

## Interdisciplinarity within the Discipline

Elena-Alexandrina CLINCIU<sup>1</sup>

**Abstract:** *This study is dedicated to the great mathematician Solomon Marcus, departed from us on March 17<sup>th</sup>, 2016. The problem arises here of the interdisciplinary conjugations: the full power of the abstract model (be it mathematical or of a different nature) to reorient the authority of some disciplines. The idea of semantic field, articulated by metabolizing a considered discipline, leads us thereby to the discovery of new regions of conscience (the lyric and the narrative). By interdisciplinarity, the being becomes more aware and responsible, experiences the act of culture as a complete and complex act, refuses the narrowness of the autonomous field of knowledge, and commits to finding models meant to fulfill his/her spiritual, intellectual demands. A position of comprehending the abstract, of the mature act of making culture; a position of apprehending the sense of music (art of sound) beyond the cognitive reflexes within reach, is brought into the equation.*

**Key-words:** *intellectual metabolism, interdisciplinarity, model, language, musical performance*

### 1. Introduction

I remember Constantin Noica's wise intervention, in a book preface, explaining Moisil, the mathematician. He refers there to a measure by which Solomon Marcus would weigh the greatest Romanian scholars, starting with George Călinescu and ending with Cantemir, Haşdeu and Iorga; according to Marcus' sayings, to such a scholar "one can hardly find the kinship" (Moisil 1979, 10). Noica continues, nevertheless, Marcus' remark, with a new emphasis, that is, the latter found Moisil's "kinship"..., forming with him a larger family of scholars, with an amazing openness towards universality: Ion Heliade Rădulescu, George Enescu, Pius Servien, Lucian Blaga, Tudor Vianu. Recently parting with Solomon Marcus – similarly as we had the painful anguish of heart in the case of the great scholars Grigore Moisil and Constantin Noica, we bid farewell to a historical time in which the man of culture had not only authority, but also greatness. The great universalists I speak of, had an identity of substance; it is the identity by which the "specialist" (Moisil *sensu*) could not remain merely a *specialist*; by the Renaissance model, this family of noteworthy

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<sup>1</sup> Doctoral student of *Transilvania* University, Faculty of Music, Braşov, clinciu\_a@yahoo.com

scholars could not appear in front of the great culture with a unique knowledge, with a single “specialization”, but with a suite of intellectual programs, of cognitive unchainings, and of openings towards encyclopaedism. Can one speak nowadays, in post-historical time (which will become, in its turn, *history*) of a gallery of scholarly figures who might vest such massive attempts of interdisciplinarity? Will the youth of our days be able to babble (at least something!) about the cultural models which nurtured them? Shall we, the teachers and professors, succeed somehow in recreating the trace of intellectual Pedagogy transmitted via the historical flow, by the great scholars, for the very purpose of linking the rings among themselves and of rallying the young apprentice who learns (informs himself/herself) to the polyvalence of the interdisciplinary impact?

Upon hearing, in broadcasts, Solomon Marcus talk about his mentors Miron Nicolescu, Octav Onicescu, Gheorghe Vrânceanu, Simion Stoilov, Dan Barbilian, about Grigore Moisil, about their entertaining a whole gallery of great ideas; that they formed themselves “in the spirit of the time”, as a consortium of inquisitive intellectuals, Truth- and not Exactitude-trailing (which “consumes the object, reducing it to formula and law” – according to Noica’s words), we can only wonder upon the direction of culture’s contemporary ark. These colossal mathematicians, with whom Marcus closes the series, knew “that, in principle, they were not allowed anything” (Moisil 1979, 13). Mathematics would be the splinter of the Whole, by which they would “think” their being. The Whole was the knowledge of the Universe and it enacted a form of orientation, of settlement for the spirit, all unknowns regarding its ontology being an equation to be solved. Probably the format itself of the equations with one or more unknowns was the expression of the questions chasing after their solutions, answers. And the mathematicians are those who reconcile the vibration of the question with the finding of the answer. Their addressability model is the mathematical; yet their thinking is meta-logical, transcendental. A good instinct of mathematician makes him/her an artist, an intellectual with his/her own area of inclusion. Marcus gives a special colour to the intellectual meetings with the mathematician Octav Onicescu, mentioning that what particularly attracted him was how the mathematician related mathematics to culture; as, for Onicescu, mathematics were neither a computational tool, nor an engineering object, but a symbolic language, with a cultural aspect by excellence. As a professor, Onicescu approached a qualitative vision upon algebra, replacing the mathematics of calculation with the one of the structures (of the ever more abstract thinking). The universality of this reasoning line conferred upon thinking, openings, bridges towards deciphering the linguistic environment (see the literary, poetic language); there is well known his reasoning which flanked interdisciplinary significations oriented towards the level of growth in the entropy of a text, as well as its poeticity level (Solomon 1986, 162-175). Dwelling upon the evaluation forms of a poetic text with increased semanticity coefficient, as it appears in Eminescu, Marcus re-experiences, after long years, his friendly polemics, after his student

