

Holofractal Music in Scene: Experiments on Performing Arts under a Semiotic Transduction Dialogue

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Abstract

The present text reports a research which deals with some of the semiotic possibilities of integrating music, dance, theatre, technology, physics, cognition, philosophy and oriental mysticism to dialogue in the same space-time on the political problems we are facing nowadays. Therefore, as it has to be especially for paradigmatic reasons, that is an ever “in progress” research, contingently restricted to my doctorate proposal of building a collective holofractal art spectacle and to depict from it a transduction semiotic model. So far, I am able to present a Peircean semiotic analysis of some few experiments in gathering poetry, dance, music and cyber sceneries to address our contemporary problems based upon some of the physics paradigmatic concepts, such as relativity, atemporality, multidimensionality, unpredictability, complementarity, interdependency.

Amidst the innumerable contemporary poetic concerns one may find a perspective that was defined by the composer H.J. Koellreutter as the role of a real artist: to spread and socialize the main ideas of his time. In agreement with Thomas Kuhn's notion of paradigmatic revolution, Gianni Vattimo addressed in the mid 1990's the idea of an artistic paradigmatic revolution, opening in his aesthetic analysis the possibilities that Koellreutter was already exploring since the 1970's. For the composer, a rich field of research was to create music upon some paradigmatic notions developed in quantum-relativistic physics, because it was one of the most advanced areas of experimentation in our time.

Following his advisory, I began to study those concepts and developed a transdisciplinary master's research, entitled «Quantum Music», which confirmed that the 20th century music was implicitly, but deeply connected to the most important discoveries in the field of physics. Koellreutter's important contribution was, thus, to upgrade our level of awareness about concepts such as relativity, atemporality, multidimensionality, unpredictability, complementarity, interdependency, holonomy and many others. Moreover, his work contributed to enhance the social-political aspects of the artistic field.

In spite of many symbolic and metaphorical discoveries fetched in that hermeneutic research, I was not completely satisfied with the «method» for developing my own poetical experiments and I began to look for something that could give more technical elements to deal with the transposition of concepts from one field to another.

PEIRCEAN PHENOMENOLOGICAL SEMIOTICS: IN SEARCH OF A DYNAMIC TRUTH

The answer to my quest was found in the mid-nineties, when I found a philosophic branch of Semiotics — very different from the logocentric Barthes-Greimas French school and Tartu-Moscow versions — which had a remarkable dedication not to one, but to two specific categories of non-verbal signs and signification process: the semiotics of Charles Sanders Peirce. One could argue that since Peircean semiotics was developed in 19th century, this could be a step back. However, the linear progress of knowledge is just another fable from positivism, very far from the complexities of reality. Conversely, Rosenthal demonstrates that Peirce's thought configures a «pragmatic pluralism» that:

[...] cannot be understood in terms of relativism, subjectivism, or irrational arbitrariness as opposed to «objectivism» and rational progress. Peirce's entire orientation provides a novel paradigm in which these popular but self-defeating dichotomies become irrelevant. This new paradigm provides the context for an enriching kinship between Peirce and Kuhn [...] ^[1]

[1] Sandra Rosenthal (1994), *Charles Peirce's pragmatic pluralism*, Albany: State University of New York Press, p. 128.

Hence, as a pragmaticist^[2], Peirce defends a terminological ethics, which implies a deep concern with language and logic, a term that he identifies with *semeiotic*, the science of signs and meaning process. He believed that many sterile contends could be avoided if terms were clearly defined^[3], and developed his semiotic method for understanding and classifying the signification phenomenon. Furthermore, Peirce defends that the role of the investigator is to search for the pragmatic truth^[4], and Santaella cites his Manuscript 684 to confirm that: «the pragmatic real truth is the one that can and must be used as a guide for conduct»^[5]. She sums up, based on C. J. Misak's analysis^[6], that this envision of truth presents three advantages: 1) it gives a rational context to the enquire development; 2) it gives sense to the investigation practice as a search for a living truth, a truth in process; and 3) it offers and justifies a methodology, encouraging the researcher to test his beliefs against argument and experience^[7].

