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AN EDUCATION IN COMPLEXITY. THE ROLE OF CONTEMPORARY ART MUSIC

The aim of my short contribution to this study session is to propose some reflections on the important role of contemporary art music in an education in complexity.¹

Theories of complexity are an area of thought that is largely established in humanities and social sciences today. They constitute a body of theories that, despite several differences, share a general rejection of reductionism.²

Referring to the etymology of the word 'complex', which means 'something held together', these theories emphasize factors such as discontinuity, contradiction, non-linearity, multiplicity, randomness, and the role of chaos in the natural or cultural phenomena they examine – a series of aspects that were considered marginal or even negative by classical Cartesian rationalism.

Edgar Morin, among the major theorists of complexity, pointed out that, in the early 20th century, thanks to the Quantum Theory and the Theory of Relativity, the paradigm of simplicity was replaced by a new paradigm of complexity, which now dominates both the natural and human sciences. Morin's model is based on a dialogical principle, «un principe dialogique», whereby opposites are mutually constitutive, not exclusive.³

There are other radical positions. Gaston Bachelard, for example, argued that «il n'y a pas d'idée simple, parce qu'une idée simple, ... doit être insérée, pour être comprise dans un système complexe de pensées et d'expériences».⁴ However, it is Edgar Morin who gave the clearest definition of the new epistemological premise underlying his dialogical model: «La complexité ne saurait être quelque chose qui se définirait de façon simple et prendrait la place de la simplicité. La complexité est un mot-problème et non un mot-solution».⁵

It is no coincidence that the recent thought of Morin has been largely devoted to pedagogy. Our contemporary global society requires new

¹ On this topic, see my previous article *Pedagogia, didattica e musica d'oggi*, in *La musica tra conoscere e fare*, ed. by G. La Face Bianconi and A. Scalfaro, Milano, FrancoAngeli, 2011, pp. 61-68.

² For an overview on the subject, see *La sfida della complessità*, ed. by G. Bocchi and M. Ceruti, Milano, Feltrinelli, 1985.

³ Cf. E. MORIN, *La Méthode*, III: *La connaissance de la connaissance*, Paris, Seuil, 1986, p. 98.

⁴ G. BACHELARD, *Le nouvel esprit scientifique* (1934), Paris, Presses Universitaires de France, 1968, p. 152.

⁵ E. MORIN, *Introduction à la pensée complexe*, Paris, Seuil, 1990, p. 10.

theoretical models in human sciences (think, for example, of Niklas Luhman's sociology of complex societies), including new pedagogical models. After *La tête bien faite. Repenser la réforme. Réformer la pensée*, Morin published, following an invitation from UNESCO, a sort of manifesto, *Les sept savoirs nécessaires à l'éducation du futur*, in which he outlines a programme of educational reform based on the theory of complexity.⁶

Today, given the situation of the educational system in the West, where knowledge is still highly fragmented, Morin strongly recommends a paradigmatic, not merely curricular, educational reform. The new paradigm requires that the learner be able to grasp the relationship between the parts and the whole, the context, the complexity and multidimensional structure of reality. In other words, the pedagogical goal is to attain a transversal, interdisciplinary knowledge.

This paper follows up on my previous research in the field of didactics of listening for children, begun in 2005 with a proposal for the didactic use and transposition of a piece for solo violin, *Riconoscenza per Goffredo Petrassi* by Elliott Carter, an American composer whose music has a complex structural organization.⁷ From here I would like to take a step further, in the same domain and musical genre, considering the work *B.A.C.H.* for solo piano, a piece written by Italian composer Aldo Clementi. I believe that this piano work lends itself to be used in pedagogy and the didactics of complexity, for children but also, with a different approach, for young people and adults.

Before I start, I would like to clarify a series of points, in order to avoid any misunderstanding.

By 'complex' I mean an object consisting of multiple, aesthetically rich elements related to each other, which can stimulate attention, emotional and intellectual participation, and an interpretive answer on the part of the learner. Although I am considering here a work of contemporary art music, I would like to emphasize the fact that any complex music (be it classical, ethnic, popular etc.) can be profitably used in an educational program for children, young people or adults.