years, between him and Onicescu. If Marcus elaborated the mathematical, systematically putting it into the service of the linguistic model, Onicescu accentuated the paradigm of the theory (respectively energy) of the information. Supported by a colossal intuition, and also by the masterly apprehension of the information theory, Onicescu, having a philosophical vocation, parameterized the level of entropy in the verses of the poems *In the Heart of the Forest*, *Midnight Rings* and *Sleepy Birds* of Eminescu, showing how his creation stands in the light of this theory. Here is what means to bravely advance in the imaginary, towards the outline of an analysis tool aggregated by a mathematical model, and what signification holds the interdisciplinary implication in culture! Leaving “Onicescu” lane, Marcus comments upon the brilliant, overflowing endowment of the mathematician Dan Barbilian (with the poet pseudonym Ion Barbu) whom he had met when he was a student in the 2<sup>nd</sup> / 3<sup>rd</sup> year, at the faculty. Being fond of his verses, he discovered them in the mathematical language, during his interventions from the chair. Despite the fact that Barbilian the poet sought to obscure the accents of his profession of a poet (as from this perspective, I. Barbu was not politically approved) poetry used to possess him permanently, used to be his manner, par excellence, of feeling algebra, his unique manner of breathing life. Marcus emphasizes, in an interview, that Barbilian “was a poet in all his manifestations of language and in all his manifestations of life. He was an abstracted guy, of a genuine naivety. [...] and this naivety itself made him very likeable.” Likewise, Marcus evokes with a high passion, the professor Moisil, as a complex, nuanced scholar, who legitimated his own paradoxes beyond the older ones (of the logic of the possible worlds initiated by Leibniz). Moisil’s mathematics was a way of understanding the world, life; and, by no means, a portfolio object or a *scholarly*, *pedant* manifestation (by calculating obsessions and rigorism).

And here we are at the portrait of the mathematician Solomon himself. As the last great scholar, creator of a cultural paradigm, whom Romania consecrated as a Renaissance model, in terms of intellectual comprehension; the one who, as an *inventor* and (at the same time) *discoverer* introduced, on the cultural firmament, the concept of mathematical linguistics (along with the one of mathematical poetics), extends by his coryphaeus stature, with one more ring (will it be the last...?) the impressive chain of the encyclopaedist scholars that Noica talked of. His culture is a culture of the pluralism and of the intrinsic connection with artistic and scientific fields (apparently disparate), of the cause-and-effect relations established between them, by mathematical modeling. Marcus also reaffirms the potential of the paradigmatic nuancing and of the interpenetration between semantic planes, of the modernity inherent to the analysis systems. Poetry and music are, for him, cultural indexical signs, not only subtle emotions. Marcus was also the constant encouraging, inspiring supporter of the musicians involved in prospecting interdisciplinarity.

