

Preface

This issue of *Contemporary Music Review* responds to two needs: 1) to make a synthesis of the concerns of music psychology within the framework of cognitive science so that its current scientific strengths and weaknesses are apparent, and 2) to call upon practising composers and musicians to participate in posing *contemporary* musical problems in a way that invites relevant musical experimentation by their scientific colleagues so that the results may eventually feed back into their own explorations within music itself.

New publications in this field abound at the moment, as is evident in perusing the bibliography of the survey article that begins this issue. However, the presence of composers and of direct applications of psychology to the study and composition of music are very rare (though surely on the increase as musician-psychologists find their way into music departments). It seems at times that we have more psychologists concerning themselves with music than musicians concerning themselves with psychology. An aim of this issue is to swing the balance heavily in the other direction and invite a greater proportion of composers and musicians to reflect on aspects of perception and cognition in music, to counterbalance the more academic trend of music psychology, to make the regard of the psychologist looking at music mutual with that of the composer reflecting on the psychology of the listener, though their perspectives remain different.

The reflections of composers are necessarily non-scientific. The immediacy of the composer's synthetic necessity precludes too much self-reflection or analysis of why one makes certain æsthetic decisions at a given moment in a work. However, they do have some clear thoughts on what they have done after the fact of composition has asserted itself. What is important for the psychologist is to *hear* what these people have to say, especially if they are interested in their work being oriented towards the practice of music in our time. I am continually struck by the apparent musical conservatism amongst my scientific colleagues. The sad part is that this often keeps them away from young composers who have a lot of enthusiasm and insight to offer to their explorations.

Another aim of this issue is to address some areas that are too often treated only summarily or marginally in the major books in this field.

The main themes fall into four categories: organizational processes, timbre, time, and the experience of musical form. My own contribution, rather heavily based in a psychological direction, reviews the history of psychological reflections on music from the time of Pythagoras, attempts to define the realm of music psychology and then proceeds to situate the concerns of the field within two of the major axes of research in cognitive science: the mental representation of musical dimensions and structures, and organizational processes in musical listening. As I remark in the article, the contents of this issue were consciously biased towards the psychology of listening, with an understanding that there are many additional problems of interest in performance, composition, and improvisation. The article tries to make the weaknesses of the field in its present state plainly visible, particularly as concerns problems of affective and æsthetic response to music and the apprehension of large-scale musical forms.

Since the sounds of music are spread out in time, it is evident that there are mental processes dedicated to the accumulation and organization of this material in order for the listener to be able to appreciate motifs, phrases, sections and whole pieces. James Wright & Albert Bregman consider the conceptual impact of the principles of auditory organization on our understanding of patterns in polyphonic music. They present a summary of these principles and then consider their influence on the linear and harmonic dimensions of polyphony, particularly with respect to the control of harmonic dissonance. They attempt to clarify the psychological mechanisms behind some principles of traditional music theory, and suggest that psychological theory provides ways to *explain* contrapuntal phenomena.

One of the most exciting developments in 20th Century music is the concern with musical timbre. There is relatively little psychological research on the musical use of timbre, much less its structural possibilities. If we consider timbre to be one thing that results from the fusion of acoustic elements into auditory images, we can then compare its musical behavior with the case of the same elements when they are heard separately, giving rise to the perception of an aggregate sound; what we normally call a chord. Kaija Saariaho discusses her use of the continuum along the fusion axis between timbre and harmony with computer synthesized sound structures, reflecting on the compositional relation between timbre-based procedures and harmony-based procedures. She also considers the use of the sound/noise axis as a dimension along which musical tension can be created to replace the dynamic function of a harmony based on consonance and dissonance. She then muses on the possibilities of organizing timbres in complex ways along more than one dimension.

Fred Lerdahl bases his consideration of timbral hierarchies on his previous work in generative music theory. He proposes the possibility of organizing timbre hierarchically claiming that one of the important functionalities of a hierarchy is the building and release of musical tension. His reflections center on a consideration of the different timbral

parameters that allow the creation of hierarchical structures and the different elements of construction that can be derived, such as timbral prototypes, "intervals" and "scales".

