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Concrete Time: New Concepts of Time in Musique Concrète

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ABSTRACT

This paper looks at the new perspectives of musical time raised by the *musique concrète* movement founded by Pierre Schaeffer and examines the use of recording mediums (turntables, tape) for the creation of music. It discusses how the techniques developed in response to this technology led to realizations about the nature of micro- and macro-structural time in music and served as the basis for the conceptual and experiential foundations of the *musique concrète* movement including the conception of the *sound object*.

1. INTRODUCTION

In 1948, Pierre Schaeffer, at the *Radiodiffusion Télévision Française* in Paris, completed *Etudes de Bruits*, a series of five short studies consisting of assemblages of recorded sounds. The *Etudes* not only represented a new direction in compositional technique, but also gave rise to “a new way of thinking about music.” [1] Schaeffer called this new artistic direction *musique concrète*.

2. FOUNDATIONS

Like every aesthetic movement *musique concrète* had its unique set of foundations. I have divided these foundations into four categories: technological, technical, conceptual and experiential.

2.1. Technological

Musique Concrète was founded on several important technological advances that well preceded this aesthetic form, mainly the invention of the recording and reproduction device created by Thomas Edison in 1878: the gramophone. This technology had already significantly transformed the way in which music reached audiences, without the need of attending live performances. The change from the recording cylinder into the wax disc gave way to the utilization of these devices for compositional purposes in the form of *musique concrète*. The development of the radio and its later institutionalization also played an important role. The *Etudes de Bruits* were done using solely turntable technology, but the invention of the tape recorder in 1935 (although only available to Schaeffer in 1945) and its incorporation to the Paris studio, revolutionized the possibilities in recording by making editing a more practical possibility.

2.2. Conceptual

“This determination to compose with materials taken from an existing collection of experimental sounds, I name *musique concrète* to mark well the place in which we find ourselves, no longer dependent upon preconceived sound abstractions, but now using fragments of sound existing concretely and considered sound objects defined and whole...” [2]

Pierre Schaeffer

The treatment of all sounds (musical, environmental, noise, etc) as equal in value is an aspect of the conceptual foundations of *musique concrète* that had important ramifications in the 20th century. The fulfilling of the emancipation of noise, envisioned by composers like John Cage and Edgar Varese, had finally taken place and carried with it a whole new set of implications of musical structure, and on the sounds themselves. More significant to the purpose of this paper was the conceptualization of the *sound object*, “a basic sound event, isolated from its original context and examined for its innate characteristics outside its normal time continuum.” [3] This conceptualization permitted Schaeffer to develop a system of classifications and hierarchies of different sound events depending on their timbre, rhythm and density, the possible processes which may be applied to them, and, finally, the way in which they are perceived. [4]

2.3. Technical

Given that all the sounds in *musique concrète* come from recorded sources, the concept of what the “material” of the musical work consisted of was drastically redefined. Where in most of the instrumental music up to that time the “material” consists in a combination or sequence of pitches (in a tonal or atonal space) that the composer creates, in *musique concrète* the composer will gather the sound material and manipulate it.

“Let us now imagine original recordings of noises that are much more complex and much harder to recognize; let us imagine transformations of these noises taken beyond any known limit, thanks to devices that allow slowing down, speeding up, retrogradation, reinforcing, attenuation, fragmentation, and the shifting of register from infra-low to ultra-high; let us imagine that the results thus obtained are intermingled, stuck together end to end, moved around and mixed up according to the marvelous law of algebraic permutations and combinations, then we shall have a faint idea – in fact still totally abstract – of the manufacturing procedures of concrète music.” [5]

Pierre Schaeffer

The application of these techniques, which were a result of the possibilities and limitations of the technology of the time, (turn-tables and tape recorder) had a radical impact on the conception of musical time at a micro- and macro- structural level.