## 2. Solomon Marcus and the interdisciplinarity

Starting from some deep structures discovered in the resources of the *mathematical*, Solomon Marcus reconstitutes by testing the *puzzle* (the existing conditions) of some fragments in the area of the humanistic sciences, their semiotic and semantic systems (separately aspected), in order to detach them from their dogmatized, prefabricated layer. Without renouncing risk, he discovers their properties which (by tradition) leveled them, restricted their interrelational potential. Transforming, in the light of the new model, their canonized, autonomous vision whereby they would consume themselves as in a hive (“swarm” system) Marcus emphasized and predicted their linguistic character (universal constant) by a new reading window: the linguistic-mathematical game. Initiating a model of analysis, by the passage from a psychological dominant to another one, respectively from the *lyrical* to the *narrative*, Marcus initiates a first interesting incursion, so as to prove the semantic resistance of a corpus of verses (Tudor Arghezi’s three poems: *Rada*, *Mystery Psalm* and *Morgenstimmung*). In his book *Time* (Albatros Publishing House, 1985) the scholar explains, adapting to his field, the discoveries made following the research upon the activity of the neocortex, the two behaviours, their asymmetry; this way, the *lyrical* – associated to the right hemisphere – controls the non-sequential, hence non-concomitant activities (emotions, intuitions, affectivity); it is about “the raw, unmeasured, multidimensional emotiveness” (Solomon 1989, 95), whereas the *narrative* – represented by the left hemisphere – has a sequential, linear structure, controlling language and logic. These two directions of behaviour often interfere, creating convergences at other levels, such as the “the conversion of the lyrical into language [which] means at the same time the narrativization of the lyrical.” Extending Greimas’ project, related to the issue of narrativity (see *Actant Theory* 1990), Marcus proves how Arghezi’s verse appeals to the narrative, without detaching its constituents from the lyrical; here Marcus discusses a semiotics of the lyrical and one of the narrative.

The model of the transformational generativism, as “a way of passage of a finite, visible structure, into an infinite, intelligible structure [leading to a generative grammar (n.n.)] to a finite system of rules, whereof at least one (or a group) is recursive [hence cyclically repeats itself (n.n.)]” (Solomon 1989, 97) witnesses, confirms the possible passages from finite, visible structures, to infinite, unintelligible structures. The ambiguity relations of the Arghezian verse place into a hierarchy, the syntactic entities, on the support of the lyrical or of the narrative. Such a format of analysis causes other inlets/ reunions of the morphological elements which take part in the generative game. Marcus remarks not only that any such text iteratively uses a finite number of symbols, but also that the text becomes potentially infinite. His conclusion, affirming the infinity of images in which the generative transformation can occur, shows the differentiation between a lyrical grammar and its complementary, the narrative one, respectively the fact that in the lyrical one, the units are deprived of the phonetic or rhythmical level (see the occurrence frequency

of the vocals), whereas the narrative grammar exposes units of the level of the motive, events and formal sequences. This model can be efficiently transmuted in the space of the arts. Transformationism in music would require, in its turn, a generative reading, both on the level of the lyrical and on the space sustained by the narrative. Here's what cognitive potential releases such an interconnection and in what conditions can an algorithm used by Marcus create working tools for the semantic performance of a musical phrase. Although music does not operate with concepts, it is clear that, at a certain construction level, it suggests them. It remains to be demonstrated what types of correlations can be defined between mathematical and linguistic modeling, and arts, respectively music; and, even more, which is the nature of the problems intended to be solved by this interaction

### **3. Can interdisciplinary relations be adapted to musical analysis and performance?**

“Learned men, yet deprived of talent, namely the bearers of dead science, I see them as a darkened room with an entrance and with an exit. Novel ideas enter one door, go through the darkness of the room, and leave through the other door, indifferent, alone and cold ... The head of a man of talent is like an enlightened room, with walls and mirrors. The ideas do come cold and indifferent from outside – yet what a society, what a party they find within!” (Noica 1992, 123) Mihai Eminescu (fragment from *Notebooks*)