Also different from other logocentric methodologies, philosophical pragmaticist semiotics is based upon a triadic phenomenology — that he named *phaneroscopy*, following his terminological ethics —, concerned with mind and perception process, i.e., with the pre-forming of meaning. But the main advantage of all is its detailed architecture, technical description and dynamic modeling of the micro-processes of signs formation.

In order to operate with the complex and multidimensional Peircean semiotic method, it is fundamental to understand its peculiar phenomenology; otherwise it is likely to get trapped in the often fascinating, but seldom productive, entomologic-like task of classifying signs. The science of *phaneron* (phenomenon), which is «all that is present to the mind in any way whatsoever, regardless of whether it be fact or figment»^[8], must not be confused with psychology, Peirce clarifies, because it deals with mental processes and perception (thought and experience as parts of cognition) to study «the kinds of elements universally present in the phenomenon»^[9].

This is capital for the seeking of the real truth, since Peirce refuses Kantian definition of reality as «incognizable», because that is to claim knowledge about what is defined as unknowable»^[10]. For him, «reality or the real is precisely that which is independent 'of the

[2] Actually, Peirce is the creator of the *pragmatism*, but the term became famous under William James' approach. Annoyed, Peirce coined another term for his philosophy, *pragmaticism*, ugly enough to avoid kidnapping as he said in several texts.

[3] Charles Peirce (1995), *Semiótica*, São Paulo: Perspectiva, p. 193.

[4] It worth noting that Peirce's position about truth was very complex and much ahead from his time, because while he did not agree with rationalist-idealists, who believed in the aprioristic nature of truth, he did not agree with realist-empiricists, who defended the objective truth of reality. He partially agreed with Kant, on the limits of our perception in knowing reality, but defended a pragmatic position on fallibilism and critically agreed with empiricists that some of our beliefs about reality could be confirmed through the repetition of experiments.

[5] Lúcia Santaella (2004), *O método anticartesiano de C. S. Peirce*, São Paulo: Editora UNESP, p. 255.

[6] C. J. Misak (1991), *Truth and the end of enquire*, Oxford: Clarendon Press, p. 160.

[7] Op. cit., ibidem.

[8] Charles Peirce, (1931-1958), *Collected Papers*, vols. 1-8, C. Hartshorne, P. Weiss y A. W. Burks (eds). Cambridge, MA: Harvard University Press, Electronic Edition of J. Deely, Charlottesville, VA: IntelLex, volume 8, paragraph 213.

[9] Idem, volume 1, paragraph 186.

[10] John K. Sheriff (1994), *Charles Peirce's guess at the riddle: Grounds for human significance*, Bloomington and Indianapolis: Indiana University Press, p. 56.

vagaries of you and me' (CP 5.311) or '... how we may think or feel about it' (CP 8.13)»^[11] and he defended a notion of truth based on the communitarian agreement upon the undeniable aspects of reality that force themselves against our perception and have been repeatedly submitted to this «trio of operations: conjecture; deductions of predictions from the conjecture; testing the predictions by experimentation (trial)»^[12], which is a very synthetic description of his method of ascertaining the truth.

The triadic nature of this method is no accident, but derived from Peirce's deep analysis of the *phaneron*. Phaneroscopy, also described as «The Doctrine of Categories», aimed «to discover [...] a set of categories which might then be applied to all nature and to all thought». Thus, after naming those categories with different terms, Peirce defined them according to the order they appear to mind: firstness, secondness and thirdness.

The first category is maybe the most difficult to describe, because it is about the «quality of feeling». By feeling Peirce means «an instance of that sort of element of consciousness which is all that it is positively, in itself, regardless of anything else»^[13]. So, the firstness of *phaneron* lives in its fresh primary self-containedness, before any comparison, judgment or effort of comprehension, including the qualities or effects of every kind of sensorial or emotional experience present to the mind in its suchness as it is perceived, as the feeling of a sound, taste, odor, color, joy, pain, etc., independent from the complexity of their source, which may be a symphony, an injection needle, the humid air on the beach or a remembrance.