I have chosen *B.A.C.H.* because, as a contemporary music scholar, I have noticed that this genre is still neglected in school syllabuses, and many teachers are not musically competent enough to introduce it to learners. Consequently, schools run the risk of using a kind of music that is aesthetically simplistic and

⁶ See ID., *La tête bien faite. Repenser la réforme. Réformer la pensée*, Paris, Seuil, 1999; and ID. *Les sept savoirs nécessaires à l'éducation du futur*, Paris, Seuil, 2000. For an application of Morin's theoretical thought to contemporary music see N. DARBON, *Musica multiplex. Dialogue du simple et du complexe en musique contemporaine*, Paris, L'Harmattan, 2007.

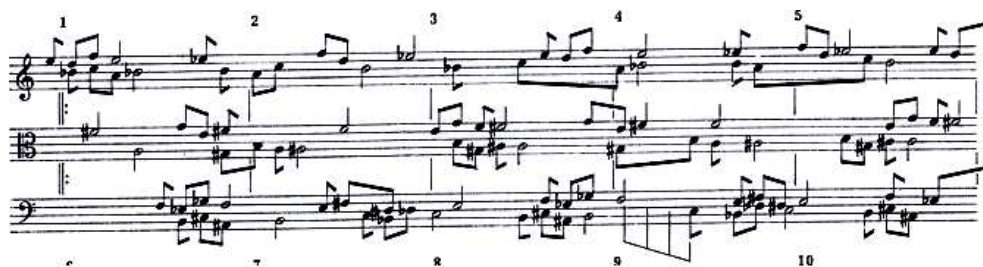
⁷ Cf. R. POZZI, *Didattica dell'ascolto e musica d'arte. Come proporre "Riconoscenza per Goffredo Petrassi" di Carter a bambini di sei anni*, «Musica e Storia», XIV/3, 2006, pp. 715-732 (monographic issue on *Didattica dell'ascolto*, ed. by G. La Face Bianconi).

poor, instead of stimulating children in perceiving and understanding complexity.

After this short premise, let us listen to Aldo Clementi's piece.

The piece we have just listened to, *B.A.C.H.* for piano, was written by Clementi in 1970, and opened a new stylistic period for the composer, which is referred to as diatonic.⁸

Starting from this work, a composition he initially regarded as little more than an experimental piece, the composer abandoned the dodecaphonic and chromatic language he had used up to the 1950s and 1960s. His new language was characterized by the use of diatonic elements and the development of melodic fragments from works of the past, which contribute to form complex polyphonic textures. We can see a clear example of this process in *Frammento*, another Clementi piece for piano, written in 1983:



ALDO CLEMENTI, *Frammento* for piano.

The basic material for this work is taken from the beginning of Tchaikovsky's *Trio* op. 50, for violin, cello and piano: the first four notes of the cello.

PYOTR IL'YICH TCHAIKOVSKY, *Trio* op. 50 for violin, cello and piano.

⁸ Cf. G. MATTIETTI, *Geometrie di musica. Il periodo diatonico di Aldo Clementi*. Premio internazionale Latina di studi musicali 1996, Lucca, LIM, 2001.

B.A.C.H. has a different structure:

ALDO CLEMENTI, *B.A.C.H.* for piano.

This piece shows an overlapping of different scale structures. The central part has a diatonic scale of C minor (green colour), to be performed *mp*; the upper and lower parts (pink colour) – the first *pp*, the second *p* – use a chromatic scale. The notes of the name BACH are introduced in the central part (green and pink colours). Another corresponding quotation appears in the white sustained notes (yellow colour): a motive fragment from the beginning of Johann Sebastian Bach's *Fantasia and Fugue* in C minor BWV 906. The incipits of both the *Fantasia* and the *Fugue* also contain the notes of the name BACH:



JOHANN SEBASTIAN BACH, *Fantasia* in C minor BWV 906.



JOHANN SEBASTIAN BACH, *Fugue* in C minor BWV 906.

The piece, according to the composer's instructions on the score, must be played as fast as possible and repeated at least three times. The kaleidoscopic repetitions and rotations of the elements, the constant change of asymmetrical rhythmic accents, and the fast pace, generate a sense of vertigo in the listener and, ultimately, a perception of time as something static. These multiple compositional devices suggest that *B.A.C.H.* goes well beyond its title in paying homage to Bach, whom Clementi admired for designing superb polyphonic architectures, spreading the use of equal temperament, and reaching a synthesis of diatonic and chromatic harmony.

