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At the limits of Schaeffer's TARTYP

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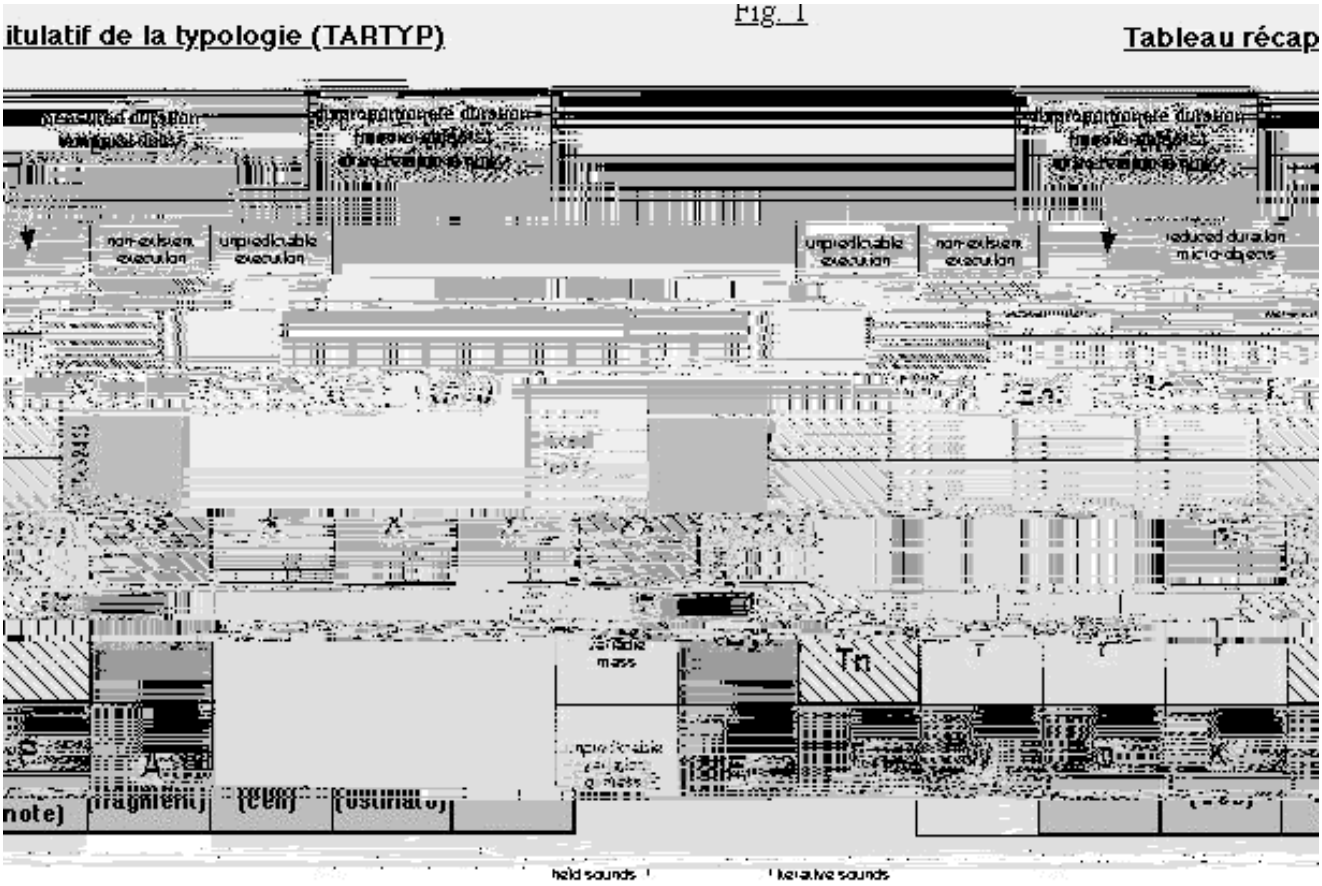
Abstract

languages, Schaeffer also realised that studio practice would inevitably produce new techniques and sound materials and these would demand new theoretical systems. Moreover, he believed that by a careful balance between these new practices and their theoretical ramifications, musicians would develop a more profound understanding of music - all music - as a social and artistic practice (1). Many of these ideas were presented in his *Traité des Objets Musicaux* (Schaeffer 1966). His deeply humanist attitude ensures that technology, however important, is never elevated above the sounds and our perception of them.