From this point on, any reaction to the firstness of a phenomenon brings its potentialities to another stage, when «a sense of commotion, an action and reaction, between our soul and the stimulus»^[14] develop a *struggle*. For Peirce, this is the best term to describe the secondness, because it is typical of the action between pairs, as happens in the ideas of causation, resistance, opposition, reaction and all other dyadic compounds, granted the relation between them is straight and immediate enough to be elicited, since the idea of relation or mediation is from the nature of thirdness.

The third is characterized as «the medium or connecting bond between the absolute first and last. The beginning is first, the end second, the middle third. The end is second, the means third»^[15].

An important aspect of the phenomenological categories is their ordinal appearance, indicating the implication of the first in the second, and of both in the third. It is also interesting to remark that this linear logical description of Peircean phenomenology is indeed paradoxically non-linear, for it puts the thirdness in the middle of the process and gives a complex multidimensional perspective to modeling reality, perception, and cognition.

[11] William L. Rosensohn (1974), *The phenomenology of Charles S. Peirce*, Amsterdam: B. R. Grüner, p. 79.

[12] Charles Peirce, (1931-1958), *Collected Papers*, vols. 1-8, C. Hartshorne, P. Weiss y A. W. Burks (eds). Cambridge, MA: Harvard University Press, Electronic Edition of J. Deely, Charlottesville, VA: IntelLex, volume 8, paragraph 213.

[13] Idem, volume 1, paragraph 306.

[14] Idem, volume 1, paragraph 322.

[15] Idem, volume 1, paragraph 337.

One of the most interesting examples of thirdness, especially for studies on language and logic, is the idea of sign, because it is a first, the *representamen*, which connects a second, its object, with regard to some of its characteristics, to a third, its interpretation. This triadic process, called *semiosis*, is the basis to comprehend the underlying aspects of any language, be it verbal or not, thus allowing the uncovering of what is hidden behind the appearances of signs and their creative manipulation. That is the origin of the Peircean semiotic classes, which will classify, according to the phaneroscopic nature of each dimension in signs formation, *representamina* as qualisigns (quality), sinsigns (singular events or apparitions) or legisigns (repetition); their relations to the object as icons (similarities), indexes (physical connections) or symbols (convention); and to the interpretant as rheme (term), dicent (proposition) or argument (logical combination of premises and conclusion ^[16]).

As long Peircean sign — differently from both the linguistic binary sign, that is a compound of *signifier* and *signified*, and from the notion of text, which is the unity of interest on Russian semiotic studies —, presents its genuine and complete form with the pragmatic aspect of interpretation, its thirdness, it is an adequate tool for enquiring on the nature of the sign translation between different semiotic systems in its deepest dimensions, which is of the utmost interest in the holonomic and fractal music research, because it is capable of transcending the binary, dualistic classic logic, typical of traditional dichotomic thinking.

With Peircean complex method in hands, my capabilities of understanding the process of translating signs between different semiotic systems (like music and physics) became more rigorous and reliable, specially because it gradually brought to light some limits and difficulties of such operations. The most important of them is that such operations are not translations, but a different kind of process called transduction.

TRANSDUCTION: A SEMIOTIC PATH TO BRIDGE PHYSICS AND PERFORMING ARTS

Translation is so essential for *semiosis* that Petrilli considers both terms homologous: «[m]eaning is indissolubly interconnected with translation, in fact is engendered in translative processes» ^[17]. So, semiotics appears as an important tool for comprehending how to deal with the challenges and the limits of translation, be it 1) between symbolic verbal codes (like interlingual translation), 2) between verbal and non-verbal codes (like verbal interpretation of a painting), or 3) between non-verbal codes (like choreographing a recorded piece of music). Anyway, it worth noting that every symbol presents underlying pre-verbal traces, since its thirdness implicates indexical and iconic aspects, which explains why even the most «objective» interlingual translation — take the

[16] Several works interprets in detail those classes, a task that falls out of my scope here, like John Deely's and Floyd Merrel's semiotics prolegomena, but it always worth visiting the *Collected Papers of Charles Sanders Peirce*.

[17] Susan Petrilli (2004), «The semiotic machine, linguistic work, and translation» in *Quaderni del Dipartimento di Pratiche linguistiche e analisi di testi*, PLAT. Serie annuale diretta da Augusto Ponzio, 3, 2004, pp. 367-382, Università degli Studi di Bari, Bari, Edizioni dal Sud.

case of the words «cheese» and «frommage», for instance — always presents several differences between the object it stands for in source and in destiny. *Traduttore, traditore*.

