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## Meaning and behavior patterns: The creation of meaning in interpreting and listening to music

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Studies in musical semiotics often still rely on a model more or less derived from Saussure's two-sided reality, which links signifier and signified, or in a different terminology, a level of expression and a level of content, or yet again, a written or sound musical object I and a meaning. It goes without saying that if an object can have a meaning it is because someone gives meaning to this object, someone who either listens to the music or who creates it, as composer or instrumentalist. Yet it is thought pointless or even invalid to investigate how this meaning arises through production and reception. This two-sided object is isolated for reasons drawn from the epistemology of language.

This is the opposite of what shall be done here: to observe how a meaning develops, two empirical analyses will be used. These are not analyses of music, but of production and reception behavior patterns. A priori there is no link between them, and this makes the general nature of the conclusions more probable. The first concerns the gestures of the pianist Glenn Gould, the second, listening to electronic music.

### 1. First example: Glenn Gould plays Bach

Gould's gestures have been analyzed on the basis of two films by Bruno Monsaingeon, entitled *Glenn Gould joue Bach* (Glenn Gould plays Bach), made towards the end of Gould's life (1979-1980) and comprising little more than an hour of Bach's music drawn from quite different genres (the *Art of Fugue*, *The Well-Tempered Clavier*, *Chromatic Fantasia*, *Partitas*, *Italian Concerto*).<sup>2</sup>

Here, the interpreter finds himself in the position of intermediary between two objects — the score (a written object) and the recording (a sound object). He is in a reception situation towards the score and a production situation towards the recording he is making. It was the latter behavior that was observed.

I noticed that in these films Gould uses a fixed range of what might be called "gesture types". There are five such types, which are characterized by two distinctive features: (1) movement of the thorax and (2) the relative position of head, shoulders, and thorax. Other characteristic signs occur only occasionally, such as movements of the eyebrows, elbows, and shoulders. The five types are as follows:

"Composed" type. The thorax is motionless and leaning forward, the head lowered, chin almost touching the chest. Occasionally, some lifting of the eyebrows on the beat. When the left hand is free, it is given to a measured vertical movement, with the palm turned down.

"Vibrant" type. The thorax bends forward and straightens in alternation, by bending from the middle of the back, the lower back remaining fixed. The head and sometimes the left hand accompany this vertical movement. Sometimes raising of the eyebrows accompanies the melodic motifs, not in time, combining vertical, front-back, rotating and "vibrato" movements.

"Flowing" type. The thorax sways from front to back, or has a rotating movement, articulated from the bottom of the back without any bending in the middle of the back. Occasionally, brief raising of the eyebrows on the beat.

"Delicate" type. The thorax is motionless and thrust forward, with the nose over the keyboard and head projecting away from the shoulders. Frequent raising of the eyebrows for long periods exceeding those of the melodic motifs (horizontal wrinkles in brow).

"Vigorous" type. The thorax is motionless, upright or bent slightly forwards, the head buried in the shoulders, neck contracted, shoulders pushed forward. Some frowning (vertical furrows in forehead), some sudden upward shoulder movement or outward elbow movement, some jerky rotating head movement.

It can easily be imagined that such a taxonomy, established by observation of video documents, might be more or less "solid". In fact this one exhibits remarkable "solidity":

(a) The transitions are sharp: the moments when Gould changes posture of thorax position can be timed to within a second.

(b) Dividing the sequences of film thus isolated into "pure" sequences, which belong clearly to one of the types, and "impure", which are more

difficult to classify, gives 75% "pure". The remaining 25% are themselves open to analysis (though in a more arguable fashion than by simple visual observation) into combinations or rapid transitions between pure types.

According to what criteria does Gould use a particular gesture at a particular moment? There is no obvious systematic relationship between the score and gesture type, but only some statistical tendencies (for example, a long moving phrase linked to the left hand leads to a preference for a "flowing" gesture). On the other hand, playing characterized provisionally as *pianoforte* or *legatolstaccato* oppositions is systematically linked to each gesture type. Thus, "delicate" playing is represented at the level of sound by the characteristics of *détaché* and *piano*, "vigorous" playing by intensifying marks, "vibrant" and "flowing" by legato *piano* or *mezzo forte*, and so on.

This obviously leads to a search for an interpretation. A psychomotor explanation of postural choices is obviously insufficient. It can be admitted that the forward position is useful in the execution of "delicate" detached playing, just as the contraction of the neck is in a "vigorous" *forte*; but the other features as a whole — whether rotation of the thorax or movements of the eyebrows — have no effect on the motor functions of the hands and should be interpreted on the symbolic level. The position of the body expresses a psychological attitude.