The years between Schaeffer's first experiments in 1948 and the publication of the *Traité des Objets Musicaux* is a particularly significant period. Schaeffer and his colleagues gradually became aware of the full implications of the new medium: sounds need no longer be restricted to a physical source even though the perceptual strategies of the listener might still use it as a point of reference. This liberation of sounds from sources was evident from the very first experiences in the studio. Consequently, there was an immediate connection between the technological means of sound realisation and resulting theory. For example, even the most 'primitive' techniques (by present-day standards) of the early musique concrète studio resulted in sounds whose dynamic behaviour and spectral constitution would not - in many cases, could not - refer directly to any known physical cause. Editing, changing playback speed, creating tape loops, adding reverberation and filtering confronted musicians with limitless numbers of new sounds. Schaeffer eventually devised a system of classification and description based solely on perception. My intention in this article is to examine the sound types identified by Schaeffer as existing on the fringes of traditional music. They are *excentric* sounds (sons excentriques) (2) and *redundant* sounds (sons redondants). I will examine his diagram, the *Tableau Récapitulatif de la Typologie* (or TARTYP) (3)



Traité des Objects Musicaux, 459

which was published in the *Traité des Objects Musicaux* (Schaeffer 1966: 459). By contrasting the *balanced* sounds with those of *excentric* and *redundant* sounds their implications for different languages can be assessed.

2 *The Tableau Récapitulatif de la Typologie* (TARTYP)

TARTYP attempts to represent diagrammatically the entire sound universe. Sound types were isolated and classified according to the stages of typology and an initial stage of morphology (4). Types were then placed in boxes formed by the intersections of the diagram's horizontal and vertical axes. Schaeffer himself stressed that to assign a sound object exclusively to one type might occasionally be both difficult and inappropriate as, due to context, a sound object's classification might require reassessment. A careful examination of the diagram reveals the subtle intelligence of Schaeffer's theoretical approach. The formidable challenge facing him was the necessity of combining several sound criteria into two dimensions. Thus, the diagram had to include Schaefferian notions such as *mass*, *sustainment* and *execution*. For example, the vertical dimension subdivides *mass* (a generalised notion of pitch) into four principal categories. This is indicated on the left-hand side of TARTYP. A sound object's *mass* will be either clearly defined and stable in the pitch-field (for example, the notes of traditional instruments: the flute, violin, piano…) or it will consist of a complex spectrum (such as

cymbals, piano clusters…). In addition to these categories Schaeffer lists *mass* which varies slightly in the pitch-field and *mass* which varies within the sound object in an unpredictable manner. Thus, the axis does not simply list *mass* from high to low positions in the pitch-field, nor does it describe the occupation of the pitch-field from the sine-wave to white-noise. The concept of variation and change within sound objects is incorporated into TARTYP at the most fundamental stage. This is an obvious result of Schaeffer's preference for investigating concrete sounds which are often lively and unpredictable. Furthermore, it contrasts with the approach of composers in Cologne where, due to serial preoccupations, the need for perfectly stable sounds was, initially at least, a priority (5).

The horizontal axis deals not only with duration (the sounds become longer as they move from the centre) but the manner in which the sound's energy is maintained over time. This is either continuous ('held sounds' to the left) such as a sustained note on a wind or string instrument, or iterative ('iterative sounds' to the right) where the sound energy is maintained in close, repeated bursts (a tremolo, for example). Furthermore, the notion of *execution* is incorporated into the horizontal axis in order to construct the two outermost columns on each side. *Execution* is an explicitly qualitative notion. If a sound object's spectral components and dynamic evolution behave in a manner such that a listener can imagine a physical source and cause, then the sound object has *execution*. It must be emphasised that this is not restricted to sounds that do have real-world origins; the sound object might be entirely synthetic - the appraisal is achieved solely by perception. Thus, to have *execution* a sound object must give the impression of the way in which it could have been created. For example, if we imagine a recording of a single, mid-range note played by plucking a string on a guitar, or harp. Its duration would be neither excessively short nor long and the evolution of its spectral components would conform to our learned expectations of a plucked string's physical behaviour. Such a sound object would have *execution*. However, if the same sound object were transformed by time-stretching and selective filtering, the sound's *execution* might be less evident. Providing the duration remained within certain limits and the dynamic profile and spectral components continue to behave in a relatively 'natural' manner, *execution* would probably still be applicable. Nevertheless, additional transformations could disrupt this assessment. By modifying the abrupt attack into a gradual onset, extending the total duration and randomly attenuating or emphasising frequencies *execution* is removed. The long duration inhibits the listener's memory of how the sound was initiated and the random fluctuations of the spectra creates an impression of artificiality. The incorporation of *execution* in TARTYP is essential as, in a sense, it can be used as an indication of how distant a sound object is from real-world experience. Sound objects with *execution* assist our predisposition to seek for a cause and relate it to familiar acoustic events leading, perhaps, to the creation of sound families. Naturally, this is a process which continues throughout a musical work and may need extensive modification as the composer confirms or subverts our culturally acquired expectations.

