Music without body: composition, computers and instrumental practice

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Abstract

This paper poses a theoretical discussion upon some aspects of computers' usage as a tool for musical composition, by analyzing its consequences to the education of musical composers, to the musical ideation process, and to the communication of musical works to the audience. Computer music brought-as one of its possibilities—the possibility of a musical composition without a performer. This gave the composer the responsibility of making performing decisions in the very act of composing. The authors question the actual possibility of a musical work being played without having ever being performed by human performers. As a conclusion, the paper stresses the relevance of instrumental practice as a significant tool for structuring musical thought.

"...music-making—especially children's music-making—is essentially a social activity. When new technology is introduced, this social dimension can be lost—the interaction is happening between the player and the computer screen rather than between people..." (Swingler, 1994).

Introduction

This paper poses a personal view on some implications of computers' usage in education and training of composers. The authors reflect from a personal point of view. One of them is an electroacoustic composer and teacher, who has been in the music field for many years. The other is a music educator and a flutist, specialized in performing early and contemporary music.

The growing interest towards musical creation with digital media has generated plenty of courses and careers on this particular field. The explicit social interest is towards music-making, but it is also possible to recognize a new generation of musicians. The authors believe that the idea of an "easy" and "intuitive" approach does not pose any requirement of instrumental skills for their students. The idea of an "easy" composition process seems to have completely discarded any training or experience on playing instruments.

The authors wonder about the following questions. Is the trend a healthy one? Could composers' education without physical experience with instruments be a complete one? Would not be something lost? Could music ideation be a purely mental act, without the intervention of human body, even as a memory? Or is it a retrograde position? Is this the point of view of a musician that feels his place of knowledge and power invaded by new barbarians, not knowing or valuing the traditions of his art?

Electronic instruments have posed the need of developing new and specific playing techniques. By depressing the key of a synthesizer, complex processes start— for example, rhythmic phenomena—that are only controlled in the instant of triggering them. Actions within the sound take place, without the need of any action of the performer to keep them going. This is a new fact in music history: a pianist, flutist or violonist always needed to continue playing if they wanted to prolong sound actions. This requirement of motor faculty of the performer was necessary, in most of the cases, to supply energy to the instrument, for sound production. At the same time, it gave the player a precise and empathic control over sound processes that were being generated.

None of this is necessary in electronic instruments. Their power supply for sound generation has a source different from their players. Complex sounds, of the kind that are common in the electroacoustic exploration, are musical processes of their own. Their development is independent of the player, because it has been programmed in the very act of composing them.

We will be told that MIDI continuous controllers can give the player the control that we are lacking. Nevertheless, many of the player's physical actions over these devices are a distant relationship with the sound processes that they control. A modulation wheel, for instance, doesn't seem to be a useful control device to control the amplitude or speed of a tremolo, if we compare it with the actions needed to do it in an acoustic instrument.

In many cases, the action modes of these continuous controllers lack an organic interface with the sound effect that they produce.

Nonetheless, it is undeniable that synthesizers are musical instruments. The situation described above could be stated as an interface problem, a case of remoteness between sound processes and player actions, in a way similar to the case of the pipe organ among acoustic instruments. In any case, we can deal with the problem in terms of adaptation of the interface. We can see the growing interest towards research on control devices— even...
virtual instruments--that could use the totality of human gestures (Muldner, 1994). Physical modeling synthesizers also pose an interesting approach to a more direct and organic relationship between the performers’ bodies and the sounds they produce.

But what happens when there is not even a synthesizer under consideration? When the electroacoustic composer or the student thinks of the computer as his instrument—as the instrument? Is it possible for those who do not know any other way of interacting with sound than a computer keyboard or a mouse, to develop music ideation processes?

