

A. *The acousmatic revelation*

A number of historical circumstances has led to the notion of the sound object. First, the initial discoveries of “musique concrète” with its two inaugural experiments: the *closed groove* and the *cut bell*; then, the awareness of a listening situation, not new, but whose originality had never been identified or given a specific name; the acousmatic situation.

» 1. ACOUSMATIC

1) *Acousmatic*: a rare word, derived from the Greek, and defined in the dictionary as: *adjective, indicating a noise which is heard without the causes from which it originates being seen.*

The word was taken up again by Pierre Schaeffer and Jérôme Peignot to describe an experience which is very common today but whose consequences are more or less unrecognised, consisting of hearing sounds with no visible cause on the radio, records, telephone, tape recorder etc.

Acousmatic listening is the opposite of *direct* listening, which is the “natural” situation where sound sources are present and visible.

The acousmatic situation changes the way we hear. By isolating the sound from the “audiovisual complex” to which it initially belonged, it creates favourable conditions for *reduced listening* which concentrates on the sound for its own sake, as *sound object*, independently of its causes or its meaning (although reduced listening can also take place, but with greater difficulty, in a direct listening situation).

2) *Effects of the acousmatic situation*: the acousmatic situation alters the conditions of listening, with certain characteristic effects. Some of these are:

a) The help provided by sight to identify the sound sources is absent. “*We discover much of what we thought we were hearing was in reality only seen and explained by the context*” (93).

[19] b) Sight and hearing are dissociated, encouraging listening to sound forms for themselves (and hence, to the sound object).

Indeed, if curiosity about causes remains in acousmatic listening (and it can even be aroused by the situation), the repetition of the recorded signal can perhaps “exhaust” this curiosity and little by little impose “*the sound object as a perception worthy of being listened to for itself*” (94), revealing all its richness to us.

c) By repeated listening to the same recorded sound fragment, the emphasis is placed on variations of listening. These variations do not arise from a “blurring” of perception, but from “*specific moments of illumination, directions which are always precise and always reveal a new aspect of the object, towards which our attention is deliberately or unconsciously drawn*” (94).

3) *The acousmatic experience*: the rare word “acousmatic” also described in Greek a sect of the disciples of Pythagoras who were said to follow a form of teaching where the Master spoke to them hidden behind a screen. This was done in order to distract their visual attention from his physical appearance.

P.S. emphasises the *initiatory* significance of the acousmatic experience which enables the listener to become aware of his perceptual activity as well as of the sound object.

It was the acousmatic nature of sound on the Radio which, in 1948, led him to develop a self-contained “noise music” which he was to call *musique concrète*. This is why he came to extend the meaning of the term “acousmatic” and speak of the “acousmatic experience” to describe a new way of hearing: “*giving oneself over entirely and exclusively to listening*”, in order to discover the path from the “sonorous” to the “musical”. The tape recorder in this research plays the initiatory role of “*the screen of Pythagoras*”, by creating not only new phenomena to be studied (by manipulations in the studio), but also and above all “*new conditions for observation*” (98).

Acousmatic and acoustic

We must take care not to misinterpret the acousmatic situation, for example by making a distinction between the “objective” – what is behind the curtain – and the “subjective” – “*the listener’s reaction to these stimuli*” (92) in an over-scientific simplification of the phenomenon. On the contrary “*the acousmatic involves a reversal of the normal course of events (...) it is no longer a question of knowing how a subjective listening interprets or distorts ‘reality’ or of studying reactions to stimuli; the listening itself becomes the origin of the phenomenon to be studied. (...) The question: ‘What am I hearing?... What precisely are you hearing?’ is turned back on to the subject, in the sense that he is being*

asked to describe, not the external references of the sound he perceives, but his perception itself.” (92).

So Acousmatic and Acoustic are not opposites like objective and subjective. Insofar as it is a procedure (and not just simply a situation) the Acousmatic “*must be unaware of (...) measures and experiments which apply only to the physical object, the acoustician’s ‘signal’.* But the fact that the Acousmatic is focused on the subject does not mean that it must give up all claim to its own objectivity (...). The problem is how, by comparing subjective experiences, we might find something that several experimenters could agree upon” (92).

[20] This research, guided by the *reintroduction of phenomenology* which inspires every stage of the T.O.M. will lead to a definition of the *sound object* in its “inherent objectivity” based on a new listening mode: *reduced Listening*.

ACOUSMATIC: 90, 91-98, 150-151, 468.

» 2. CLOSED GROOVE / CUT BELL

The “closed groove” and the “cut bell” are the two “experiments in interruption” which were at the origins of *musique concrète* and certain discoveries in experimental theory.

1) At a time when such music was made on *supple discs*, the closed groove experiment consisted in closing a recorded fragment in on itself (as is done accidentally by a scratch), thus creating a periodic phenomenon taken, either by chance or deliberately, from any sound continuum and able to be repeated indefinitely. With the arrival of the tape recorder, the tape loop replaced the closed groove by creating an exactly similar effect. Widely used in *musique concrète* during this period, the closed groove led to an awareness of the sound object and reduced listening: how, indeed, could this sound fragment be described *in itself*, when the “causal” and anecdotal perception was soon over and when it presented itself to the listener as an “object”, always identical yet always capable of revealing new characteristics when heard over and over again?