Two interpretations are then plausible and moreover compatible. The first concerns Gould's conception of time: in the "delicate" position, duration breaks up into very short units, with the notes detached; while, exactly opposite, in the "flowing" position, the music is thought of as a "stream" (the word is Gould's) which flows in a continuous fashion. Between the two is the "vibrant" gesture, with periodic bending of the thorax, which divides the duration into short phrases. The second interpretation, corroborated by several of Gould's commentaries, consists in considering each gesture type as the realization in gestural behavior of an expressive characteristic. Thus the gesture that has been called "vigorous" is the material expression of "vigor"; a "delicate" gesture, an expression of "delicacy"; a "composed" physical attitude, psychological attitude of composure; the "flowing" type, a constantly sustained homogenous distribution of expressive intensity; and the "vibrant" type, in contrast, a concentration on the individual moments of the greatest expressive intensity. There is a correspondence, term for term, between a sort of psychomotor organization and what in music is commonly called "expressive nature", which implies an affective attitude, defined qualitatively or quantitatively, and a conception of the passage of time. This interpretation can only be presented as a hypothesis, but intuitively it is sufficiently obvious to be adopted. The "gesture type" is thus both a psychomotor organization (thorax movement, position of the thorax, head, shoulders, and eyebrow movements)

and an expressive content. It will be more correct therefore, to no longer speak of "gesture types" but of "expressive schemata", placing ourselves above the distinction between affective and psychomotoric; in fact, this distinction is a descriptive device, since in expressive behavior the psychomotor and the affective are linked.

To summarize the results of this study:

(a) There is a correspondence, term for term, between signifier and signified, in this case between the gestural and the affective. (These are two sides of the same coin: the expressive schema).

(b) Gesture can be analyzed into five interconnected gesture types; if they are projected on the level of combination, this cuts across the affective and psychomotor levels.

(c) In addition, the gesture type strongly correlates with instrumental playing (*piano/forte, legato/staccato*). It leaves a trace on the sound object.

For the study of meaning, these results can be exploited in two different ways, depending on the viewpoint that is adopted.

First viewpoint: the objective of semiological analysis remains that of finding relationships between features of the musical object, here the sound object and elements of the contents. The route via the study of gesture will only have been a provisional intermediate stage. It has permitted the introduction of distinctions which might have been overlooked, and the discovery of an interconnected system of types of expressive content. It has given a certain objectivity to the description (it is easier to analyze configurations of gestures than expressive content). Still, the two-sided object to be studied remains the musical object itself, score or sound object.

Second viewpoint: not one, but two semioses, to be studied separately, one after the other, are considered. The first links an expressive content to gesture (these being two sides of the same coin). The second links these gestures to the traces they leave on the sound object (these are indicators of gesture).

The benefits of using this second model will be indicated below.

## 2. Second example: Listening to electronic music

Having seen the development of meaning within production behavior, we shall now see how meaning is constructed in reception.

Informants were invited to listen attentively to a piece of electronic music by Pierre Henry, "Sommeil", the first movement of *Variations pour une porte et un soupir*.<sup>3</sup> The analysis of their responses shows that their listening, which is diverse and changing, can be grouped into five general categories which we call "listening types". The listening of an informant,

when it does not directly belong to one of these types, appears to be a combination of two of them, in the form of alternation or sometimes of conflict. Passing rapidly over "non-listening", introduced only to take into account moments of inattention and the "search for a law of organization" (in which the listener hears the piece as a puzzle, and searches for a single creative principle), we now consider how each of the other listening types implies a specific way of perceiving and attributing meaning to the form of the musical object.

"Taxonomic" listening results from the desire to obtain an accurate recollection of the work. As a consequence the informant listens to the sounds without getting lost in their details, listening just deeply enough to group the sounds into simultaneous and consecutive parts which are easy to memorize. He/she practices internal verbalization, and if he imagines metaphors it is essentially to label types of sound. The image that is built up of the work is a sort of mental "score" in subsets.

In the case of Pierre Henry's "Sommeil", such a taxonomic description will help give the reader an idea of the piece. It is made up of three types of sound: (1) very short, low-pitched pulsations, repeated in a quasi-periodic fashion every four or five seconds; (2) high-pitched pulsations, which are also noticeably repetitive, with a few variations; (3) quasi-regular waves of white noise, which could suggest breathing. These three elements interact for a moment, then one (the deep pulsation) disappears, which delimits a second section; and finally, in a third section, the "breathing" alters and acquires a more suggestive presence.

