Loop-interpolation-random & gesture: déjà vu in computer-aided composition

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Starting from a distinction between music creation and sound or pre-established methods of form and sound manipulation, this paper discusses the use of some typical procedures in computer-aided composition. A critique of common-sense procedures sets out to show that musical creativity may be threatened and put at risk in the name of a community's immediate acceptance of what is considered to be of musical value.

1. INTRODUCTION

Although it may seem easy to distinguish an electroacoustic composition from a piece for acoustic instruments while listening to a concert, the same is not true when trying to distinguish a computer-aided composition from one that does not make use of a computer at all. Today, almost every composer, working either in entertainment, concert music or research, has to face the computer at some stage of his or her creative process. However, the computer is not merely an audio processor, a calculator, a sequencer or a typewriter. As musical notation and detailed metre definition nurtured the rapid development of polyphony in the past, equivalent transformations may occur with the growing use of computers in the compositional process. Furthermore, the use of the computer is frequently treated as a new and exclusive field of composition in itself.

To attribute the recent transformations in musical composition to the computer is just as misleading as considering notation to be the only reason for the spread and development of polyphony.[1] In both cases, various factors make a particular musical practice possible.

But what elements does the use of a computer emphasise? In order to answer this question, we will draw attention to the fact that to talk about aesthetic problems in computer-aided music composition is to talk about problems in contemporary music. This music is not isolated with its own discoveries, inventions and problems.

Before addressing the central issue of this article concerning composition and déjà-vu in computer compositional resources, it is worth thinking about what we consider as musical and not musical. Musical propositions and tendencies have been abundant throughout the twentieth century. Our object of discussion, music, is not singular or unique but diverse and multiple.[2] Talking about music nowadays requires an articulation of different ideas projected over qualitative and measurable air pressure disturbances taken as sound and musical impressions.

Music based on propositions such as those by Cage, Varèse, Schoenberg, Boulez and Takemitsu goes beyond any scholastic view of music (namely, something to be heard). But when we penetrate this propositional domain, we may take the risk of accepting as music anything that we call music, and as such, shared and accepted by a community. It is relevant to say that being sonorous is not enough to establish something as musical, and vice versa. As an example, La Monte Yong's *Composition #7* does not make any reference to sound, and one can name any number of examples from the music of the 1970s, like the idea of a 'musik zu lesen' by Dieter Schneble; in a more common sense, to make sound does not necessarily mean to make music.

So, we must first distinguish different modes of musical listening:

(1) *Textural listening*. This is a kind of listening directed towards sensations not easily nameable, without bringing into play any sort of representation. Two distinctive poles are relevant here: expression and sound presence sensation. They exist without the need for representation.[3] We only represent something if it finds resonance in language (or in the crossings of sign systems – semiotics – with language). In this case, both expression and sensation would leave the condition of being held as an object of perception, giving it away to representation. This is why we do not represent an expression;

[1]For a discussion about transformations in composition derived from the use of the computer, see McNabb's and Truax's articles in Emmerson (1986) and Jullien (1993).

[2]What is meant by multiple is not to be taken as something totally unconditional, but more in the sense given by Gilles Deleuze and Felix Guattari in *Mille Plateaux* (Paris: Minuit). Any unity is at the same time multiple, not in the sense of a group of elements, but of a continuum crossed by other continuities. Multiplicity is a field of multiple entries. When considering music, we will later be drawing on three entries set in a logical sense, which can hold their own articulations and overlap each other (see also Ferraz 1999a).

[3]Cf. Ferraz (1999b); here the categories of Firstness, Secondness and Thirdness are applied to musical listening. Concerning texture, it is important to notice that when starting to describe texture we are already leading with representation in the second level of the semiotic chain.

Organised Sound **5**(2): 81–84 © 2000 Cambridge University Press. Printed in the United Kingdom.

https://doi.org/10.1017/S1355771800002041 Published online by Cambridge University Press

we only map it to present it or repeat it. An expression does not exist in itself (let us remember the game proposed by Wittgenstein);[4] it only occurs if confronted with other semiotics or when reactivated along with something else.

(2) *Figural listening* (indexical net of relations; one unit of data relates structurally to another).[5] In this case, listening relates to a point of view, now in a representational universe. What we represent here is not the object but the relations between objects. Musical notation does not register sounds but presents systems of interrelations, allowing the transmission of certain musical aspects. To note a sound is to present an understanding of a structural form (think of the different sorts of representation in music: time domain, frequency domain, space domain, etc.). Here we have a gamut of possibilities going from contrast-type relationships to less direct ones, such as structures of repetition with clear variations or more complex structures not easily perceptible. In relation to textural listening, we point out that while choosing objects or relating elements in texture, we leave one listening field to enter another.