2) The experiment of the *cut bell* also involved intervening in the progress of a recorded sound: if a fragment of the resonance of a bell was “taken out” after its attack, then, by evening out its dynamic behaviour and repeating this fragment using the technique of the “closed groove”, “*a sound like a flute*” (417) could be heard. This experiment led Pierre

Schaeffer to the idea, which he was to verify in subsequent experiments, that the recognition of a timbre was not linked as much as was thought at the time to the presence of a distinctive harmonic spectrum, but also to other characteristics in the *form* of the sound (particularly the attack).

As an “*experiment in interruption*”, isolating a sound from its context, manipulating it, and thus creating a new sound phenomenon which could no longer be traced directly to its cause, the experiment of the *cut bell* together with the *closed groove* encouraged people to practise “reduced listening” and draw out from it the notion of the sound object (391).

Typologically, the closed groove can be put under the same heading as an *ostinato* (cyclic repetition of a fragment) in its usual sense, whereas the artificial and brief sounds of the cut bell, if they are not repeated in closed grooves, can be classed with *fragments* (see **80** and **81**).

CUT BELL: 391, 417, 455.

CLOSED GROOVE: 23, 65, 391, 455.

[21]

B. *Physical Signal and Sound Object*

Before discussing in detail what a sound object is, we shall begin by saying what it is not:

- It is not a simple “translation” by the ear of a physical signal, as a whole current of musical thought contemporary with the T.O.M.’s research encouraged people to believe. Hence, several pages of the T.O.M. contain a formal critique, backed up by numerous experiments, of this tendency which involves reducing auditory perception to a sort of identical copy of an “objective” physical signal. It points out that there are very variable *correlations* between the physical signal and the perceived sound, which can be characterised by phenomena called *anamorphoses* and which demonstrate that sound cannot be reduced to a linear translation of a stimulus.

- Similarly, if the sound object is associated with a new listening mode which we shall call reduced listening, we should first try to understand the mechanism of “ordinary”, non-reduced listening modes. For there are several: at least 4. These are the 4 *listening modes* defining 4 *sectors*, 4 ways of considering our relationship to sound. These four sectors recur throughout the *Guide to Sound Objects*.

» 3. PHYSICAL SIGNAL

1) We cannot deny that every heard sound is the perception of a vibrating phenomenon occurring in the physical world. But it is impossible to claim to deduce from this, as was often the case during the 50s and the 60s, that perceived musical values are measurable and identifiable from the particular parameters of this physical signal.

Indeed, it is important to distinguish SOUND as a physical signal and thus measurable by machines, and SOUND as a sound object, which arises from a perceptual, qualitative experience, which can no more be identified by a physical phenomenon than the perception of a colour is by a wavelength.

2) The “PHYSICAL SIGNAL” is, therefore, sound as an energetic phenomenon acting in the physical world (electric current, mechanical vibration), existing independently of any “listener”, but which allows him to hear a “sound object”.

This physical signal can be located and quantified by its particular qualities (frequency, amplitude, chronometric time, etc.) using measuring devices; it can be recorded and reproduced by recording and reproducing equipment which also allows it to be manipulated; and it can also be synthesized electronically with very precise determination of each of the characteristics cited above (frequency, amplitude, etc.).

[22] It is true that the CORRELATIONS between the variations of a physical signal and the perceived sound object which corresponds to it are close, but they are not a direct copy. It is the job of “psychoacoustics” to study these correlations from simple physical examples (pure frequencies for example), and particularly all the phenomena of distortion (anamorphoses) which occur when moving from one to the other, as a result of the PHYSIOLOGICAL properties of the ear and the PSYCHOLOGICAL data which intervene in the act of listening.

The active role of the ear in constructing and defining the characteristics of perceived sound can be demonstrated by showing that in certain cases the ear perceives fundamental notes which do not physically exist but which it supplies from the spectrum of their harmonics.

Pierre Schaeffer’s challenge to “scientific prejudice” (through which sound is equated with the perception of its physical components, giving the practice of music the status of a “science”) is based, therefore, on PSYCHOACOUSTIC experiments (reported in book III),

but it aims to go beyond the elementary examples studied by ordinary psychoacoustics to attain the status of MUSICAL EXPERIMENTATION.

The aim of this experimentation, which Schaeffer differentiates from psychoacoustics is “*to establish experimental relationships between the physical signal (sound, defined by acoustic parameters) and the musical object (perceived with the intention of musical listening)*”, this research “*is not affected by any preconceived theories based on the findings of psychoacoustics*” (168).

a) *Difference between physical signal and musical object.*

“*The physical signal... is not sonorous, in the sense of something which is grasped by the ear. It has to do with the physics of elastic environments. It is defined in relation to norms, and its own system of reference*” (269).