"Empathic" listening to the sound material gives priority to the sensation that the sound produces. As a result, the listener fixes attention on the present moment, attempting to cultivate an internalized sensation. The listener's attitude determines a fuzzy perception of the general shape of the piece. Paying attention to the sensation results in the production of precise and differentiated metaphors, some described by words like blow, impact, dense, hard, others by soft, drawn-out.

Hence the form attributed to the object differs from that determined by taxonomic listening on two points:

- (a) the listener contrasts two types of sound, not three: (1) those deriving from the category "blow" (the low/high pitched distinction is not relevant to this point of view) and (2) those deriving from the category "drawn-out";
- (b) length becomes simple repetition of the moment (without being divided into consecutive periods), slight variations existing only to make concentration on the present more intense.

"Figurativization" is that listening for which the image of a living being in a setting rapidly becomes obligatory. The sounds are divided into two classes (not those of empathic listening): (1) there is on the one hand the "breathing" and the low-pitched pulsations (which might

suggest the beating of a heart) that derive from the organic, the living, the internal; (2) on the other hand, the high-pitched pulsations associated with the mineral, the inanimate, the external. The form is interpreted as an action. The morphological feature near/far is relevant here. Modifications become movements, changes in space. That which is (acoustically) very near merges with the proprioceptive, the self; that which is distant merges with the objective, the visible. It can thus be seen how the morphological object and its meaning are defined in parallel.

The following observations can be made on the basis of these reception-behavior patterns:

- (a) The musical object is not divided in the same way depending on the type of listening adopted.
- (b) Symbolization plays an active part in the construction of the object. The object is not first seen, then associated with images; perception of organization depends on metaphorization.
- (c) The meanings that appear as the result of metaphorical construction are a function of the type of listening. More precisely, a type of listening gives a form to the semantic content, which is the mirror-image of (constructed in parallel with) the form of the object.

Here again it would be possible to draw conclusions in two different ways, depending on the viewpoint adopted for the study of meaning.

First viewpoint: the objective is still to find a relationship between meaning and the musical object, and the route via the study of behavior has only been a way of taking polysemy into account. The same object, considered from several points of view (the listening types), gives rise to differing semantic organizations. As soon as the study of listening behavior is terminated, it will be forgotten; only the various types of relationship between object and semantic organization, which the study has enabled us to distinguish, will be retained.

Second viewpoint: it is noted that there exist two successive relationships, which are different in nature and studied separately. (1) One is between behavior and meaning. The construction of meaning is part of the act of reception; we have spoken of metaphorization or symbolization to point out that it is a development parallel to the act of perception. Metaphorization is a dimension of behavior and cannot be dissociated from it. (2) The other relationship is situated between behavior and object. Listening constructs the object in its own fashion, as far as can be determined; but listening is also determined in relation to

the object. Between object and behavior there is a relationship of reciprocal presupposition: object and behavior are defined in parallel.

### 3. Discussion

Starting from the Saussurean model of a two-sided sign (signifier and signified), applied to the musical object and its meaning, we have considered how meaning might be constructed both from the production and from the reception side. With Gould, the expressive content is only one aspect of an expressive schema, which moreover is characterized by typical gestures; in listening, metaphorization is an integral part of the reception process. What is the advantage of considering behavior?

Evaluation differs depending on the model adopted. At least since Hanslick (from 1854 on), reflection on meaning has divided musicologists into two camps, those for whom an extramusical meaning is attached to the object (the "absolutists" in the terminology of Nattiez [1986], which is based on Meyer [1956]), and those for whom it is the subject who projects meanings onto the objects ("referentialists").<sup>4</sup>

In truth, unless the debate is given an ontological dimension, the two models are equivalent, provided that both manage to take into account the diversity of meanings that are attached to the same object. There can be no doubt that if an object takes on a meaning, it is because someone, producer or receiver, attributes meaning to it, which does not prohibit direct study of the resulting relationship between object and meaning. In operational terms, the choice of one of these two models is a question of efficiency. One of the two will be preferable if it sheds light on important facts that the other obscures.

So far, we have simply noted that the same facts can be integrated into two theoretical conceptions depending on whether one considers a single semiotic relationship — between musical object and meaning; or two relationships — between meaning and behavior on the one hand, and between behavior and musical object on the other.