Pierre Boulez considers the function of timbre in 20th Century instrumental composition in terms of the relation between timbre and musical language. He notes a mutation of the function of timbre during the 19th Century and its implications for the conception of musical form. The role of timbre in writing for small ensemble is one of stability, identity and the articulation of musical form. In the modern orchestra, timbre assumes an importance as the result of compositional techniques based on the perceptual fusion of instruments into complex sound-objects. Here the function is one of illusion. In the former case, the pre-existing identity of the raw timbre articulates the individual voices, whereas in the latter case, organized timbre is the result of the composer's compositional technique.

Antoine Bonnet considers the application of these principles in a structural and perceptual analysis of Boulez' piece *Messagesquise* for 7 cellos. He questions the divorce of compositional procedures from perception in 20th Century music, due primarily to the loss of the principle of identity upon which tonal music was based. The relation between the means of invention and structuring of musical material (organized timbre, for example) and the perceived result are treated with respect to the functions of articulation and fusion evoked by Boulez. The work clearly plays along this continuum and Bonnet analyzes the relation between perceptual and compositional procedure as they are revealed in the work.

The apprehension of musical form obviously involves our capacities as listeners to process extended temporal structures. Eric Clarke observes that musical time is organized hierarchically in a network of interconnected levels, each of which has different structural properties. At the lowest level are the continuously variable expressive properties. Discrete or discontinuous properties are found at higher levels of structure. In tonal/metric music, these levels are clearly connected by the metric structure. The abandonment of the forms of tonal music in the 20th Century casts doubt upon this clear division by the weakening of metric structure and the discrete categories of durations upon which it depends. This calls into question the distinction between structure and expression in musical form. Clarke's consideration of the cognitive structures underlying rhythmic perception poses some questions about certain aspects of rhythm in contemporary music and its comprehension and significance for a listener.

G rard Grisey, in a companion article, reflects upon the distinction between chronometric time and psychological time. He criticizes the notion of rhythmic symmetry which is more based on spatial than audio-temporal symmetry where it would be more related to redundancy. He proposes a scale of rhythmic complexity. Then, drawing from his own compositional experiences, he speaks of the relativity of temporal perception and its relation to the quality of sound objects and

their juxtaposition in musical structures. He concludes with some considerations of the role of memory in the different times experienced by the listener, the performer and the composer.

This movement from processing to the use of a perceptual dimension and then to the perception of temporal structure leads us naturally to compositional considerations of musical form. Roger Reynolds considers the composer as a kind of performer outside of time in the formal design of contemporary musical works. He contrasts two kinds of composers: the "maker" who bases his work on familiar sonic conventions which are used to articulate his own position, and the "searcher" who treats music as a pre-existing body of potential experience from which musical forms are drawn. He moves from these social reflections to look at a number of approaches to his own composition that he feels to be coherent with living a life in contemporary times. Among other things he demonstrates his extension of the variation form into a contemporary vocabulary of musical transformation techniques which he calls the "transformational mosaic." He considers the importance of memory and the identity of musical material that can withstand transformation and still contribute to a musical form, and that allows the listener to sense the transformational processes themselves as part of the experience of the form of a work.

Placing music psychology face to face with contemporary music raises many problems. One concerns the extent to which we can really be expected to consciously or intellectually "understand" the music of our own time, what it is made of, how it works. Complaints about its difficulty for listeners may merely be the complaints of people who have not yet acquired the "mental schemata" (to slip into psychological jargon) that allows them to "experience" this music deeply. But perhaps it does, at times, violate psychological limits of comprehension. Another problem is that of studying any art form with methods that aim to describe the general tendencies of experience of a large population of people. Most everyone sees objects, but not everyone understands painting. Most everyone understands the language of their society, but not everyone appreciates poetry. There are probably limits to how far our current scientific methods can take us in the search for understanding, but the positive experience of interaction between composers and psychologists that has been found in places where they dare confront one another can bring to the one and the other matter for serious reflection that must surely advance each one's individual concerns.

Stephen McAdams
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