Analysis and composition

Before evoking a few results of semiotics considered as a set of analytical techniques in the field of music composition, I wish to mention some more general considerations concerning the object itself of semiotics.
The famous semiotic triangle as defined by Peirce : sign, object and interpretant, has proved to be useful in the field of musical semantic, and we can say that this place in Helsinki has a central position in this domain, thanks to Professor Tarasti. But if we move from the semantic to the phonemic or phonetic level, it may be not so appropriate.
Although music has often been compared to a language, either with no natural relation between sign and object, or with no object at all, I think that some degree of cratylism is justified here. You remember that this term designated the attempt, mentioned by Plato in his Cratylos, to find a natural justification to the use of words, so that λόγος as speech could be fully equated to λόγος as rational thinking, and that truth ἀλήθεια could appear as an actual removal of oblivion, even in its etymology. Cratylism has been dismissed by all the linguists (except for the case of a few onomatopoeias), and was probably not proposed without some degree of irony by Plato himself. It has also been often considered as something rather shameful by musicologists, even if the relationships between song and breath, playing and motricity etc. have always been acknowledged.
Beyond the important affinities (and limitations) between music and biological laws, I think that music is highly cratylic, insofar as it is a type of thought which keeps close to the symbolic thinking. Language has obtained its efficiency by moving further and further away from the symbolic thought, and its importance is that of a natural counterpart for a world where semiosis is increasingly present, as the signs become more and more numerous and complicated.
The symbol is a sign which keeps a natural bond with its object. For example a storm is a symbol of any violent crisis, because it is itself a violent crisis. This relationship of natural contiguity is essenrial, so that the symbol appears as the place where the metonymic relation justifies the transcendant, metaphoric relation. It is not my purpose to discuss if there are or not symbols of which it is impossible to trace that metonymic origin.
In the same way, any music may contain an implicite relationship with some natural models (speech, gestures, biological rythms, soundscapes etc.), which act as the basic guarantees of its symbolic sense. It is probably the reason why different musical cultures can communicate, even if what is a paradise for some may be the others' hell. It would need another lecture to discuss fully that field of the universals in music.

If the distance, in music, between the sign and its object is characterized by that frequent relation of contiguity, so that, at the limit, it may be reduced to zero, it seems that the semiotic triangle has sometimes a very narrow basis, and tends to be only a dialogue between two terms : one archetype and one interpretant. It seems especially so when we consider the smaller meaningful events : sound objects, cells, motives etc. On the broader scale of overall gestures (developments, articulations, main contrasts etc.) the keys proposed by Greimas and the peircean concepts may function in a more convincing manner. But if music analysis cannot use a single method for all the levels of its object, one may wonder if it is yet a real science. There seems to be no gap in music between the relevant sound elements and the "meaningful" grouping of these elements, as if we moved here from the phonemic to the semantic level without any lexical or morphological level in between : but where is the common semiotic approach which could apply the same principles to the phonemic segmentation of the sound chain and to the semes of the work ? If music analysis is still looking for an agreement on its principles, this may be due to the historic situation.

Music analysis has long been just an aspect of musical composition. It was normative for centuries, before it tried during the 20th century to become a description, and if possible, an interpretation of musical thought. We are now facing worldwide endeavours, among scholars, to bring musicology into the domain of scientific research, not only as an auxiliary to History, but also as a discipline of its own. The composer, who had long been the only specialist in music analysis, has lost this privilege, and discovers approaches of music which are sometimes extremely far from his usual concerns.

In front of this situation, many composers show a strong scepticism towards an analysis which is carried by someone who is generally not a composer himself. They apparently keep to the traditional idea of analysis having no other purpose or meaning than to try and define an esthetic project. To them, analysis is only declinable in the imperative or optative mood. But many others have a different view on that matter, and especially those who, like me, have received a teaching of the kind that Messiaen would give, that is to say, no guided writing, but reading and listening to other composers' musics. Messiaen never taught composition, but just analysis. He thought that this was the basis for musical imagination, which cannot be taught. In my opinion he was right. But this was at a time when analysis was a pure matter of traditional skills, observation and intuition, without any claim to become a science with specific principles and criteria.

Modern techniques have given a new field of reflection, and offered new tools both to the scholars and to the composers. Some belong to the software domain, others to the hardware. Today I shall consider one of each category : Semiology

as a new set of concepts which can concern also the composers, and new transcription devices as a challenge to the conventional scoring of music.