(3) *Symbolic listening* (net of symbolic relations). This is a result of a semiotic crossover between one system of signs and another, or a system of signs and language (gestural, visual or verbal).[6] The game of language is at play in such listening activities, not focused on sensation or relationships of proportion anymore.

It should be clear that these domains (textural, figural and symbolic) interpenetrate each other and that the process we call a musical one is dependent on language crossings. Such musicalities (the musical listening and performance that result from these three groupings) may emerge from an unexpected territory and migrate to others, promoting attachments between languages. For example, the music of catholic masses has migrated to concert halls and to musical analysis classrooms. This particular path goes from ritual listening to structural listening, passing by dramatic listening, filled with verbal content; potentially, all of these territories exist.

These sorts of listening are concentrated in a bundle of possible listening territories. Each time we meet a musical object we throw (or restrain) ourselves into a nomadic voyage, swinging from one part of the bundle to another. Children sing themselves to sleep because of their fear of the dark. They cover themselves and run their memories, recreating sign chains (sensations, images and meanings) with more or less intensity. It is exactly this intensity that determines what we call expression. Expression is born of a clash; it is not a separate entity. Whenever different discourse or language territories collide or enhance each other there is expression.

2. BETWEEN A SOUP OF SOUNDS AND MUSIC

From such an approach to a complex musical fact, we now return to our initial central question about the computer presence in composition. We will also try to demonstrate how computer practice permeates the idea of form and expression in music, either acoustic or eletroacoustic. Computer-assisted music is not a lonely maiden in a tower. Problems that seem to be unique to it are actually applicable to all of contemporary musical practice.

The foundations of instrumental musical practice form the basis of a vast amount of today's music involving the use of the computer, either in synthesis, sound transformations, sequencing of events, or in calculations and projections with a serial or spectral basis. When we mention form and expression we are concerned with a general problem in music, not restrained to the acousmatic situation or to music made without being heard, such as those pieces rendered from numerical projections. It would be too simplistic to think that the presence of performers or their gestures as sound movements are ultimate solutions to these problems. On the contrary, the way gesture has been treated in electroacoustic music only creates more problems, since it ignores alternatives for gesture and how it is linked to a musical discourse. In fact, it excludes the potential of gesture to alter a sonic object into a musical one.[7] Thus, the problem remains the same; gesture takes the credit for a solution to what turns a sequence of sounds into music.

Debates on these matters were widespread in the 1970s, particularly in discussions about improvisation. Arguments by Vinko Globokar in a special issue of *Musique en Jeu* serve as an example.[8] During the following years, so-called 'New Simplicity' and 'New Complexity' composers sustained new consideration and criticism about it. The immediacy attributed to gesture by New Simplicity provoked a reconsideration of the term in Wolgang Rhim's articles, in response to Brian Ferneyhough's critiques.[9]

[4]'Sing a song with expression! Now, do not sing, but repeat the expression!' (Wittgenstein 1945: 332).

[5]Concerning the idea of figure, see Hjemslev (1963).

[6]The triadic game here follows in some sense Charles Sanders Pierce's model, as proposed by Pierre Schaeffer and subsequently by François Bayle and Trevor Wishart. There are also other composers who distinguish three fields, such as Brian Ferneyhough (cf. Ferneyhough 1990).

[7]Note that the sonic object is outlined from a constructed intention of an object, thus distinguished from an outline with an intention of musical construction, the latter being based on relations among sonic objects.

[8]See Globokar (1971).

[9]Concerning the subject, see Various Authors (1984). Apart from the articles written by Ferneyhough and Rhim, Dalhaus and Décarsin focus on what is usually taken as public rejection problems in contemporary music. Ferneyhough considers that gesture is not an immediate way to access music but a result of a symbolic chain. So, when talking about gesture we are referring to such symbolic, figural and textural musical practices. And, concerning a logical signal chain, gesture is in the abstract extreme of the listening experience, and dependent on figural and textural conception.

https://doi.org/10.1017/S1355771800002041 Published online by Cambridge University Press

Gesture (in the sense of corporeal–instrumental–sonorous movement) aside, a whole chain of musical significance permeates procedures and works produced with the aid of a computer. A series of 'guaranteed musical procedures', already framed by communities, are conventionally called upon, such as the most common examples of loops, interpolations and random games of permutation.[10]