Hence, it may be foreseen the obstacles of the present proposal. Each form of translation has its own operational limits and requires specific concerns on how deep the sign will be transformed from the source code to the destination. When it is the case of using the original sign as a source of inspiration for the creation of another piece of art, both under the poetic function in Jakobsonian terms, things are relatively simple, since the interpretive openness of the source in regard to its own aesthetical meanings turns the destination never wrong nor even problematic, considering the artistic supposed «freedom of creation». So to speak, in Peircean general terms, the destination sign is a symbol whose object may have weak iconic and indicial relations with the original sign, probably establishing stronger metaphorical links. That is why Sokal and Bricmont critique on many «intellectual impostures»^[18] are not concerned with this kind of poetic appropriation of «concepts» and the worst problem to be aware of, in these cases, as we still live under the capitalist system, is maybe a matter of copyrights.

But a special kind of translation is requested to deal with the encoding-decoding of signs in this research, where two conditions are self-imposed: 1) the source semiotic systems are deeply distinct from the destination ones, and 2) the aim of the translation is to evince, in concrete aesthetic experiences, the qualities and actions of the source. If it is a hard challenge to make a good precise interlingual translation, it is clearly impossible to make a perfectly precise intersemiotic translation, e.g., between physics, music, dance or performance. Although, that is exactly the most relevant reason for this research, which is about finding a path for the emergence of the same truth on different, but interconnected phenomenon. Therefore, when one ought to be the most faithful with the translation between different, although paradigmatically interconnected, systems, it is necessary to work with another perspective, along with the notion of *transduction*. According to Sebeok:

‘Transduction’ refers to the neurobiological transmutation from one form of energy to another, such as a photon undergoes when impinging on the vertebrate retina: we know that it entrains impulses in the optic nerve that change rhodopsin (a pigment in the retinal rods of the eyes), through four intermediate chemical stages, from one state to another. A message is said to be ‘coded’ when the source and the destination are ‘in agreement’ on a set of transformation rules used throughout the exchange^[19].

In this transduction example, Sebeok stresses the role of rhodopsin molecules: light receptors in the eye which, in order to «translate» luminous energy signs into brain electrochemical decodable signs, go through several physical changes and conversions in order to allow the engenderment of a genuine symbol, built upon qualities of feeling (firstnesses) and physical (re)actions (secondnesses), from raw reception (1) to conversion (2) and mental interpretation (3).

[18] Alan Sokal et Jean Bricmont (1999), *Impostures intellectuelles*, Paris: Editions Odile Jacob.

[19] Thomas Sebeok (1991), *A Sign Is Just a Sign*, Bloomington-Indianapolis: Indiana University Press, p. 28.

That is exactly the opposite process in regard to inappropriate translations or «intellectual impostures», as these later have a symbol (term, notion, concept) transported (or better: teleported) to another semiotic system with no concern to its original secondness (indexical traces) or firstness (iconic qualities), sometimes taking advantage of its conventional misunderstanding potential, as exemplified on some misuses of the term relativity. Broadening Sebeok's definition, Petrilli remarks the role of firstness in the process, when she affirms that:

Transduction consists of a series of transformations in the source and destination operated on the basis of the interpretation of a probable homology between meaning and an externalized serial string — for example, speaking or writing or gesturing^[20].

With this perspective in mind — of looking for homological relations between the original experiments in physics, that gave birth to each of those paradigmatic ideas, and the proposed artistic holofractal performances, especially with regard to their interpretive dimensions —, it is possible to build a dynamic theoretical framework which could be helpful not only to the present research, but potentially to any kind of transductive experiment.

ENHANCING THE BRIDGES

To conclude this reflection, I would like to address Sergio Basbaum's scientific review of the CD «Holofractal Music» (2000), with five musical experiments^[21], because it raises some enlightening questions, very useful to enhance this project. His analysis, «The modern semi-otic-machine and the holofractal poetics» begins remarking the post-modern character of the music, acknowledged as «a vigorous work», but upon the reading of my published scientific articles, Basbaum criticizes some of its supposed modernity traces, which he names the «modern ghost»^[22].