First I must emphasize the fact that no technique has ever been the first source of any music. It is sometimes said that notation in the 13th century was not really a means of keeping a record of actual singing but rather a technique for imagining new musics. In fact we now know that polyphony is a practise which has existed everywhere since several thousands of years, and that the western notation is only the most accurate tool for transcribing it. We have no evidence of a score bringing together the different parts on the same page before the 15th century. It is only in some works of the Ars Nova and Ars subtilior, that we can sometimes suspect the composer to guide his imagination of a musical time on the possibilities offered by the space of the score. The formalism implied by this approach of composition has had two historical acmes : one in the 14th and one in the 20th century. There is now another tendency to point out to musical aims, such as expression or symbolic values, rather than to pure techniques.

I personnally consider that refering primarily to technical considerations rather than to aesthetics is generally a way of concealing the real questions. The most important of those questions is probably the very meaning of music, and making music, in the most serious acceptation of the word, is not basically handling sounds, with pure consideration of combinatory rules, but trying, with the help of sounds, to understand why this special kind of thought is so important to man. I have tried to find an answer by refering to a double conception of Nature. If music is a natural activity, with a strong biological basis, it can be related both to nature as an external world of sound models and to nature as an internal law, to filh and to f„si$.

The first acceptation leads to a phenomenological approach, where musical ideas are born from a new way of listening to the world. There is no real gap between nature and culture, between what is given to us and the values we try to develop. Generally speaking, there are not two separate worlds of consciousness and reality, but a series of relationships which are at the same time a mental procedure and an external structuration of the world, the ultimate reality of which is ever elusive. In music, an idea is not a new abstract rule which can be applied to a neutral material : nothing is neutral, and the musical idea is precisely a new perception of a sound reality which informs our thought in the same time as our mental structures inform it. So, it is important to become able to control that intuition of the "intelligence included in the sounds", according to the formula by Hoene Wronsky, which Varèse liked to quote.

Semiotics has offered some new tools for that. I shall take one typical example, that of birdsongs. Musicians have always been aware of the marked convergence between that phenomenon and their own activity. Their general

intuition has often led them to occasional approximative evocations of birdsongs, or more rarely to precise analysis of their listening. But it was not before the middle of this century that a real analysis was made possible by new techniques. Recording and automatic transcription have made possible a real control of the too complex and too fast features of birdsongs. Semiotics, in a broad acceptation of the word, has offered a technique for analysing their structures.

Semiotics is a term which applies to very different fields. On the phonemic level, it is a methode of description of the relevant phonic units; on the syntactic level, of the recurring groupings of sounds, at least if we keep to a pure distributional analysis. For birdsongs, this method seems the most appropriate, and I shall give an example of the use I made of it in my music. The semantic and stylistic levels have hardly, so far, been explored, and they may be irrelevant in animal signals considered as models for the musician. But, apart from the analytical methods it has suggested, semiotics is also for the composer a world of operating concepts, many of which have been or can easily be applied to musical logic, such as for example allophones, markedness, contrasts versus oppositions, deep versus surface structures , syntagms versus paradigms etc.

Here is an illustration of what I have said about first the hierarchy between finality and technique and secondly the possibilities offered by the present technology. I was impressed by the rythmic originality of some birdsongs. Instead of showing a preference for their melodic content, I was often more interested by some birds presenting an original balance between redundancy and imprevisibility, and I wanted to understand how this was achieved. I had noticed that the most original parts of the Rite of Spring or Noces by Stravinsky, their most novel rythmic features, were closely related to that type of birdsongs, and I wanted both to understand which principles were lying behind their common style, and to develop an application of my own. The analysis by Messiaen, dealing with what he called "rythmic characters" was marked by his liking of theatre ; whereas Boulez's analysis was utterly formal. It is not surprising that a composer has a tendency in his analysis, through his personal reading or listening of the work, to describe the project of the composition he intends to bring to life. I do not claim to do anything else when I remark the close analogy between the Danse sacrale and some songs of marsh warblers. Music analysis is not yet an autonomous science. But semiotics is, so far, one of the few approaches which seem to open the way to that scientificity. Meanwhile it is also an auxiliary of musical imagination, as I'll try to show now.

Here is an extract of the song of one of those birds which are basically rythmicians and not melodists : it is a sedge warbler

DAT 7,11 (27")