In his research into sound, Schaeffer says, “*the acoustician is concerned with two things: the sound object which he listens to, and the signal which he measures. From his erroneous viewpoint, all he has to do is first put down the physical signal, consider what he listens to to be its result, and the sound object as a subjective manifestation... He forgets that IT IS THE SOUND OBJECT ITSELF, WHICH IS GIVEN IN THE PROCESS OF PERCEPTION, THAT DETERMINES THE SIGNAL TO BE STUDIED, and that therefore it cannot possibly be reconstructed from the signal. The proof of this is that there is no principle of physics which would enable him, not only to differentiate, but to have any notion of the three sounds C, E, G, contained (and mixed together) in a few centimetres of tape*” (269).

b) *Psychoacoustics and experimental music in relation to the physical symbol.*

Whereas psychoacoustics looks for simple examples, such as pure frequencies, in order to study “*the connections between variation in an elementary physical dimension of the object and variation in a sensory value*”, the experimental musician, “*has no particular predilection for physically straightforward stimuli. What interests him,... are clearly perceived dominant musical perceptions, which may quite well be caused by sounds which are physically very complex... The musician’s ultimate point of reference is the ear*” (170).

So, in contrast to the psycho-acoustician, the musician does not seek to explain the individual’s “black box”. He lives “*in an original world which he studies for itself, the world of musical perceptions*”(171).

[23] PHYSICAL SIGNAL: 159-171, 269.

» 4. CORRELATIONS

1) The relation between the physical signal which produces the sound impression, and the perceived sound itself, is called the *correlation*. The term correlation signifies that there is no regular and automatic similarity between one and the other, but that perception intervenes with its own character and specific laws and is not content passively to “imprint” the variations of a physical “stimulus”.

The study of these correlations therefore consists in examining a certain number of those examples where perception apparently contradicts or problematizes the measurements indicated by the physical signal: not because it is “blurred” or “deceptive”, but because it possesses its own inherent objectivity which cannot be reduced to the world of physical phenomena.

The author notes that until now the study of these correlations has been neglected, particularly by those who wanted to base a musical technique on acoustic laws, and who therefore postulated that music and acoustics were consistent with each other.

2) More generally we intend to study the “*reasonable and reasoned correlations*” between *acoustics* and *music* by defining the “objects and methods” specific to each domain. While acknowledging the closeness of their relationship, the author believes it is time to define their true nature.

Examples of correlations between physical signal and sound object

Book III of the TRAITÉ examines, with supporting experiments, some examples of correlations between parameters that belong to the physical signal and properties of the perceived sound object.

For example:

a) *The correlation between spectrum and pitch*, where it appears that the concept of perceived pitch, “*far from being apparent, and connected, as people say, to the frequency of the fundamental, is a complex, plural concept*” (188) and “*the apparent bulk or mass of a sound, or its precise position in pitch do not exactly correspond to the physical bulk of the spectrum or the position of a fundamental.*”(192).

Experiments on the *thresholds* of pitch *differentiation* demonstrate the importance of familiarisation and context in the perception of very small variations (Francès’ experiment on harmonic vectors, cf. his book, *la Perception de la Musique*, p. 67ff.).

b) *Experiments on thresholds and transitionals*: the minimum time-thresholds of the ear for recognising pitches, articulations and timbres play an important part in the perception of the physical characteristics of sound.

c) *Experiments in “anamorphoses of dynamics and timbres”* (see ANAMORPHOSES): these experiments establish the importance of the dynamic development of sound, throughout its duration, to the perception of its attack and timbre.

d) *Experiments on time and duration*: these lead us to posit that perceived musical duration is a function of the density of information (time-duration anamorphosis).

[24] All these experiments, which demonstrate the discrepancy between the physical and the perceived, are a preliminary to research into a new experimental theory of perceived sound, which would define its own objective criteria instead of borrowing a semblance of objectivity from other disciplines.

CORRELATIONS: 58, 128, 144-147, 157-258 (Book III), 267, 275.

» 5. ANAMORPHOSIS

1) A particular example of the correlation between physical signal and sound object characterised by “certain irregularities” which are noticeable in the transition from physical vibration to perceived sound “*suggesting a psychological distortion of physical ‘reality’, and which demonstrates that perception cannot be reduced to physical measurement*” (216).

Anamorphoses which appear whilst perceiving sounds involve, amongst others, the dimension of time: these are called *temporal anamorphoses*.

For example, the attack of a sound is associated by the listener with the beginning of the sound, whereas splicing experiments show that this perception of attack is a synthesis made subsequently by the ear of the sound’s energy profile over its entire duration, and in a very variable manner depending on its specific dynamic and harmonic profile.

In other words, a phenomenon which is physically spread over the complete duration of a sound, i.e. its dynamic development, will be perceived as a specific quality of attack. This dynamic development turns out to be important in characterising the *timbre* of the sound object, which cannot then be reduced to a characteristic harmonic spectrum.

In the same way, experiments on time and duration lead to the contention that musical duration as heard is not the same as “objective” duration. Even when the “chronometric”

duration is the same, a sound which is rich in information will be perceived as longer than a sound which is “poorer” and more predictable. (TIME-DURATION ANAMORPHOSIS, 248).

Thus, a reversed piano sound will appear longer than the original because the reversed version is more unusual and engages the ear more actively.

2) In a secondary sense, derived from the first, the term anamorphosis is used in the study of the theory of variations (see **30**) to indicate the most rapid and the densest of the three speeds of variation that can be heard. The two other degrees of speed and density are called *progress* (slow speed and density of variation) and *profile* (medium speed and density of variation).

ANAMORPHOSIS: 216-231, 232-243, 248, 251, 253, 255, 563 (in its second meaning of sounds with rapid variation, see p.567, 568, 572).