His first objection is about the closed or in-loop circuit artwork-manifest, which is a typical character of the modernist avant-gardes^[23]. Indeed, my inherited Koellreutterian proposition of spreading the new physics notions through musical experiments could legitimately be interpreted as an influence of the avant-gardist mind. And my aesthetic-political engagement would corroborate to his point. Nonetheless, a few reasons may demonstrate that this is not my motivation in writing and publishing articles. The first one is that, despite the importance of scientific communities, it never was my intention to limit my audience to these circles, which represent an elite with large access to the paradigmatic revolution and is able to understand it. Actually, I spouse a belief that the capacity of spreading those notions through words is much

[20] Susan Petrilli, op.cit., ibidem.

[21] Three from the five pieces of this CD (coVeranS, Lamento and Letterblocks) are freely available in MP3 on the Internet at: <<http://www.musicexpress.com.br/eufrasioprates/>>

[22] Sérgio Basbaum (2003): «A máquina semiótica moderna e a poesia holofractal», in *Revista Galáxia* n.5, abril/2003, pp. 271-277.

[23] Idem, p. 275 (my translation).

more limited than through the aesthetical experience, which goes far beyond the boundaries of rationality. Otherwise, I would publish such texts in larger media vehicles. Although these articles may serve to spread a contemporary paradigm worldview, conversely they were meant to establish a critical dialogue with scientific readers, in order to enrich the theoretical basis of my artistic work, which, by the way, is the perspective I take Basbaum's important contributions. From this objection, I keep the lesson of avoiding get trapped by manifests, and to keep my poetical expressive doctorate proposal in the foreground.

Another accusation of the review is on the use of computer digital techniques, in detriment of live performance. In his words:

[...] although formally adopting non-linear scores — which refer to the spheres that one of Prates' masters, the composer Hans Joachim Koellreutter, is developing since the 1990's, and which are legible in multiple forms —, the non-linearity is not completed: while the German master offers such scores to the singular subjectivity of his interpreters, Prates, in opting for the linearization of the alternatives of his graphic schemes into one single author's version, made on the computer, reinstalls the composer's absolute control over the work — an essentially modern mark ^[24].

Again, Basbaum is partially right. Only two pieces from the CD were interpreted live, «Letterblocks» and «Gogh Stars», and both with my own performance. In part, it happened because in my first years of career it was not easy to find music performers capable of extracting the best from such open forms and scores. And even for a remarkable composer as Koellreutter, this used to be a problem: I remind of his many complaints on some of the planimetric works' performances. Competent musicians existed, for sure, but as a new composer I was restricted to a small circle of music students and encountered greater obstacles on finding places to present such unusual experiments. Even then, sometimes I found competent musicians, mostly teachers, to perform my live pieces, but certainly it was not the rule.

That is no more the case, and most of my experiments since the middle nineties gather live acoustic and electronics, as the examples in section 1. Confirming my point on performers difficulties, there is a recent bachelor monograph from Cazarim on the stages for building a music performance of «Letterblocks» ^[25]. And agreeing on the importance of live performing, «Holo fractal music» project is proposed «in scene», which means that performance and collective collaboration in the creative process are central keys.

The last point in Basbaum's critique is about the holo fractal music intention of dealing with the whole set of «complexities and contradictions of the contemporary culture» ^[26]. Just after affirming that «it is not possible to point any artwork capable, in itself, to express the

[24] Idem, p. 276 (my translation).

[25] Thiago Cazarim (2007), *Performance de música planimétrica: Estágios da construção da interpretação de Letterblocks de Eufrazio Prates*, Goiânia: bachelor monograph. Accessed online in 22/Jun/2009 at: <http://ufg.academia.edu/ThiagoCazarim/Papers/81399/Performance-de-m%C3%BAsica-planim%C3%A9trica_est%C3%A1gios-da-constru%C3%A7%C3%A3o-da-interpreta%C3%A7%C3%A3o-de-Letterblocks--de-Eufrazio-Prates>.