2.4. Experiential

Another line of Schaeffer’s research was concerned with the various modes of listening. Schaeffer proposed that the listener could intentionally separate sounds from their sources. By disconnecting the spatio-temporal causes from what we are hearing we can constrain the discussion of sounds to the *plane of hearing alone*. [6] What remains after the reduction is the acousmatic. [7] Schaeffer writes, “Often surprising, often uncertain, we discover that much of that which we thought we were hearing, was in reality only seen, and explained, by the context.” The technology of the time, mainly the radio and playback through loudspeakers, performs the acousmatic reduction and constitutes the material basis for Schaeffer’s insight. [8]

The acousmatic reduction is then followed by what Schaeffer called *reduced listening*, a mode

of listening in which the sound’s structure attains perceptual primacy and requires the listener to consciously avoid giving significance to the sound’s source, or to treat it as a *sign* or *index*. [9] “Only at the stage of reduced listening does the *sound object* emerge for the listener as the ontological foundation of sonic meaningfulness.” [10]

3. TIME IN MUSIQUE CONCRETE

3.1. Time is in Music

The ephemeral nature of sounds was challenged by recording technology which now allowed sounds to be reproduced identically over and over again and gave them a new sense of permanence. The separation of sounds from their physical and temporal structures, identified by Schaeffer as the acousmatic reduction, made way for an objectification which focused on the sonic behavior of the sound event, allowing the analysis of its “time qualities” regardless of the real physical time in which the sound object was produced and recorded. The “storing” of the *sound object* and its physical representation in the groove of the turntable’s needle or the magnetic pattern in tape extended the idea that sound has its own material properties and its own time characteristics. Furthermore, the unprecedented levels of control over the manipulation of sound naturally led to ideas that emphasized the plasticity of the material in a way that reminds us of sculpture.

The techniques pioneered by Schaeffer, allowed by the new technology and the composers’ experimentation with them, gave way to several observations about the nature of time in the newly defined sound objects. The application of these techniques changed the inner-time of the objects, therefore transforming them into new entities, new sound objects. For example, the ability to cut off

components of the sound object's envelope with techniques like splicing had profound implications on the object's qualities.

John Cage's experiments with tape splicing reinforced this conclusion. Cage believed that the "chief technical contribution of my work with tape is in the method of splicing, that is, of cutting the material in a way that affects the attack and decay of sounds recorded. By this method, I have attempted to mitigate the purely mechanical effect of electronic vibration in order to heighten the unique element of individual sounds, releasing their delicacy, strength, and special characteristics, and also to introduce at times complete transformation of the original materials to create new ones." [11]

Examples 78 through 82 in Pierre Schaeffer's *Solfege de l'Objet Sonore* show the kind of relationships that splicing can create between different sound objects. The violin's sound remains recognizable throughout the examples, despite the interruptions of what we perceive as bursts of noise. When the bursts of noise are presented isolated of the violin's held note we can identify their pitch but not their source. Finally, their identity is revealed in the last example, in which the listener realizes that the sources of the four bursts of noise were orchestral instruments. [12]

At its most extreme, Iannis Xenakis' experiments with granulation, a technique in which a sound object is cut into multiple pieces and then rearranged in a variety of orders, creating new objects, serve as an example of the almost infinite possibilities of transforming an object by splicing it.

Similarly, the alteration of speed of a sound, which was easily achieved by speeding or slowing down the turntable or tape, could transform a sonorous object dramatically, sometimes to an extreme where it becomes impossible for the listener to grasp any perceptible relations between the

original object and the transformed one. [13] The loss of the sonorous object's natural identity, created by the change in its inner-time, led to the conclusion that, as Robin Maconie observes, "things are not in time, but time is in things." [14]

3.2. Music is in Time

The same techniques had important implications on the macro-structural level of musical composition as well. The degree of precision that was acquired with the advent of recording/reproduction technology was unprecedented. With these devices the composer was able to create precise structures that would be impossible for a human player to perform. The proportions of the musical structure could now be measured in fractions of a second, instead of the general proportions constructed in beats and measures of earlier instrumental music.