[25]

C. *The circuits of “ordinary” listening*

» 6. THE FOUR LISTENING MODES

1) There are *four modes of listening* (Listening [Écouter], Perceiving [Ouvir], Hearing [Entendre], Comprehending [Comprendre]) which can be arranged in a four quadrant table, with four *sectors* numbered from one to four. These four sectors, defined in such a way, clearly located and each given a code number, will help us to understand not only musical research and the functioning of traditional music, but also the relationship between music and language and the physical signal and the musical object. In effect, they arise from the intersection of two pairs which are encountered universally in every perceptual activity: the pair Abstract/Concrete and the pair Objective/Subjective (the meeting of the *object of perception* and *the activity of the perceiving consciousness*). The T.O.M therefore contains a certain number of tables focusing on various questions which, in their layout, stem from this initial matrix-table of the four listening modes:

4. COMPREHENDING [COMPREDRE]	1. LISTENING [ÉCOUTER]
3. HEARING [ENTENDRE]	2. PERCEIVING [OUÏR]

The clockwise numbering will soon become familiar: it indicates not a chronological sequence but a “circuit”, where perception moves in every direction and where the four sectors are most often involved simultaneously, interacting with each other.

But what are these four listening modes? What do these four everyday verbs mean in the language of the T.O.M.? Listening, Perceiving, Hearing, Comprehending.

In sector 1 - *Listening*, means listening to someone, to something; and through the intermediary of sound, aiming to identify the source, the event, the cause, it means treating the sound as a *sign* of this source, this event (Concrete/Objective).

In sector 2 - *Perceiving*, means perceiving by ear, being struck by sounds, the crudest, most elementary level of perception; so we “hear”, passively, lots of things which we are not trying to listen to or understand (Concrete/Subjective).

In sector 3 - *Hearing*, here, according to its etymology, means showing an intention to listen, choosing from what we perceive what particularly interests us, in order to make a “description” of it (Abstract/Subjective).

In sector 4 - *Comprehending*, means grasping a *meaning*, values, by treating the sound as a sign, referring to this meaning through a language, a code (semantic listening; Abstract/Objective).

[26] These four modes can be summed up more or less in this sentence: “*I perceived (ouïr) what you said despite myself, although I did not listen (écouter) at the door, but I didn’t comprehend (comprendre) what I heard (entendre).*”

(3) & (4)
 ABSTRACT

(1) & (2)
 CONCRETE

because the object is stripped down to qualities which describe perception (3) or constitute a language, express a meaning (4).

because the causal references (1) and the raw sound data (2) are an inexhaustible concrete given.

<p>(4) COMPREHENDING</p> <p>A meaning conveyed by SIGNS.</p>	<p>(1) LISTENING</p> <p>Events, causes, of which the sound is an INDEX.</p>	<p>(1) & (4) OBJECTIVE because we turn towards the object of perception.</p>
<p>(3) HEARING</p> <p>selected sound object by means of selective perception.</p>	<p>(2) PERCEIVING</p> <p>raw sound objects by means of raw perception.</p>	<p>(2) & (3) SUBJECTIVE because we turn towards the activity of the perceiving subject.</p>

(after the *Table of Listening Functions*, 116, see *Appendix*)

a) *The circuit of the four listening modes.*

First, the four listening modes involve two sets of comparisons:

- vertically, between abstract and concrete;
- horizontally, between objective and subjective.

The bottom half (2 and 3) concentrates on the person who is perceiving, the top half (4 and 1), on his objects of perception.

- On the left (4 and 3), we have the two abstract sectors: the process of listening, (below), with HEARING, which involves the selection of certain qualities of sound, turns (above) with COMPREHENDING, towards the comprehension of a meaning through abstract values, a code, etc.

- On the right (1 and 2) we have the two concrete sectors: listening (below), with PERCEPTION, a “raw perception” of sound, turns (above), with LISTENING, towards the recognition of the real-world source of the sound and its agent, through the indications given by the sound.

“Whether we’re talking about subjective listening, or values and knowledge emerging collectively, the whole idea in 3 and 4 is to strip down, and consists in retaining from the object only qualities which will allow it to be related to others, or to be referred to meaningful systems. On the contrary, in 1 and 2, whether we’re talking about every potential for perception in the sound object, or every causal reference in the event, listening turns towards a given in the real world, inexhaustible as such, even though specific” (119)

[27] These two sets of comparisons, between Objective and Subjective, Abstract and Concrete can, according to the author, be found in all human activity:

“In every act of listening (...) on the one hand there is the encounter between a person receptive within certain limits and an objective reality; and on the other hand, abstract value-judgements, logical ways of describing, detach themselves from what is given in the real-world, which tends to organise itself around these, but without ever being reduced to them” (119).

Every listener can “specialise” in one “*of the four poles which arise from this two-fold tension*” (119), but always in relation to the 3 others:

“No specialist can in fact dispense with “going round” the whole cycle of quadrants several times, because no-one can escape from his own subjectivity when dealing with a supposedly [abstract] objective meaning or [concrete] event, or from the [abstract] logical deciphering of a [concrete] event inexplicable in itself, and hence from the uncertainties and the progressive learning process of perception”(119-120).

b) A “*dangerous intersection*”: another compartment for the abstract.