A central position in TARTYP is given to the nine *balanced* sounds and a brief examination of them is necessary in order to contrast their musical functions with those of sounds at the periphery of the diagram. *Balanced* sounds comprise the vast majority of the traditional Western instrumental vocabulary. It is only in the twentieth century that this has been enlarged by extended techniques and unorthodox orchestration. A *balanced* sound, by definition, has *execution*. It is of medium duration and has an easily perceptible, well-formed dynamic shape. The exceptions - impulses - occupy TARTYP's central column. Strictly speaking, due to their short duration, impulses are *balanced* but 'non-formed' (see Chion 1983: 129). The majority of music before the twentieth century consisted of the three N type sounds (sounds which have clearly defined, stable pitch) with occasional contributions from X types (similar to N sounds but of complex pitch). Y sounds which vary slightly in the pitch-field are relatively recent additions to Western music. However, the inclusion of Y type sounds is in itself significant. Schaeffer did not feel inclined to differentiate between Y sounds of definite or complex pitch. They are placed in the row of slightly varying *mass* indicating that the characteristic of slight variation was the predominant categorical feature. Even a cursory inspection of TARTYP reveals that *balanced* sounds occupy only a portion of the sound universe. Their dominant position in music can, of course, be explained. N type sounds function effectively within tonal, modal and even serial systems as elements at the lowest level of structure and can be organised into units at higher structural levels. Nevertheless, the exclusion of all other sounds cannot be justified in electroacoustic music. In addition, it must be emphasised that each box contains a vast number of individual sound objects. Once assigned to a category, sounds would be subjected to further description according to morphology.

3 *Redundant* and *excentric* sound types

The sound objects in the outer regions of TARTYP are the principle subject of this article and are situated in the two columns on either side of the *balanced* sounds - for sounds with 'non-existent *execution*' and those with 'unpredictable *execution*'. In addition, three types should be included which are situated in the lowest row in the three columns of *balanced* sounds.

3.1 *Excentric* sounds

Excentric sounds are complex and unpredictable in terms of spectral and dynamic evolutions. With the exception of three 'general examples' they display little sense of causal unity due to their chaotic or missing *executions*. The three 'general examples' can be seen in the central section of TARTYP's lowest row and contain the following types: *large note* (W), *fragment* (Φ) and *cell* (K). As they are placed immediately beneath the *balanced* sounds their durations are not as extended as the types placed in columns to the left or right. The *large note* is a continuous, coherent, evolving sound of medium duration. The *fragment* has (as one would expect) a short duration but not as short as an impulse. Its *mass*

iterative its energetic momentum is fractured and discontinuous. Schaeffer cited examples of these sounds in traditional music. For example, he claimed a *large note* can be found in Bach's Toccata in D minor (Schaeffer 1966: 456). The logic and consistency of each individual note is subsumed into a coherent whole. Thus, such sounds could be considered larger, more distended versions of their *balanced* counterparts situated above.

The sound types in the boxes to either side are less familiar in instrumental terms (apart from the avant-garde repertory). The continuous *excentric* sounds in the column to the left are the *web* (T) and the *sample* uge467parts situF2 12 Tf -0.10.0155 Tc 0.1execu32 0 (souge 302 the column to the lef26ither sid4

to Schaeffer the lack of *execution* betrays their artificial origins. This stems from the fact that such sounds are unlikely to result from single sources - instrumental or otherwise. They can only be produced by careful instrumentation. As a result of their duration and lack of clearly defined form, the ear can focus on the development in *mass* in the cases of the *special webs* and special *ostinati* (by definition there would be no development in sounds higher in these columns). These sound types seem to be particularly problematic as their formlessness hinders unambiguous classification. For example, Schaeffer did not include the type called a special *siren* in TARTYP as he considered it an extended version of the varied *balanced* note Y. This is made clear in a table of *redundant* sounds in the *Traité des Objets Musicaux* (Schaeffer 1966: 451).