To speak of interdisciplinarity nowadays, when the field of music art is almost exclusively tributary to the unique comprehension canon of this form of expression, such volatile, appears perhaps as an anodyne act. The “unwavering” mistresses which confer power in apprehending the science relative to the art of sounds, are – according to the paradigm of our academic school (with a program...) the autonomous disciplines. Theory and history of music, ethnography and folklore, and few other adjacent subjects (harmony, counterpoint, orchestration, musical forms), then their multiplication by the “practical” ones, starting from the energy caused by the actual singing or playing (either vocal or instrumental) – these are the only ones which explicitly revolve around the field. The horizon comprising these disciplines also fastens the sense they hold in educating the musician (be him/her a professor, a student, a future music lover). The sense of creating a language whereby the musician expresses himself/herself as a man/woman of knowledge, as a specialist, is the first move proposed by the autonomous disciplines. Some musicians consider nevertheless that even in this “shabby” sense-promotion framework, they have to operate a selection in finding the disciplines (we speak only of those autonomous to the field “music”), which should articulate their cogito and fulfill their inner knowledge-requirements. The selection is (usually) made with steps (much too) safe, reaching the state in which the faculty student should choose only the “cream and skimmers”, namely what is for him/her the easiest and safest to understand, in order to prove to himself/herself that *s/he, in his/her turn* exists there, in the musicians’

“select” consortium. His/her selection comforts him/her quite easily; not only he himself/she herself, but sometimes also the mentality of the school “tells” him/her what to choose: in this challenge, it is about *choosing*, only about playing, a little chamber music, a little bit of orchestra..., and “that’s all!”. Among the persuasion forms come from *some voices* of the school, the student and also the instructor who guides him/her agree upon the selection – univocal, barren, tormented. The error consists, however, in the idea that art does not come to life by selection, but by aggregation of substance. Let us look back in the history of culture: a Michelangelo, a Da Vinci, a Bach or a Beethoven have shown not only that in their art there is a hidden power, of exorcism and elevation, but also that this is a form of connecting the individual to his/her adjacency, to the dimension of the Infinite. As any other field of knowledge, music is not only a carriage ride to the borders of the world of sound, but essentially a possibility of tearing, laceration of the being, on his/her path towards the knowledge of the Universe and implicitly the self-knowledge of the *Human*; hence mine, too! as a “point in motion” and dweller of this Universe. The visible of this (already proven) theorem can fill with responsibility, awoken to interrogation, occupy that “within and outside” of the *Being* with the will of power recovery that art, philosophy, natural sciences (Earth’s sciences) and other forms of knowledge have offered him/her since ancient times. Situating the Being in such a position determines associations of a subtle nature, so as It might not open only “the Eye” (as Nichita Stănescu would say), but *the Sight*. Detaching the consequences of the situation which does not allow losses, to wit the interrogative one, the student and his/her master will no longer consider the language of this theorem as “a mask on the Being, but [on the contrary, that] s/he is the most valuable witness of the Being.”(Ghideanu, 1979)

The need to appeal music by *culture* remains (unfortunately, nowadays) an absurd need for the faculty student. He/she calculates his/her energies in solving such or such virtuosity passage of a rhapsody by Franz Liszt (for instance), without turning his/her head towards the associated relations, of an intellectual nature, which appear during its thorough (non-infantile!) reading. S/he remains consistent in surpassing himself/herself, by exercising his/her mnemotechnic capacities (a reflex of the “primary educational cycle”...!), yet from an intellectual, culturally-accepted (and acceptable) perspective, his/her playing or singing is governed by a bundle of inconsistencies, which s/he does not imagine to exist. The inconsistencies are related to his/her not mastering the semantics of the language, not knowing how to decipher what the work of art “tells him/her”. *What the oeuvre says*, s/he might find out, if s/he set out to acquire the grammar of that language, which does not consist in (indefinitely) playing the piano, but in analyzing the score at his/her work desk. His/her inconsistencies are somehow understandable: s/he falls in that unique and conditioned reflex (prototype of the hamster), which “disembroils” it, because of the speed by which s/he solves the technical problems (of pure instrumental play) of the “Rhapsody”..., his/her enrollment in the carousel of the future artistic activities, depends. Transformed even in the bud, into instinctual starting points, the