The importance of the body

Psychoanalysis has stressed the importance of the connection with sensitive world as fundamental to psychological development. Consciousness cannot develop if there is no connection with the external world. By extension, our bodies also develop through exploration of the world. (Lapierre-Acoudurier, 1977)

Music is related to body from the beginning. Rhythm, which is primary, and comprises other earliest musical selves. Between four and eight weeks of development, rhythmic contractions along the spine of the embryo are rhythmic, and the embryo begins to move around the mother’s womb. Our oldest neurophysiology resides in our body's organ. Our oldest neurophysiology resides in our body's organ. The body is corporeal, and music is bodily. (Spaulding, 1994)

According to Nattiez, the minimal condition for music is sound. When there is no connection with the world of sound—even as a representation of past experiences—composition is no longer an operation with the world of sound. In the case of a composer trained exclusively through a screen, there is a loss of something essential, a psychological impoverishment due to the lack of experience.

Division of work

The origin of the trend that we are describing in this paper could be tracked in the past. Let’s propose the following framework:

Applying Molino's ideas of semiological tripartition (Nattiez, 1987) to musical creation, we can see that any given symbolic form can be studied in connection to three different dimensions:

a) The poietic dimension, which refers to the process of creation of the symbolic form. Process of creation and strategies for production, and it is describable and can be reconstructed.

b) The esthetic dimension, that implies the construction of meaning in the course of an aesthetic perceptual process. Suppose perceptive strategies. "The enjoyment, the contemplation or the reading of a work, the musical work."

The trace (also named "neutral level" or "material level") refers to the physical and material aspects of the composer, who generates the work, the performer, who actualizes it, and the listener, who decodes it. A simplistic approach—as shown in figure 1—could assign the framework of tripartition to this three categories, like:

1) The composer generates the poietic processes to configure the symbolic form.
2) The performer manipulates the trace generated by the composer.
3) The listener puts esthesical processes in action, to read and comprehend the symbolic form.

Nevertheless, reality doesn’t lend itself easily to this kind of simplifications. Although the functions of the composer, the performer and the listener are always present, it does not mean that these roles are necessary taken by different people. Let’s take the example of a jazz improviser, that could be thought of as an almost "pure" performer, generating the work as he plays.

Without trying a morphology of music history or of the different aesthetics, we can see that the relationship among these roles varies according to musical periods and styles. To limit our analysis to the West, we see that historically, the roles of the composer and of the performer were intimately linked. In Bach’s times, nobody could have imagined a composer who did not play one or several instruments, nor a good performer without compositional skills; music ideation was strongly related to its practice.

Other particular moments favored the separation between roles. For example, the medieval distinction between musica theorica—that was taught at universities along with mathematics—and musica practica—that was taught to singers and minstrels, generally of low social level and without a higher education—.

Closer to us, other ages have witnessed this separation. The situation of the baroque composer-performer begins to change with the development of the symphonic orchestra. In the romantic conception, the role assigned to the orchestra player was of a mere translator of the composer's intentions.

Berlioz, for example, imagined the orchestra as a big instrument. "The players of all kinds that constitute it, seem to be its strings, pipes, drums—machines become intelligent, but submitted to the action of an immense keyboard played by the conductor, under the direction of the composer." (Berlioz).

In symphonic music of late XIX and early XX centuries, the conductor, not the instrumentalist, was responsible for the musical decisions. Players lacked formation for the global comprehension of compositional processes. They only contributed doing an specific task, like workers in an assembly line, under the supervision of a foreman/conductor. We can see this phenomenon comparing well known treatises used for the formation of a professional flutist. In XVIII century, Quantz gave great importance, judging by the amount of chapters and pages, to the poietic aspects: handling of compositional structures, embellishment, aesthetic valuing criteria, etc. (Quantz, 1666). On the other hand, the Tafanel treatise—used till our days—stresses the physical level, like scales, arpeggii, etc., without a need of comprehension of compositional issues (Tafanel, 1958).

We find characteristics of this kind of practices in some of the studio recording techniques, when the instruments are recorded separately, in an artificial acoustic environment, without a real interaction among players.