So, until page 308 inclusive of the T.O.M., the various tables in 4 sectors which Pierre Schaeffer develops from the initial 4 listening modes table (113) for his own reflection, are

divided into a *concrete* side on the right (1 and 2) and an *abstract* side on the left (3 and 4). They are respectively:

- *The table of listening functions* (116) which summarises the characteristics of the 4 listening modes (this diagram is “visually represented” on the cover of the work in 4 pictures illustrating each mode);

- the diagram in two parts showing the *correlation between the physical and musical object* (fig.1, 144) for the physicist and musician;

- the two diagrams with their variants showing the listening mode *omitted in language* (307 and 308), comparing *language* with music;

The final summary of listening intentions (fig. 2, 154) does not follow the arrangement into 4 sectors, but can be found in a y-shape with a concrete side on the right (listening to sound as an *indication* of an event) and an abstract side on the left (listening to sound as the carrier of a *meaning*) (see BIFINTEC)

At one stage, where the “experimental system” is introduced, this dividing line is put into question. Sector 1, the causal reference to source (*listening* to an instrument) is relocated on the abstract side. For example, reference to an instrument (such as the violin) on a traditional score shows a certain level of abstraction despite appearances.

“Thus, the term violin in the indication “a G on the violin” is no less abstract than the value of the symbol G. Leaving aside everything else, what has been retained is what could be common to all possible violins” (317).

After this new interpretation of sector 1 as showing not only a concrete reference to a particular source (*violins*) but also a more general reference to the fact that *a* characteristic type of instrument (*the* violin, with its generic timbre), or even a *genre* of characteristic sources is an abstraction, only sector 2 (raw “hearing”) of the rest of the 4-sector diagrams in the T.O.M. remains truly concrete.

This is true of the following diagrams, in order:

- *Comparative table of materials for language and music* (314).
- *Summary of Musicality-Sonority (Traditional System)* (fig. 20, 320);
- *Sonority and Musicality of the instrumental fields* (fig. 21, 324);
- *Comparison between the code of conventional languages and the repertoire of noises* (fig. 22, 338);
- [28] *Traditional musical system* (fig. 23, 367);
- finally, and most importantly, the *Programme of Musical Research* (fig. 24, 369) known as PROGEMU (see *Appendix*).

In the latter, sector 2 (*Typology*) which is still concrete, is precisely the sector on which the 4-stage programme for the reclamation and synthesis of the musical is based.

These typographical considerations may seem otiose, but the T.O.M. continually shows the importance which the author gives to the *spatial arrangement* of the (usually dual) ideas he is dealing with, in *tables* which in most cases arise from the principle of 4 sectors, which is itself based on the intersection of 2 opposites. Without their relationships, their interdependences and their polarities (“visually” represented and created within a two-dimensional “conceptual space” in this great number of diagrams), the ideas in the T.O.M. have neither meaning nor function. So it is no surprise that Pierre Schaeffer takes two pages in the T.O.M. (316-317) to justify his reorganisation of the initial placing of the pair Abstract/Concrete within the 4 original sectors, and that he points out that the critical moment when concepts must be expressed in spatial terms is a “dangerous intersection” (§18, 2, p. 316).

c) *Summary of the diagrams in the T.O.M. based on the 4 sectors.*

1. *Table of listening functions* (116); this is the diagram on which the cover of the T.O.M. is based.
2. *Correlation between the physical and musical object* (144): here each has its diagram, there is one for the physicist, one for the musician.
3. *Final Summary of listening Intentions* (154, BIFINTEC). This diagram is not divided into 4 sectors, but is a new layout of the first diagram on p.116.
4. *Comparison of Language and Music* (307 and 308). Here, in the same way, language and music are compared in 4 sectors one after the other; there are two variants of the diagram.
5. *Comparative Diagram of materials for language and music* (314).
6. (Untitled) diagram illustrating the eventual “intersection” of the 4 sectors: instead of objective-subjective crossing over abstract-concrete we have meaning-event crossing over general-particular (317).
7. *Summary of musicality-sonority (traditional system)* (320): musicality is “above” (sectors 1 and 4); sonority is “below” (sectors 2 and 3).
8. *Sonority and Musicality of instrumental fields* (324). This diagram is shaped like a sort of kite with its four corners held out by the 4 sectors.
9. *The code of languages and the repertoire of noises* (338).
10. *The traditional musical system* (367). This diagram shows a new dualism

Identification (sectors I and IV) and *Description* (sectors II and III) (see **23**).

11. *Programme of Musical Research* (369, PROGEMU). This is the richest and most complex, as in effect it contains two interlaced diagrams, one on the “traditional system” (boxes I and IV in Roman numerals), the other on the “experimental system” (boxes 1 to 4 in Arabic numerals, where the four main stages of the Music Theory can be found: Typology, Morphology, Analysis, Synthesis).
12. (Untitled) *The “four musics”* (638) – see *Polyphony/Polymorphy* (**31**).

FOUR LISTENING MODES (THE): 112-120, 121, 125, 142, 144, 154, 307, 308, 314, 317, 320, 338, 363, 367, 369, 497, 498, 499, 501, 615.

[29] » 7. ORDINARY/SPECIALIST (LISTENING MODES)

1) One of the two pairs of listening modes, together with the pair natural/cultural.