inconsistencies are for him/her a voyage towards primitivism, involving his/her stop in all sorts of stations (intellectual laziness is one of them ...), with no connection to the discovery of the Universe within that music. The selection for which s/he *signed* when s/he cast aside (from his/her possible preoccupations) the extensive study of the autonomous and light-making disciplines in the Lisztian idiom (currently distributed only through the language of the “losses”, namely through the uncontrolled effusions of the author) will drastically condemn him/her! This way, throughout his/her entire career, s/he will relate “from anywhere” to the project of musical creation (to the compositional masterpieces), babbling the *wooden* tongue of the *basket-weaver* craftsman. He will not understand except (maybe) by some sort of miracle! the *sin* of the perspective confinements produced by (simply...) playing an instrument; and that, in fact, the “boring” history of music, theory, art of melody, harmony, counterpoint, syntaxes and morphology, musical forms, orchestration, stylistics and semantics, are not ingredients, but levels of gravitation, facts of language; they are the *existing conditions* of the idiom; and that they must be internalized, integrated into the goal; they (to the greatest extent) place in order, allow the accession to the “spirit of finesse” (Blaise Pascal) without allowing apprehension cracks in the sonorous re-dimensioning act of the opus. Therefore, the frozen reflex of playing “in forte”, assorted with a theatricality studied in the mirror, cannot create facts of culture, much less in this art so volatile, in which the sound forms are those that reign; yet only harmoniously sculpted have they the capacity to confirm the complexity and expansion of the Being (its *mature* closeness to the comprehension of the Universe).

Let us see what *vision* means, in an interdisciplinary light; for a musician (student at the faculty of music), it would be one of the hypotheses to probe in the future. How “his/her face would look like”, if s/he gradually pushed aside that empire of the reflexomaniac behaviour rules taken by mime (from teachers, professors or colleagues) and by what should s/he be rewarded, were s/he to renounce the concerned “empire”? We realize that what the student-musician does, in front of the keyboard, is done, in his/her own way, by any student (regardless of the faculty). Therefore, modern times of education produce an error; this is the error by which *the choice was made* to raise “unaccomplished” students, demobees, prey to immaturity, structurally submitted to violence and frightened by low grades in exam sessions, deprived of the right to think. In their quasi-slumber condition at a cognitive level, they will not be able at all to see the use of text-memorization and text-rendering acts. Reaching the substance of these texts, contemplating them, probing their semantic resistance, is the outcome of a process of special mental and methodological implications, that only the openness towards interdisciplinarity, towards readings *of grand force*, with actual being-sensitizing potential can facilitate. How would “the musician-student’s face look like”, if s/he solved each morning a mathematical equation, if s/he summarized a volume proposed by S. Marcus (let us not forget that each of his books propagates from a space circumscribed by a dictionary of different benchmarks, of other authors)...?

#### 4. Conclusions

The condition for finding the way out of the “wheel-of-the-squirrel” impasse – when we select the *too little* is searching a new model, another form of mentorship, discovering other forms of intellectual nutrition, new variants of reading the musical datum. The sense of this renunciation would be the expansion of the laboratory for comprehending the thinking Being; namely, of transformation: of stepping towards a new consistency, elevated from one artistic quality to another one. Do we want to know the style of an oeuvre?... We must make archaeology until reaching *alchemy*. We know how many fields benefited from this leap (transgression) from the moment of awareness, by lucidity, of the sense, modernity, topicality of the new *forme mentis*. Nowadays, human knowledge makes important steps in sustaining the plural analysis, the diversification of investigating methods, in order to obtain nuanced approaches to the researched object. Music-performance is (pretends to be...) such a field. Projecting the border expansion in the theoretical research (leaving here aside the practical research, of strict instrumentation of the piano (or of another sound-emission medium which holds, in its turn, its own rules) it must impose new selections in the choice of the fields of intersection, which might sustain *by such models* the closeness to sound, author, score. Of course, the performer’s organic adherence to the autonomous fields from the theory of music, remains perfectly valid. As constantly guided by the mathematician Solomon Marcus in his attempt to reform education, it is necessary, on our analytical field, then in the field of the production on the concert stage, to renounce promoting slogans (the *wooden* discourse on the purpose of art). Ignorance and laziness are those which (unawares!) place the score and the performer in the space of the Kitsch, of the intellectual props. We hope we will be able “once and for all” to open the window wide, to take air, to grow up, in order to create the space of reflection, with a view to living and feeling by music.

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