These techniques, in their extreme precision, were also able to create innovative temporal processes. For example, tape splicing, as understood by Jonathan Kramer, was able to produce continuities and discontinuities that were never possible before. [15] If we accept Schaeffer's mode of reduced listening, the structural possibilities allowed by this radical increase in precision are enormous, permitting the composer not only to control the rate of continuity or discontinuity the listener perceives between multiple sound objects, but also of the increasing the type of sound objects that can be juxtaposed. This form of listening will also allow the listener to hear sonic processes that are not possible in instrumental music without the distraction of the natural reflex to search for the sound source's poetic meaning.

If we reject reduced listening, the juxtapositions between sound objects can become even starker, with the composer having the capacity of taking the listener at high rates between different worlds

of sounds, now carrying all their contextual baggage, and allowing him/her to make sense of their poetic-semantic relations. [16]

Consider the experience of listening to Pierre Henry's *Antiphony* in both ways. Reduced listening would most likely lead the listener to perceive the extremely rich rhythmic, harmonic and timbral continuities between the alternating sounds. In this way, the perception of time can be said to be more continuous. On the other hand, when listening to *Antiphony* contextually, the listener's attention will react to the variety of sound sources in the piece and their contrasting relationship, creating a more jagged experience of musical time. The alternation between the vocal sources, the instrumental ones and silence, could additionally create a dramatic experience missing in Schaeffer's proposed reduced listening.

This goes to prove that the mode of listening will undoubtedly affect the perception of time in the listener's experience, and perhaps the ideal form of listening would be the one suggested by Denis Smalley, which he denominates interactive listening, through which the listener will be aware of the dual meanings of the source (contextual and reduced.) [17] In any case, *musique concrète's* integration of recorded sounds and their alterations allowed the listener to experience musical in ways that previous music had not.

4. STOCKHAUSEN'S UNITED TIME STRUCTURING AND THE META-OBJECT

Stockhausen's experiments in *musique concrète* at the *Radiodiffusion Télévision Française* triggered a new interpretation of time. The composer suggested that by compressing a Beethoven symphony into one second (without transposing pitch) we would get a sound with a "particular

color or timbre, a particular shape or dynamic evolution, and an inner life which is what Beethoven has composed, highly compressed in time." Conversely, if we were to take "any sound and stretch it out in time to such an extent that it lasted twenty minutes instead of one second, then what we have is a musical piece whose large-scale form in time is the expansion of the micro-acoustic time-structure of the original sound." This continuum was the basis of what Stockhausen called *unified time structure*. [18]

With this in mind, the interpretation of a whole piece of music as a sound object itself or as a *meta-object* allows the conceptualization of musical time in a cyclical (or even fractal) continuum, in which a macrostructure (music is in time) composed of sound objects (time is in music) becomes an object itself (time is in music) of a new macrostructure (music is in time), etc. This theory and Stockhausen's *unified time structuring* challenge that the dichotomy established so far is static, and suggests that our definition will come down to perspective (proportion.)

5. CONCLUSION

The set of observations on time presented in this paper reflect the implications of *musique concrète* on the subject of musical time. We can summarize our observations into a few points:

- 1) The *sound object's* identity can be completely transformed by the technical alterations made possible by recording/reproduction technology as a result of the modifications of its inner time.
- 2) The macro-structure which consists of the interaction of the *sound objects* it contains, will have a drastically different level of precision in its timing. Its continuity and discontinuity will be

exponentially larger than in an instrumental work and the wider spectrum of materials will also affect the way that musical time flows.

- 3) The manner in which we listen to a piece of *musique concrète* will affect our perception of musical time. Searching for the sound object's source or meaning will lead to a different experience than when listening in a reduced way.
- 4) The possibility of the macro-structure becoming a *sound object* (or *meta-object*) itself through the application of the same transformational techniques allows the possibility of the *unified time structure* proposed by Stockhausen or the cyclical continuum proposed by myself.

The further development of technology now allows further precision and more complex manipulations of sound objects, but many of the questions about musical time raised by Pierre Schaeffer's aesthetic movement are still a concern today, a true measurement of the dimensions of the shift in musical perception brought on by *musique concrète*.

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