Ordinary listening goes immediately to the *causality* of the sound, its origins, as well as its meaning (sectors 1 & 4, LISTENING and COMPREHENDING) but does not reflect very much on itself (sectors 2 & 3 PERCEIVING and HEARING) or on how it functions.

Specialist listening concentrates on a particular manner of listening. For example, the sound of galloping: ordinary listening hears it as the galloping of horses, but different specialised listenings hear it differently; the acoustician seeks to determine the nature of the physical signal, the Native American Indian hears “the *possible danger of an approaching enemy*”, and the musician hears *rhythmic groupings*.

We must, however, beware of thinking that ordinary listening is more “subjective” and specialist listening is more “objective”; the opposite could equally be argued.

2) Each listening mode has its own limits: ordinary listening gives an imprecise “automatic response” about its subject. Specialist listening shuts itself off from certain meanings, certain potentialities, or else it tries to bring everything into its own domain: for example, “physicist’s” listening, which ignores all the perceptions which it cannot reduce to its field, without seeing that “*every specialised auditory activity establishes a domain of objective practices which are entirely original*”(127).

ORDINARY/SPECIALIST: 121-122, 123-126, 127, 128, 152-154, 337.

» 8. NATURAL/CULTURAL (LISTENING MODES)

Natural listening is the “main and primitive tendency to use sound for information about the event” (120) and is expressed in the question: “What is it? Who is it? What’s happening?” It corresponds, therefore, to sector 1 (LISTENING).

Cultural listening “turns away (...) (without ceasing to hear it) from the sound event and the circumstances which it reveals about its source and uses it as a means to comprehend a message, a meaning, values” (sector 4, COMPREHENDING) (121).

The two pairs of listening modes, ordinary/specialist, natural/cultural, are interlocked, in competition or association: these notions clarify how listening and its circuits operate and thus bring out the originality of *reduced listening* in comparison.

NATURAL/CULTURAL (LISTENING MODES): 120-121, 152, 153, 271, 337, 345.

[30]

D. *Reduced Listening*

With the concepts of *reduced listening* and *sound object* the author aims to reinstate phenomenological concepts about music which, when he formulated these ideas, were contrary to the spirit of the times, and perhaps still are.

The phenomenological concepts of *intention* and *époché* will help us understand what reduced listening is.

» 9. INTENTION

1) A phenomenological concept which maintains that the perceived object is an “*intentional unity, arising from acts of synthesis*” (263). If the object transcends every partial experience that I have of it, it is in my experience that this transcendence is formed. There is a correlation between a certain hearing intention and a certain heard sound object or sound criterion. “*To each domain of objects, therefore, there is a corresponding type of ‘intentionality’. Each of their properties reflects activities of consciousness which are ‘constitutive’ of them: and the perceived object is no longer the cause of my perception. It is the ‘correlate’ of it*” (267).

2) The correlation between perceptual intention and the perceived object is one of the fundamental notions of *phenomenology* which Schaeffer *reincorporated* into musical research, which was dominated in the 50-60s by the scientist notion of a musical object as an object in itself. For Schaeffer, on the contrary, the “*sound object is the meeting point of an acoustic action and a listening intention*” (271).

a) *The hearing intention.*

This is the title of chapter VIII of the *Traité*, where P.S. remarks that the word *hear* (*entendre*) implies the idea of intention by its etymology (“*intendere*”), but that the word has lost its meaning and now expresses only the idea of passive reception. Hence the etymologically tautological expression: HEARING INTENTION.

There are different hearing intentions: scientific, musical and “philosophical”. When we perceive through a sound which is the index of its cause, or the meaning it carries, on both occasions this is the result of a specific hearing intention (of course the two intentions can apply concurrently to the same musical object). *Reduced listening* is a new *hearing intention*, consisting in turning the listening intentions, which seek a meaning or event beyond the sound, back on to the object itself.

But these different intentions are not completely mutually exclusive.

“*Nothing can stop a listener from varying*” this hearing intention “*passing from one system to another or from a reduced listening to one that is not. (...) it is this swirl of intentions that creates connections or exchanges of information*” (343).

Part of the research into the sound object consists in defining new *hearing intentions* which groups of researchers can agree upon, with the help of a new vocabulary (which P.S. calls a “*metalanguage*”). So, the notion of a criterion for the sound object, contrary to the classical notion of “*parameter*” (which to a greater or lesser extent supposes the *objective* existence of a sound separate from the hearer) refers to a specific hearing intention which grounds it.

[31] b) *The heard intention.*

We can use this expression (which is not from P.S. himself) to describe, not the intention shown by the listener in his listening, but the intention which he senses is being brought into play, or otherwise, when he hears a sound: in this way we can differentiate between sounds without intention (sounds of natural phenomena, mechanical sounds) and

intentional sounds essentially made in order to communicate (352). For example: “*an animal cry, the human word and morse code or a tam-tam*” (352). In this case the particular status of music could be to be “*on the cusp between the strange duo of the agent and the message: the intention of making music consists in taking first category sounds (which do not belong to any form of language) and making them into a second category communication (but without wanting it to say anything)*” (352).

c) *Intention and invention.*

In contrast to the hearing intention is the intention to *make*, to manufacture sounds: this is where *invention* comes in (353-354). Invention, which relates to *homo faber* and *making* rather than *hearing*, can also bring a wide range of intentions into play.