[26] Op. cit., p. 276 (my translation).

complexity of our times»^[27], he acknowledges the possibility of being wrong. And indeed he is wrong. Not that I believe my work is better than any other in this aspect, but because those paradigmatic notions are deep and completely interweaved and they operate as the fragment of a hologram: when cut down to a small piece, the holographic imprint still represents the whole figure, only loosing in the precision of definition. Therefore, if the complexity of the whole is grasped into a small piece, with its natural flaws and gaps, maybe it cannot represent the whole in its absolute completeness (which would be a confusion between the map and the territory, a typical rationalistic mistake on modeling reality), but it surely embeds the most important aspects of the re-presented reality, which is always complex, holonomic and fractal.

Much harder is the trial, that I've faced in some recent experiments^[28], of evincing one specific aspect or notion from the whole set of paradigmatic notions and references, extensively found to be interconnected, interdependent, interrelated, integrated. Actually, it would be impossible, e.g., to work with acausality — which may be described in brief as the transcendence or removal of the absolute character from cause and effect relations — without invoking the notions of non-linearity and unpredictability.

Anyway, it is important to take under careful consideration this kind of critique, because this is one of the main reasons for doing such investigations and experimentations inside the scientific community, aiming to enhance its methods and results. Besides, disseminating such ideas and gathering forces with similar and complementary researches, due to the scale and complexity of the obstacles to overcome, is the method I choose in the last decade to substitute my political partisan activities and complement my poetical practices. Thus, and above all, «Holo fractal music in scene» is concerned with provoking new states of awareness, despite the chimerical or utopian nature of this wish. Maybe this could be a trace of a post-post-modernist time, when the return of the beauty does not exclude the unbeautiful, with no fear of being labeled. Or when integrating many fields of the arts and science, in the search of an ever trans-forming truth, may result in broadening our collective consciousness. Or when, at least, we do not fear to try making a difference as individuals. After all, it is better to risk facing the ghost, than being haunted forever.

BIBLIOGRAPHY

Basbaum, Sérgio (2003): «A máquina semiótica moderna e a poesia holo fractal», *Revista Galáxia* n.5, abril/2003, pp. 271-277.

Cazarim, Thiago (2007): *Performance de música planimétrica: Estágios da construção da interpretação de Letterblocks de Eufrazio Prates*, Goiânia: bachelor monograph. Accessed online in 22/Jun/2009 at: < <http://ufg.academia.edu/ThiagoCazarim/Papers/81399/Performance-de-m%C3>

[27] Ibidem (my translation).

[28] The last holo fractal improvisations are the numbers 6 and 7, respectively entitled «ensaio @temporal» (@-temporal essay) and «ensaio @métrico multidimensional» (@metric multidimensional essay).

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- Misak, C. J. (1991): *Truth and the end of enquire*. Oxford: Clarendon Press.
- Peirce, Charles (1931-1958): *Collected Papers*, vols. 1-8, C. Hartshorne, P. Weiss y A. W. Burks (eds). Cambridge, MA: Harvard University Press, Electronic Edition of J. Deely, Charlottesville, VA: InteLex.
- (1995): *Semiótica*. São Paulo: Perspectiva.
- Petrilli, Susan (2004): «The semiotic machine, linguistic work, and translation», *Quaderni del Dipartimento di Pratiche linguistiche e analisi di testi*, PLAT. Serie annuale diretta da Augusto Ponzio, 3, 2004, pp. 367-382, Università degli Studi di Bari, Bari, Edizioni dal Sud.
- Rosensohn, William L. (1974): *The phenomenology of Charles S. Peirce*, Amsterdam: B. R. Grüner.
- Rosenthal, Sandra (1994): *Charles Peirce's pragmatic pluralism*. Albany: State University of New York Press.
- Santaella, Lúcia (2004): *O método anticartesiano de C. S. Peirce*. São Paulo: Editora UNESP.
- Sebeok, Thomas (1991): *A Sign Is Just a Sign*. Bloomington-Indianapolis: Indiana University Press.
- Sheriff, John K. (1994): *Charles Peirce's guess at the riddle: Grounds for human significance*. Bloomington and Indianapolis: Indiana University Press.
- Sokal, Alan et Bricmont, Jean (1999): *Impostures intellectuelles*. Paris: Editions Odile Jacob.