

Preface

In August 1985, the fifth and last *Workshop on the Physical and Neuropsychological Foundations of Music*, organized by Juan Roederer, was held in Ossiach, Austria. This important gathering had for more than ten years served as an interdisciplinary forum for various aspects of musical science. The news that the tradition would not be carried on was met with mixed feelings by many of us who had attended the workshop. This forum was an ideal setting to “knock heads” for a week over the burning issues that occupied us, but a certain resistance to many new trends, particularly with respect to cognition, made themselves apparent and privileged the more physical and psychoacoustic aspects of music. A sadness was thus accompanied by a certain feeling of liberation.

Compared with the early Ossiach meetings, attempts to account more for the complexities of *music* as opposed to elementary *tone* perception were beginning to appear. The necessity of following out the debates in this new direction and of finding another framework within which to meet was strongly expressed by Oscar Marin. He was the moving force behind the lengthy discussions with Eric Clarke, Carol Krumhansl, Fred Lerdahl and Bernard Vecchione – the other members of the organizing committee – on the form and content of a new kind of symposium that would deal more comprehensively with music cognition. We may hope that a new “tradition” has begun since a second symposium is already programmed for 1990 in Cambridge, England, at the initiative of Ian Cross.

The growing interest in the cognitive sciences that is manifest today is extending into the realm of the arts. Music composition, performance, and perception are among the primary concerns. The *Symposium on Music and the Cognitive Sciences*, held at IRCAM in March 1988, took stock of some of the most advanced directions in these domains. This collective volume is the fruit of that symposium, and relays the presentations of the specialists from several disciplines that met for the occasion – theorists, composers, computer scientists, musicologists, psychologists, mathematicians and neurologists. This event sought voluntarily, if perhaps somewhat dangerously, to address a *very* broad range of approaches to music cognition. Several of us felt all too keenly in many previous conferences the absence of composers at one end of the spectrum and of computer scientists at the other end. We can certainly claim this time to have achieved the goal of breadth.

This breadth bore witness to a diversity of basic assumptions, vocabularies, concepts, aims, methods, interpretations, and reasoning methods that often seemed at first view to be irreconcilable. Discussion, as one might imagine, was not always facile. The confrontation between art and science does not arouse only idealism and a will to understand, but also reveals reserve and criticism.

Five themes were debated by thirty researchers selected beforehand by the Organizing Committee. The difficult and ungrateful task of directing the discussions and of drawing things together was entrusted to session chairs specifically invited as a function of their reputation and of the session theme: David Osmond-Smith (the notion of musical language), Hugues Dufourt (form-bearing elements in music), Jay Dowling (experimental and theoretical approaches to listening and comprehension), André Riotte (modeling approaches to listening and comprehension), and Gerald Balzano (music performance). Their analyses of what was presented and discussed in their sessions are printed in this volume. In the interests of coherence, however, the five themes are rearranged here into four parts. Furthermore, to assure the level of quality of the volume, the symposium presentations were subsequently subjected to critical review and were revised for this publication.

Musical language and theory, the theme of the first section, presents approaches that are both theoretical (Eric Clarke; Eugene Narmour; Fred Lerdahl), and practical (Mario Baroni, Rossana Dalmonte & Carlo Jacoboni) from semiological, grammatical, generative and psychological perspectives. The question that has already been raised many times of the appropriateness of the concept of language for music and the implications that surround this conception was taken up by Eric Clarke. The impact exerted by the theoretical thought of Fred Lerdahl and Ray Jackendoff was notable at the Symposium. Their work, *A Generative Theory of Tonal Music*, some five years after its publication, remains a point of theoretical reference and is found at the heart of the development of several research programs. A generalization of the model to other idioms is also envisaged: Fred Lerdahl proposes an extension to pre-serial atonal music.

The analysis of *musical form*, a particularly sensitive subject for any musician today, is by far the one that attracted the greatest diversity of approach. In the second part of the volume, as one might have expected, chapters by composers and their close collaborators are collected (Jean-Baptiste Barrière; Marco Stroppa; Francois Bayle; Jean Petitot). They express their current preoccupations in terms of the architecture of the musical work. These concern the interaction between form and material: the evolution of language and the introduction of electronic instrument design open up as yet unheard perspectives. At the same time however, they perturb both the norms of compositional technique and the conception of musical form of the composer, and they require new listening habits of the audience. This provokes an occasion for fundamental reflection on the concept of form-bearing elements from historical (Marie-Elisabeth Duchez), psychological (Stephen McAdams; Irène Deliège) and theoretical (Célestin Deliège) points of view.

The last two parts of the volume, *experimentation and modeling* (III) and *musical performance* (IV), focus the concerns and state-of-the-art research in those areas of psychology where the marks of the cognitive current and artificial intelligence are preponderant. The experimental psychologist (Carol Krumhansl) questions, but also defends and justifies, the procedures and methods of investigating music in the laboratory, starting with experimental stimuli that are reductive objects, while being faced with recent tendencies that move towards music perception in more realistic circumstances. Neuropsychology (Oscar Marín; Robert Zatorre; Isabelle Peretz & José Morais) is at the very heart of the problem of cognition: based on experimental results and analyses of cerebral deficits, it reveals the role that may

be played by specific regions of the cortex in the processing of musical information. The data from these two fields converge quite naturally on an advanced sector of current research: modeling. Several subjects give rise to attempts at the formalization and simulation of human behavior with computers: perceptual activity (Michael Baker; Jamshed Bharucha & Katherine Olney; Marc Leman), perceptual-motor activity (Henry Shaffer; Neil Todd; Rolf Carlson, Anders Friberg, Lars Frydén, Björn Granström & Johan Sundberg), learning (Richard Ashley; Alan Marsden), and the comprehension of visual information that is achieved by the reading of musical notation and the establishment of relations with its sound attributes (Kari Kurkela).

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