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INTERNATIONAL WORKSHOP ON "A NEW SYSTEM FOR IDENTIFICATION AND EVALUATION OF REGIONAL ENVIRONMENTAL NOISE", KOBE, 8 AND 9 NOVEMBER 1999

PREFACE

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The idea of producing a new environmental noise measuring system for identifying and subjectively evaluating the noise came from a theory of concert hall acoustics. Before the meeting some of the participants enjoyed waltzes performed by the Wiener Virtuosen at the Tsuyama Music Cultural Hall, the sound field of which was designed with consideration of two fundamental factors related to temporal and spatial characteristics. Recent research on concert hall acoustics has found that our left cerebral hemisphere is associated with the temporal features of the environment, and that the right hemisphere is associated with spatial features. This specialization should be taken into consideration in any kind of environmental planning.

In other words, a well-designed environment will enhance satisfaction by stimulating both sides of our brains [Y. Ando 1998 *Architectural Acoustics, Blending Sound Sources, Sound Fields, and Listeners.* New York: AIP Press/Springer-Verlag]. Both science and art are products of both cerebral hemispheres. For instance, the brain activities stimulated by a space pattern and by sequential phenomena are what inspire a painter. The leaves on a tree in painting are not physically moving, but the painting may stimulate "a gentle breeze feeling" in the left hemisphere, and this leads in turn to "a further story". Like the proscenium of a theatre, one of the most important part of a house or any other building is a window. Through a well- designed window we can look outside and see a natural "stage performance" at any time. This kind of scientific and artistic design is in its beginning stage, and there are a lot of important and interesting problems to be tackled.

To return to the initial story, environmental noise affects this "artistic perception" and "calculation" kinds of brain activity and also affects the growth of the two hemispheres. Noise measurement, however, has usually been based on the sound pressure level associated with only the right hemisphere. It is, therefore, expected that we will need a new measuring system based on a model of the auditory-brain system. We would like to describe any of our subjective responses to noise as well as primary sensations, in relation to the temporal

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factors extracted from the autocorrelation function (ACF) and the spatial factors extracted from the interaural cross-correlation function (IACF). Here we use such a theory to establish a new system for the measurement, identification and subjective evaluations of noise. It is hoped that this special issue will contribute to the effort to design a better 21st century.

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