I think the above reflections provide a clear explanation of why a pedagogy and didactics of complexity addressed to children and young people in a school setting, but also to adults in a context of lifelong learning, can find an ideal exemplary in Aldo Clementi's *B.A.C.H.* The work, which sounds chaotic on first listening to it, yet an analytical study of the score (the cognitive dimension, a step which the didactics of musical listening cannot bypass)

reveals the many elements of multidimensionality, multiplicity, discontinuity, and non-linearity, which characterize the paradigm of complexity.

As can be clearly observed, *B.A.C.H.* offers the teacher a variety of intersecting uses and didactic transpositions. In a class of children, for example, the listening can be analysed and explained, organizing a game on the sound of names and, from that starting point, moving to a first introduction to Bach. Again in the case of children, the compositional devices of the piece, based on the repetition and circular movement of the same elements, can be explained by thinking about kaleidoscope games. For young people, the piece can be a good way of starting from a listening experience of contemporary art music to introduce Johann Sebastian Bach and *The Art of Fugue*. For adults who have adequate historical and cultural knowledge, *B.A.C.H.* can introduce listeners to the aesthetic approach of Aldo Clementi, to the nostalgia of the past in the music of the 20th century, and the relationship between Clementi and Informal painting, or philosophical Nihilism.

The importance of stimulating the mind through a relationship with complex objects that are socially experienced and shared, is strongly emphasized by several modern psycho-educational researchers. Actually, a didactic project guided by a competent teacher and based on music that is aesthetically rich and complex, can guide learners to the area of potential cognitive growth which Vygotskij refers to as «zone of proximal development».⁹

Similarly, a complex music work can encourage an exploratory attitude which, according to Bruner's theory, leads to the understanding of knowledge as a 'process', not as a 'product'. Moreover, in Bruner, like in Vygotskij, the tutorial function of the teacher and the assisted learning process he refers to as 'scaffolding' are instrumental in achieving good results in a classroom of children.¹⁰

Gardner gives another contribution to a pedagogy of complexity when he points out that in the classes of *Project Spectrum*, inspired by his theory of multiple intelligences, children's minds are stimulated by daily contact with a variety of rich and not simplistic items.¹¹

In conclusion, coming back to Edgar Morin, in order to face the complexity of the world, we need, first of all, a *tête bien faite*, a mind that is able to find a general method to ask questions and give answers to solve problems; secondly, to find the principles for connecting knowledge; in other words, to understand what connects phenomena rather than what divides them.

⁹ For this concept cf. L. S. VYGOTSKY, *Thought and Language* (1934), translation newly revised and ed. by A. Kozulin, Cambridge, The MIT Press, 1986, p. 187.

¹⁰ See J. BRUNER, *The Process of Education: Towards a Theory of Instruction*, Cambridge, Harvard University Press, 1960, p. 76. For a definition of 'scaffolding', see D. WOOD - J. BRUNER - G. ROSS, *The Role of Tutorial in Problem Solving*, «Journal of Child Psychology and Psychiatry», XVII, 1976, pp. 89-100.

¹¹ See H. GARDNER, *Educare al comprendere*, Milano, Feltrinelli, 1993, p. 215.

In his opening lecture to this Congress of the International Musicological Society, anthropologist Francesco Remotti stressed the value and importance of the concept of ‘similarity’ and criticized that of ‘identity’, questioning precisely the theories of complexity. He did not do that by chance. The concept of ‘identity’ separates things and cultures, while that of ‘similarity’ connects them.¹² From this point of view, accepting the complexity of the human experience, and basing the pedagogy and didactics of music on it, may be a good way to be more successful in education. Such a choice will probably allow learners and teachers to live better, in a society that is truly founded on a qualitative, not quantitative, idea of democracy.

¹² On the notions of ‘identity’ and ‘similarity’ see F. REMOTTI, *Cultura. Dalla complessità all’impoverimento*, Roma-Bari, Laterza, 2011.