INTENTION: 140-154, 155-156, 263, 267, 271, 276, 292, 293, 302, 339, 343, 352-354, 399, 480-482.

» 10. ÉPOCHÉ

1) From the Greek *εποχη*, this phenomenological term, borrowed from Husserl, describes an attitude of “suspending” and “putting in parentheses” the problem of the existence of the external world and its objects, as a result of which consciousness turns back upon itself and becomes aware of its perceptual activity in so far as the latter establishes its “intentional objects”. Époché is the opposite of “naive faith” in an external world filled with objects-in-themselves, the causes of perception. It is also the opposite of the “psychologist” model which considers perceptions as “subjective” imprints of “objective” physical stimuli. Finally, it differs from “Cartesian methodical doubt”, in so far as it avoids all theories about reality or illusion.

This disengagement of perception (also called: phenomenological reduction, exclusion from the physical and moral world, etc.) allows us to grasp the experience of perception. “... *at the same time as the object which it presents to me. And then I realise that transcendence [of the object in relation to the changing flux of the different ways it is perceived] is **formed** in my **experience***” (267).

2) In the particular case of listening, *époché* represents a deconditioning of habitual listening patterns, a return to the “original experience” of perception, enabling us to grasp the sound object at its own level as a medium, an underlay of the perceptions which use it as the *vehicle* of a meaning to be understood or a cause to be identified.

The “putting in parentheses”, which is what *reduced listening* is, and is thus an *époché*, leads us then:

- to “put to one side” the consideration of what the sound refers to, in order to consider the sound event in itself;
- [32] to distinguish this perceived sound event from the **physical signal** to which the acoustician attributes it, and which itself is not **sound**.

a) *Phenomenology without realising it.*

“For years, writes, Pierre Schaeffer, *we have been doing phenomenology without realising it (...)* It is only after the event that we recognized in Edmond Husserl’s heroically rigorous definition the concept of the object postulated in our research” (262).

P.S.’s attitude has always been phenomenological, insofar as phenomenology is a “philosophy which suspends the affirmations of the natural approach in order to understand them, but (...) also a philosophy in which the world is always “already there”, before reflection, as an inalienable presence and where the whole undertaking is to rediscover this naïve contact with the world and ultimately to give it philosophical status” (Merleau-Ponty, *Phenomenology of Perception*, Introduction, I).

Like Merleau-Ponty, Pierre Schaeffer has always adopted the principle that “*I am not the result or the interaction of the many causalities which determine my body or my “psyche”, I cannot think of myself as a part of the world, simply as a subject of biology, psychology and sociology, nor limit myself to the universe of science. Everything I know about the world, even through science, I know as a result of a viewpoint which is mine or an experience of the world without which the symbols of science would have no meaning.*’ (Idem. III)

b) Another point on which Pierre Schaeffer agrees with phenomenological thought right from the start is that *reduction*, or *époché* defined by Husserl, does not consist in denying natural perceptions and relegating them to primordial nothingness, but in placing them in a new perspective:

“*The universal sidelining, the “inhibition”, the “invalidating” of any approach we can take towards the objective world – and above all the approaches concerning: existence;*

appearance; possible, hypothetical, probable existence etc. – or again, as people still say, the “phenomenological εποχή”, the “putting in parentheses” of the objective world, do not leave us facing pure nothingness. What conversely and through this very process becomes ours, or better still, mine, belonging to me, the thinking subject, is my life in its pure state with all its pure lived states and its intentional objects”. (Husserl, Cartesian Meditations, 17-18)

In the same way reduced listening as defined by Pierre Schaeffer does not consist in invalidating “natural” listening modes (of sound as index or sign) or calling them an “illusion”, but in unravelling the various *intentions of which it is composed* and turning these intentions back on to the *sound object*, the carrier of the perceptions which use it as a vehicle, and so defining it through a new *specific intentionality, reduced listening*.

*“Before a new method of training is possible, and a new system of references appropriate to the **sound object** can be established, I must **free myself from the indoctrination** of my former ways and run the gauntlet of the **époché**” (270).*

This is a rite of initiation, a return to the sources, and not a “return to nature”, since *“we find nothing more natural than accepting indoctrination. It is an anti-natural effort to perceive what previously unconsciously determined consciousness” (270).*

Reduced listening, which establishes the sound object as its “intentional object”, its “correlate” (and which does not arise from it as from its cause, as in the “physicist’s schema” which Pierre Schaeffer refutes) thus arises from an *époché*, a putting in parentheses of “natural” perceptual intentions. It demands that virtue of “wonder” [33] at the world, which Pierre Schaeffer displays, and from the very beginning of *musique concrète* exhorts the researcher to display.

ÉPOCHÉ: 265-267, 270.

» 11. REDUCED LISTENING

1) Reduced listening is the listening attitude which consists in listening to the sound *for its own sake*, as a *sound object*, by removing its real or supposed source and the meaning it may convey.

More precisely, it reverses the twofold curiosity about causes and meaning (which treats sound as an intermediary allowing us to pursue other objects) and turns it back on to the

sound itself. In reduced listening, our listening intention targets the event which the sound object is in itself (and not to which it refers) and the values which it carries in itself (and not the ones it suggests).