On the first view the use of behavior is merely a means of analysis. Indeed, differentiations operate at the level of behavior. In these examples, the differentiations are between expressive schemata that link expressive features, or differentiations between behavior patterns that link semantic fields. If there is a simpler way of studying behavior than contents, then viewing behavior is useful. This is the case with Gould. It is difficult to describe expressive content and to transcribe playing nuances, but easy to analyze gesture in a video document. Such is the case with reception, which always gives rise to complex polysemy, rendered more intelligible by differentiation between behavior patterns. The symbolization

type is only one aspect of behavior. If behavior patterns can be differentiated by other features (focusing, the way subjects categorize or construct a perceptive image), the study of polysemy will be simplified. Here again the use of behavior serves only as a means of studying parallel ways of linking meaning and musical object.

I will opt for the second, more radical, point of view, which consists of considering two successive relationships. It has been seen how meaning (expressive character, metaphorization type) appears as an aspect of behavior. This is a first "polar opposition". But there is a second — the polar opposition object/behavior. Consider briefly the argument that underlies the existence of this opposition;<sup>5</sup> object and behavior presuppose each other:

(a) Production or reception behavior presupposes the existence of the musical object. Without going into detail, it should be remembered that a behavior pattern is a set of acts coordinated by a goal, and that those acts dealt with here have precisely the goal of production or reception of a musical object.

(b) The inverse is less obvious but no less true: the object presupposes behavior patterns; it can only be defined as the object of production or reception. Indeed, it is not the raw, material object that is analyzed, but the material object reduced to its essentials. For example, a score will not be analyzed as so much printed paper with notational peculiarities, but only as a set of notes, pitches, and durations, because it is recognized that they result from the composer's decisions. Thus it is a set of traces of production behavior that will be studied. As a general rule, there is no musical object other than the set of features that are assumedly capable of entering into a relationship with a production or reception behavior pattern.

The same thing can be said about the sound object. Neither background noise nor the acoustic characteristics of the room or the loudspeakers will be studied, but only the musical object as it is defined and constructed by production or reception behavior.

Thus there is indeed a relationship of reciprocal presupposition between object and behavior, a relationship worthy of study in its own right, independently of the behavior-meaning presupposition relationship. What benefit comes from studying this relationship?

This will be our last point, and it is very simple: production or reception behavior cannot be reduced to the production of meaning. That making or listening to music is accompanied by the production of meaning is beyond doubt, but not only that. Musical behavior patterns have a sensorimotor component which cannot be reduced to the symbolic.



Playing the piano is also a tactile, kinesthetic experience, which the semiological program is incapable of penetrating. Listening to music is also a sensory experience, a set of sensations (as empathic listening reminds us), converted immediately into meanings it is true, yet not reducible to these meanings. In addition, listening and production have a dimension of play. To write or listen to imitative counterpoint is to indulge in a musical puzzle game, which even if it produces meaning, only does so incidently.<sup>6</sup> A model that short-circuits behavior cannot take these aspects into account.

Thus we must beware of having an overtly reductionist view of the semiotic program. Behavior that defines objects and objects that define behavior constitute the musical event, and the production of meaning is only one aspect of that event.

### *Notes*

1. The expression "musical object" is used in opposition to "material object". It is a written or sounding material object reduced to its essentials. This question will be taken up again later.
2. This article is a synthesis of recent research, from the point of view of the relationship between meaning and behavior, to which the reader is referred for further details. In this case, see Delalande 1988.
3. The details of this pilot experiment, which will be the subject of a separate article, will not be gone into here. Seven listeners, familiar with electronic music, heard the piece individually three times in succession. The instructions and the interview which followed each hearing were designed to elicit not only what image of the piece had been constructed, but also what activity had gone on during listening. The results are not statistically representative and cannot be extrapolated to a larger population without imprudence, still less to another work. They are used simply to show how an object and a meaning are likely to be constructed in reception. They are recorded in three volumes of the Bibliothèque interne d'Inédits de Recherche du GRM (GRM Internal Library of Unpublished Research Papers).
4. The pure formalists, who deny that music has any intrinsic or extrinsic meaning — a position difficult to maintain since the work of experimental psychologists like Frances (1959) or Imberty (1979) — have been deliberately left out of account.
5. For more detailed discussion, see Delalande 1989.
6. On these dimensions of musical behavior patterns (sensorimotor, symbolic, and regular) see Delalande 1982.

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