Now here is a slowered version of the same song, where the original durations are multiplied by 2.8 . On the transcription, only the upper staff has to be read :
DAT 7,12 (19")
And now here is a canon between the former transposition and a faster one (on the lower staff of each system), where the original durations have only been multiplied by a factor of 1.33 :
DAT 7, 13 (38")
This kind of canon has been used in several works, namely Naluan for 8 instruments and tape in 1974, Octuor op.35 in 1977, Sopiana for flute and piano in 1980, and the string quartett Eridan in 1986. From one work to the other, the tendency was more and more towards abstraction. I stopped after Eridan, because I found that any further use in the same direction would completely deprive the model of its specificity and consequently take me back to the pure combinatory conception of music which I consider as dangerous, insofar as it allows rational consciousness, which is just a shallow part of the spirit, to dismiss any other mental faculty.
The analysis of the model was carried according to the distributional method : every phonetic unit and every grouping of units were defined according to the pauses and to their different occurrences in the context of the chosen model. Here is the corresponding extract in Naluan :
DAT 7,14 (42")
Now the same cantus firmus has also been used in my Octuor op.35 :
DAT 7,15 (37")
And finally the same model again in my quartett entitled Eridan :
DAT 7,16 (40").
If we now come back to the first recording which appeared to me as a potential music when I first listened to it, it is easy to measure how and how much those different works are related to the chosen model :
DAT 7,11 (27")
Another important aspect of the practice I have just described is the use of some specific hardware allowing the transcription of such complicated sounds as the birdsongs. In addition to the recorders and to the real time sonagraphs, there are also pitch detectors like the Voicetracker, and devices analysing the brightness and purity of timbre, the sharpness of the attack etc. The help they grant to the composer is obvious, whenever he pays a special attention to the sound models. But a fact must not be neglected : whatever the data delivered by an automatic analyser, they are always a translation, from a conventionary point of view, of the sound reality, which is temporal, into some spatial representation. As such they contain an important source of misunderstanding, because music , and time, cannot be translated into spatial structures without considerable distortions.

Space is much more homogeneous than time, as its exploration gives less importance to memory than does that of time. In other words, whenever music is represented by some transcription, whether it is traditional or not, it is subject to distortions which can be extremely misleading if we do not take care of the problem. The danger existed for the traditional scores, but it was partly corrected by its double type of coding : on one hand, a quantitative coding applying time to space through a bi-dimensional analysis of pitch and duration ; and on the other hand, a qualitative coding involving a set of symbolic conventions refering to global perceptions like instrument, tempo, accentuation etc. The latter has disappeared with the automatic analysers, which are much more accurate, but much less pertinent, than the conventional scores.

In face of an automatic transcription, a composer is not in the position of a reader of some extremely accurate score, but rather in the position of the decipherer of a partly unknown language - that of the sound model -with the help of another language which is also partly unknown, that of the parametric transcription, the criteria of which are never exactly those of the human listener.

The approach of the sound model is partly helped and partly hindered by the use of the technology. The danger of fetishism, of overrating of the analysers is comparable to that of pure, abstract formalism. We are accustomed to consider sight as the sense of verification, and hearing as a more subjective sense. Here it is the contrary which prevails : every visual detail must be viewed under the control of listening, which definitely has always to keep the control of the situation. A few minutes ago, I mentioned the second aspect of Nature as an internal law. It is time to explain what it means in the present context.

The use of sound models and their analysis through the means offered by semiotics lies in an aesthetic axioma according to which the human mind is part of the universe, and as such is a place where some common biological laws prevail. Making music in that context is not only assuming a social function, but also letting those laws function plainly. One important finality of music is thus of achieving an harmony between the patterns, which occur in the sound environment as imposed or suggested to our listening, and the ideas which come from inside us. Our mind is normally divided between perceptions from the outer world and conceptions from the inner world. It may be the chief function of music of achieving the fusion between both, and thus reunifying the human spirit.

For that function, there must be no contradiction between the musical ideas issued from our experience of sound realities, and those rooted in the spontaneous activity of our imagination. In other words, music is a synthesis of auditory experiences - assisted or not by an audio-technology -, and of our dreams. The right use of new analytic concepts or of new analytic machines

depends of our capacity to focus on the deeper levels of our imagination, rather than on some superficial skill .

Obviously, there is a particular meaning of semiotics which is at odds with those requisites. A certain kind of semiotics, very much in favour some 30 years ago, claimed that its object, the sign, is not only a tool facilitating communication, but the ultimate reality. It intended thus to eliminate any referent, and describe human thinking like a pure exchange of conventionary signs devoid of intrinsic value. In that conception, creating music would appear as something like the emission of cheques without provision. Indeed, some musics have given such a bad example in the past generation. They have favoured, as a disastrous counterpart, the come back of worn-out references working as a kind of cheap assurance. I still believe that if music can be viewed as a structuration of signs, such signs are not like those of language : purely conventionary. They keep a kind of relation to nature, which language has nearly broken (except in poetry). This relation has to do with their referential value, which reminds us that we belong to the biosphere, and beyond life, to the world of elementary laws. In that sense, the power of music is a symbolic image of the natural forces. But the relation of musical signs to nature has also to do with their very definition, which depends, beyond any historical situation, on some permanent structures of our brain.

In other words, making music is for me both improving the art of listening, and discovering why we feel such a strong need for that special kind of listening. In both cases, it can be viewed as a dynamic exercise in analysis.

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