This ideology of separation of tasks has led to a deprecation and underestimation of the role of the performer. Composers often look at the player as a mere executor of instructions, a necessary evil to translate—and many times to betray—their intentions. Total serialism happily welcomed the possibility of electronic music, regarded as an overcoming of the performer. The wish of "total control" of the whole sound phenomenon, makes the player be a part in the neck because of the degree of deviation produced by the act of performing. The composer, by means of the tape recording, could finally shape his work once and for all.
The role of the performer

Nativetz poses the problem of musical meaning by means of the following definition: "An object of any kind takes on meaning for an individual apprehending that object, as soon as that individual places the object in relation to areas of his lived experience --that is, in relation to a collection of objects that belong to his or her experience of the world." (Nativetz, 1987). The meaning is thus "the constellation of interpretations drawn from the lived experience of the sign's user, - the 'producer' or 'receiver'--, in a given situation". "Meaning exists when an object is situated in relation to a horizon." (Nativetz, 1987).

It is interesting to point out two implications of this definition, regarding musical work. First, when we relate the problem of signification with a subject, that send us back to the communication processes mentioned. Second, when we talk about "lived experience", "experience of the world" or "horizon" we are referring not only to intellectual experience but also to sensory, kinesthetic and proprioceptive experience. Intention of communication and sensitive experience are the two elements that we stress as basics for the generation of a musical work.

These considerations became particularly important at the present stage of computers' applications to composition. As Gareth Loy says: 'What has become of composing where formal practices are used simply the relocation of the compositional decision-making process to a higher position. (...) Some low-level elements of the compositional decision-making process may be taken over by an automatic process, but the composer must still choose the process and accept the results.' (Loy, 1989).

Nevertheless, we have gone through the repeated experience of listening certain kind of works, algorithmically generated, whose authors seems to ignore that they should have an audience, and do not give an adequate flow of information to keep the attention of the listener. This idea, that could be considered a subjective impression, is confirmed when listening what the authors of such pieces say about them. These kind of works seems to be even composed to illustrate a thesis, as a theorem demonstration, as a "correct" solution of an equation. They ignore the communication process.

Independently of the interest that some results of musical exploring through algorithmic composition have, we believe that leaving the control of certain kind of musical processes to machines implies an abdication attitude of the composer. Particularly we refer to the control of temporal processes, by means of machines that do not perceive time. As an example, for a computer that could generate fugues in Bach's style, it would be the same thing to play them at M.M. = 72 or at M.M. = 1/100000. The structures are "correct" in both cases, but in the first one we humans could recognize musical processes, and in the second they are not perceptible. The fact of configuring a symbolic form does not guarantee that it will be inserted into a communication process.

Communication is a particular case within symbolic processes (Nativetz, 1987). To make communication possible, other requirements of the "horizon" of performer and listener should be accomplished, besides the composer's universe. Figure 2 intends to represent the complex processes involved.

For this reason, it is essential that the composer should be the first performer of his work, and his first listener. That is why we insist in the importance of forming composers on the basis of experiences that involve body gestures. The ability of mental representation of real-time processes must be constructed. It is not replaced with the use of a machine that solves the problems 'correctly'.

Quod erat demonstrandum?

At this point, we would like our objective to be clearly understood, and not to be interpreted as a reactionary position. We are not posing an opposition --absurd at this stage-- between man and machine. We are not questioning the use of computers as musical instruments, not even consider heretical the developing of AI systems that allow machines to compose like humans.

The capital problem to pose is not "should we teach computers to compose?", but "how can we teach composers to compose?" Computers are a powerful medium for expanding the cognitive and expressive universe of already skilled composers, and an invaluable tool for their education. What we are posing is the nonsense of their use as an exclusive tool for music education, and even the possibility of self-defeating effects. We would be told that nobody is supporting such a position. Nevertheless, the facts we mentioned at the beginning of this paper are pointing out that social processes related to music practice and teaching, are generating situations towards this direction.
New technological media should not be adopted noncritically for educational uses. When making use of them, teachers and institutions devoted to music education should privilege the developments that favor a connection of new musicians with their bodies.

Music interaction processes need a connection with sensitive reality for their development. Instrumental practice is one of the most efficient ways of achieving this connection, and at the same time of introducing the student to artistic communication.

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References


Conclusions

The formation of "composers/users", by means of their exclusive training on computers, is an actual possibility. These new operating ways imply a change in the paradigm of what was called composition so far.