2) In “ordinary” listening the sound is always treated as a *vehicle*. Reduced listening is therefore an “anti-natural” process, which goes against all conditioning. The act of removing all our habitual references in listening is a *willed* and artificial act which allows us to clarify many phenomena implicit in our perception.

Thus, the name reduced listening refers to the notion of *phenomenological reduction* (epoché), because, in a way, it consists of stripping the perception of sound of everything that is not “it itself”, in order to hear only the sound, in its materiality, its substance, its perceivable dimensions.

Reduced listening and the sound object are thus *correlates* of each other; they define each other mutually and respectively as perceptual activity and object of perception.

a) *Origins of reduced listening.*

As we have said, it was the initial experiments on the cut bell and the closed groove which led P.S. and his research group to practise reduced listening and to formulate the concept. These two “*exercises in interruption*” (391) taught them to lose interest in the causality of sound – which is cancelled out by the redundancy of repetition in the closed groove, or masked by manipulation in the cut bell, and also to ignore the meaning it carried (also cancelled out or masked) and to place the emphasis on the substance of the sound.

But reduced listening cannot be practised at a stroke; to achieve it we have to go through deconditioning exercises to become aware of our “by reference” hearing reflexes and be capable of “*suspending*” them (270).

It is thus simultaneously a process of elucidation and of deconditioning.

b) *The other side of ordinary listenings.*

Reduced listening still retains a link with “ordinary listening” and is like “its other side”.

“*However reduced the listening to the sound object for itself is, we cannot detach its two sides one from the other, and the attachments it retains to the two aims which usually [34] go beyond the object: “What’s going on?” and “What does it mean? (...)” But “we can change our direction of interest, without wholly disrupting the basic intention which determines the structure: if we cease to listen to an event mediated by sound, we nevertheless*

continue to listen to the sound as a sound event" (271). Thus, a sound anecdote (such as the noise of a marble rolling about on an uneven surface), listened to with the intention of reduced listening, will have a structure homologous to the event-anecdote to which the sound refers: with the same progression, the same shape, the same "story".

So, P.S. shows no inconsequentiality when, in order to analyse the different types of the criterion of *allure* (in reduced listening, since the criterion is a property of the perceived sound object only as it is apprehended in reduced listening), he refers to three types of established causalities: human, "natural" or mechanical, and so apparently to something that reduced listening should completely discard. In fact, heard *allure* is identified, and its different degrees *determined*, each with its own characteristics, by these three types of causality.

"Attention concentrated on the object of reduced listening can use what it knows about the event, or even the meaning, the better to understand how the object is made" (293).

REDUCED (LISTENING); 154 (BIFINTEC), 155, 270-272, 289, 293, 332, 343, 344, 345, 347, 348, 349, 391, 468, 471.

» 12. SOUND OBJECT

1) The name sound object refers to every sound phenomenon and event perceived as a whole, a coherent entity, and heard by means of *reduced listening*, which targets it for itself, independently of its origin or its meaning.

The sound object is defined as the correlate of *reduced listening*: it does not exist "in itself" but by means of a specific foundational intention. It is a sound unit perceived in its material, its particular texture, its own qualities and perceptual dimensions. On the other hand, it is a perception of a totality which remains identical through different hearings; an organised unit which can be compared to a "gestalt" in the psychology of form.

2) A series of confusions often occurs about the nature of the sound object:

a) *The sound object is not the sound body:*

The sound body is the material source of the sound which can be identified from it. In French, with certain people, the ambiguity of the word "objet" adds to the already very common confusion between the *sound* and its causal event. This confusion must be avoided at

all costs. The *sound object* as a notion arises precisely from the radical distinction between the sound and its real or imagined causality.

b) *The sound object is not the physical signal*: the latter is not “sound” at all.

c) *The sound object is not a recorded fragment*.

It is not the same as the fragment of magnetic tape on which it is recorded, or the groove of the disc or any other piece of recorded material. [35] Indeed the same fragment, read at different speeds by various equipment, or in different ways (forwards or backwards), can be heard as *completely different sound objects*; the sound object itself is solely “of our hearing” and relative to it.

d) *The sound object is not a notated symbol on a score*:

For the same reason it is not the same as the more or less accurate written symbol which “notates” it.

e) *The sound object is not a state of mind*:

It remains the same across different listening modes, “*transcending individual experiences*”(269). One can therefore analyse it and describe it, giving it an *objectivity* of its own. However, how objects are distinguished and isolated in a “sound chain” is an intentional and non-neutral act.

In this way, reduced listening, after having studied a sound object as a totality, a whole, can also consider it as a composition of small sound objects which can be studied individually. Conversely, it can place the object in the wider context of a structure which can be considered as an object (law OBJECT/STRUCTURE, see 22)

However, we shall rely on certain rules (such as the choice of medium duration, which helps memorise the sound as a whole), to determine the “order of magnitude” which will be adopted to demarcate sound objects.

Sound object and musical note: insofar as it is a unit of sound, a “gestalt”, which can be made up of several micro-events bound together by a form, the sound object in a classical music cannot precisely match each note on the score: a harp arpeggio on the score is a series of notes; but, to the listener, it is a single sound object.

SOUND (OBJECT): 23, 53, 76, 95-98, 115, 154, 156, 161, 261, 268-274, 279, 289-290, 292, 293, 334, 343-344, 346, 347, 358, 384-385, 391, 415.