The diagram emphasises the flexible nature of classification; the edges of each box are ‘fuzzy’ rather than clear, rigid demarcations of types. Movement from one to another is always possible and context-dependent.

4 Implications for Languages

TARTYP’s value would be limited were it to remain simply a taxonomy of sound types. Important though the stages of classification and description are, Schaeffer intended to investigate how sounds might function within a language. Consequently, he had to progress beyond the lowest level of musical discourse. Schaeffer considered, therefore, how structures are formed from sound objects. He wrote: ‘We rediscover in a prosaic form the fundamental axiom: each structure is built on a variation,

but we are led to this discovery by two very different types of experience. The one discovers structure in a discontinuous configuration, a *series*

values and characteristics as Schaeffer's fundamental axiom itself. The notions of permanence and variation might be applied in a variety of ways and could fluctuate throughout the composition as values are established securely or ambiguously by the composer. Indeed, there are many examples where traditional characteristics have been transformed into values. For example, in 1958 Schaeffer composed 'Etude aux allures' in which variations in speed and depth of the morphological criterion *allure* - a generalised vibrato - were elevated into the principal structure-creating roles. The success or failure of such new discourses rests mainly on the listener's ability to hear 'abstract' relationships between these potential values. N type *balanced* sounds, due to their discontinuous nature and perceptible pitch contents, would be most suited to participation in such abstract musical languages while X and Y types would function less satisfactorily. Although the *large note*, *fragment* and *cell* are of medium duration, their disordered variation of mass might indicate that one of their principal roles would be to mediate between different types of discourse.

When applied to the acousmatic situation the physical existence of the instrument (or the sound-body in general) as sound source is redundant. However, Schaeffer coined the term 'pseudo-instrument' in recognition of our tendency to relate sounds to common origins if they displayed a sufficient number of common features. Thus, in an acousmatic work if sounds are grouped together such that the impression is created of a single source (whether real or not) then we have a pseudo-instrument. Consequently, sound families (or *genres* to use Schaeffer's term) can be created according to their immanent features. This extension of the traditional notion of instrument can still form the basis for the perception of values and characteristics. The consequences are profound. All instruments, due to the nature of physical systems, display varying degrees of unity due to the position of notes in the pitch-field, dynamic levels etc. The 'timbre' is seldom disrupted as the practised listener can, without difficulty, usually accommodate such inconsistencies. These subtle differences can, however, be exploited by the acousmatic composer who is able to mediate between different pseudo-instrumental registers leading to the creation of 'virtual' or 'hyper' instruments. The dualisms of permanence of characteristics/variation of values is not necessarily compromised, it is elaborated and extended.

It is the remaining sounds - continuous sounds - like the *redundant* and *excentric* types which must now be considered. Due to their length and variation in *mass* the dualism of value/characteristic would almost certainly be inapplicable. For example, if several *webs* occur in close proximity, could these be regarded collectively as a pseudo-instrumental genre? In addition, would they function in the same way as discontinuous sounds? Several *webs* might be juxtaposed with many common features. However, their duration and the development of internal variations would probably dominate over any attempt to perceive relationships between them based on pitch. There might be similarities between general profiles and behaviour of individual components in the *webs* but the listener would probably still be inclined to focus on the nature of the variation in *mass*. As Schaeffer asserted in the aforementioned quotation, structure could be perceived in the variation itself: 'in the continuity of a

single object’. For such sound-types Schaeffer suggested the pair of variation/texture (although this

Traité des Objets Musicaux begins with his speculations on a primitive man 'playing' with gourds of various sizes and thereby discovering the 'instrument' and how permanence/variation functions. Towards the book's conclusion in chapter 33 he considers the same primitive man perceiving the wind and the sea and once again discovering musical structure, but this time in continuously varying sounds.

In conclusion, I would suggest that the importance of *excentric* and *redundant* sound types is essential to the electroacoustic medium. I do not wish to diminish the importance of explicit quotations from the real-world in electroacoustic works. The poetic nature of such sounds is unquestionable; they augment the vocabulary of electroacoustic music and can participate in a variety of languages. Nevertheless, I would argue that it is precisely when we are confronted with long, complex sound objects that the full implications of the electroacoustic medium are evident. These sounds have