As suggested above, there is no *a priori* musicality activated during the contact with a classified object. A classified gesture does not ensure any musical creativity. The use of loops, interpolations or permutations as object descriptions does not ensure their musical potential. Musical gesture does not exist apart from a game where it becomes relevant as such. What we call form, such as in a sonata, determines events and types of gestures, but the opposite is not true; form is not determined by a sequence of gestures. Just as form is not significant by itself, but in relation to ways of listening, gestures are not significant unless they are related to specific modes of listening. Symbolic gesture is significant in a conventional domain of signifieds, of meaning. On the other hand, dynamic gesture – one that describes something as movement – is significant only if contained in a figural game emphasising or sustaining the idea of movement and stillness as a prerogative.

3. THERE ARE GESTURES AND GESTURES

When we examine composition or sound sequence-generating softwares, written with systems such as MAX/MSP and Patchwork/Open Music,[11] it is common to find loop, interpolation and permutation operators. They reflect tradition in some sense; serial music with its permutation games, minimal music, in which a looped groove may be vital, or electroacoustic and spectral music, where interpolations of rhythms, chords or melodic structures are developed, gradually transforming sound or figural processes.

A doubt still remains: what tells me that these procedures guarantee that what I do is music? The answer, in a way, may be found in the intensive presence of these procedures, which we can now call traditional procedures. 'Traditional' since there are no more people challenging them without confronting those who defend them; they are common sense in composition. Composing with such accepted procedures, particularly in the case of young composers or those distant from great production centres, is working with just one aspect of what turns a sound event into a musical one. For example, loop grooves operate by continuity, creating a specific idea of gesture. The same is true for permutation games and gradual transformations of interpolation between distinct object-gestures. Thus, at the heart of these conventional procedures we find a specific gesture, if gesture is captured at its surface. One cannot resist superficial developments according to historically classified patterns. To do this it would be necessary to focus and treat gesture as figure, resetting the figure's power to produce gestures.[12]

It is even more interesting to note that tools such as computers increase the composer's work potential and accelerate the elaboration of their compositional material. From the choice of material and treatment to the first results, there is a direct, almost immediate jump, and there is the possibility of listening to every step along the way.[13] The interpenetrations among transformational stages from texture to figure, and finally to gesture, are cut off. In this manner, composers create gestures from catalogued gestures, figures from preconceived figures, and textures from typical sonorities. Think, for example, about long drones or non-stopping shifts of objects in space. Even the process of the composer's conception of music is put aside, replaced by the assurance of a pre-established idea of music, imposed by software design or by modes of programming. Even if the composer is not satisfied with it, music is guaranteed by these pre-fixed ideas. Fast passages formed from sound matter or compositional procedures to compositional material have been discussed by composers such as Tristan Murail and Barry Truax since the 1980s.[14] At the present time we are still exploring the limits of this form of work.

As shown earlier, what we call music happens with the crossing of different languages and not only with the emission of sounds (instrumental or from speakers, elaborated by accepted procedures or not). Such a consideration is not restricted to one sort of compositional practice, but to all of contemporary music. Music and potential musicalities are invented and not pre-established.

Problems with electroacoustic music, computer music, computed-aided composition and so on, are the very problems of contemporary creativity. By suppressing the construction stages of sonic or musical objects and ascribing to software designers the assurance of musical acceptance, composers are receiving the key to enter a specific community and are risking their creative spirit.

The approach we took in this paper seemingly just

[10]Concerning the false primacy of gesture in listening, see Ferneyhough (1984). There are also those who use mathematical representations of nature as the power to transform sounds into music.

[11]To evaluate these programs, various patches offered to IRCAM associates were analysed, along with MAX user homepages (http://cnmat.CNMAT.Berkeley.EDU/Max/ nightschool99/).

[12]We may consider, for example, serial procedures; more than just a matter of form and unity, they allow the appearance of gestures not found in the catalogues of tonal dramatic discourse.

[13]In this case, listening is quite ordinary and passive. We point to those innumerable works in electroacoustic music that use grooves or long low-frequency drones. Sometimes they are enhanced by sparkling high-frequency sounds spinning around the concert room.

[14]See Truax (1986) and Cohen-Levinas (1992).

https://doi.org/10.1017/S1355771800002041 Published online by Cambridge University Press

pointed out problems, but this was intentional: to formulate a question is, in effect, to create a path to a productive answer. So, in a non-pre-established situation it is important to note that the path ahead may be one where gestures are not defined; where gestures will be not an imitation of 'gesture', but a product of new ways of computer–composer–music interaction.

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