University, Toronto, Canada, is the American composer and researcher one associates with biofeedback applications in music. His *Biofeedback and the Arts* must already be regarded as an essential source-book for documentation of the early work in this field. Much of the book is written by him, with contributions from a few other artists, musicians and scientists.

Biofeedback is achieved though the use of electrodes, usually two placed on different parts of the head, connected to a differential amplifier which reads the voltage fluctuations between the electrodes. A filter is normally employed to limit the range of frequencies monitored. The signals, detected and amplified, can be used to create sensory feedback for the subject by several methods — through triggering events or through continuous modulation. The feedback may be visual or auditory. The examples given in this book range from very simple basic researches, such as the triggering of a simple audio tone or line-tracing on a television screen, to complex multi-media 'events'.

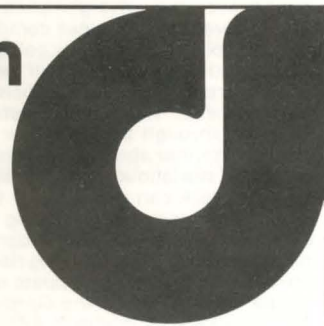
By means of the feedback a degree of control over electroencephalographic readings can be learned. From an apparent continuity of brain-wave frequencies, three have been isolated as corresponding to definable states of consciousness. Subjective descriptions of these states are as follows: *Theta* (3.5-8Hz) 'Pure relaxation. Oneness. Everything on automatic pilot'; *Alpha* (8-13Hz) 'Super consciousness of the presence of everything in the environment but not making abstractions. Raw data stored but not coded. No filters on incoming information'; *Beta* (13-25Hz) 'Maximum efficiency in making abstractions. Making instantaneous logical connections between things seen. Very attentive'.

David Rosenboom's book is an invaluable focus both for those wanting to know more about these techniques and, not least through its substantial bibliography, for those wishing to initiate their own research.

NOTE:

¹See, most notably, Harry Partch, *Genesis of a Music* (New York: Da Capo Press, second enlarged edition, 1974). For a review of this see *Contact* 72 (Autumn 1975), p. 42.

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