## PHILOSOPHICAL TOYS AS VECTORS FOR DIAGRAMMATIC CREATION: THE CASE OF *THE FRAGMENTED ORCHESTRA*

**Abstract:** *The central topic of this essay consists into establishing a relation between two dimensions of formation: the conceptual process of creating philosophical toys – that is of reelaborating existing philosophical concepts, mainly deriving from the thought of Gilles Deleuze and Félix Guattari, in terms of their potential as 'operative constructs' – and their parallel redeployment towards the specific problem of analyzing a recent transdisciplinary artwork (The Fragmented Orchestra by Jane Grant, John Matthias and Nick Ryan). By means of this strategical shift, theory looses its character of explanation and illustration. Philosophy as toy becomes rather the matter of evaluating the complexity of a specific artistic composition in terms of its aesthetic potential. It contributes towards developing metastable conditions of mutual resonance between heterogeneous modalities of creation.*

**Keywords:** *rigorous analogy, individuation, conjunctive synthesis, neuronal plasticity, art and aesthetics of sound creation*

## Filosofické hračky jako vektory diagramatické tvorby: případ *Fragmentovaného orchestru*

**Abstrakt:** *Ústředním motivem této studie je ustavení vztahu mezi dvěma dimenzemi utváření: konceptuálního procesu vytváření filosofických hraček (tj. přepracování existujících filosofických pojmů s ohledem na jejich potenciál coby „operativních konstruktů", odvozeného zejm. z myšlení Gillesa Deleuze a Félixe Guattariho) a jejich současného využití pro analýzu nedávného transdisciplinárního uměleckého díla (Fragmentovaného orchestru Jane Grant, Johna Matthiase a Nicka Ryana). Díky tomuto strategickému posunu ztrácí teorie povahu vysvětlení a ilustrace. Filosofie se coby hračka naopak stává způsobem zhodnocení komplexity specifické umělecké kompozice z hlediska jejího estetického potenciálu. Přispívá k rozvoji metastabilních podmínek vzájemné rezonance mezi heterogenními modalitami tvorby.*

**Klíčová slova:** *rigorózní analogie; individuace; konjunktivní syntéza; neuronální plasticita; umění a estetika zvukové tvorby*

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*„How is it possible to come to massively produce a desire to create, a collective generosity, by means of the tenacity, the intelligence and the sensibility proper to arts and sciences."*
Félix Guattari

*"The plasticity of time is inscribed in the brain."*
Catherine Malabou

## Introduction

This paper examines the role of philosophical concepts as vehicles for knowledge production in relation to an artwork which combines recent scientific (neurophysiological and physical) developments into the implementation of new sonic experiences (The *Fragmented Orchestra* by Jane Grant, John Matthias and Nick Ryan). The interest in this work arises from the fact that in it scientific, technical, sonic and visual *forms of experience* (and not only given results) *intrinsically* contribute to the emergence of a non-reductionist dimension of aesthetic expression. In this frame, the role of the philosophical concept as toy becomes that of examining the artworks along their complex compositional procedures, in order to extract and transpose the operative conditions of art towards more general questions concerning collective sensibility. That is if, as it will be shown, *The Fragmented Orchestra* creates the conditions for transposing a physical model[1] from the realm of neurophysiology towards the aesthetic one in terms of a procedure of de- and recomposition of sonic occasions, the task of philosophical tools will be that of transferring the operative field of scientifico-aesthetic construction proper to the artwork towards the aesthetico-political question of emergence of collective sensibility.

The method adopted here is what Muriel Combes following the thought of Gilbert Simondon defines as "rigorous analogy"[2]. Rigorous analogy dismisses both the use of visual and linguistic metaphors, as well as the structural transfer of logical conditions from one epistemic domain to another. It is a question of avoiding any form of reductionist similarity deriving from the transposition of elements of knowledge conceived as being „already

[1] Eugene IZHIKEVICH – Joe A. GALLY – Gerald M. EDELMAN. "Spike-Timing Dynamics of Neuronal Groups." *Cerebral Cortex*, vol. 14, 2004, pp. 933–944.
[2] Muriel COMBES, *Gilbert Simondon and the Philosophy of the Transindividual*. Cambridge, MA: MIT Press 2012, p. 10.

there" that is, independently from the study of their formation. Rather than transferring the whole logical structure of what is already known and taken for granted, the emphasis is set onto the problem of re-materialization of the *logical operations* pertaining to an established epistemological domain within the realm of a new productive dimension.

The idea of rigorous analogy is intimately related to the concept of individuation, which is understood as the operation leading towards the constitution of individuals, that is generic beings. What is significant to the current inquiry, is that individuation intimately relates the ontological operation of constitution of beings to the epistemological one concerning the creation of knowledge. The "rigour" of analogy derives explicitly from conceiving the relation between being and knowledge not in terms of their resultant conditions, i.e. the appearances they might take, but of the operations they are both traversing. According to this approach, analogy becomes a matter of "squaring",[3] that is of assigning another dimension of power to the *intensity* of the original discovery. Squaring emphasizes the fact, that it is not only the question of establishing a relation between different formations of knowledge and of beings, but that the relation has to be conceived in terms of a relation of relation: what gets transferred is not only a particular result deriving from specific procedures of knowledge production, but the structural logic determining the modality of individuation in a particular case. Furthermore, because of the tight relation between being and knowledge, the idea of squaring does not only refer to the relational character of a mathematical operation, but acquires the status of a "physical paradigm",[4] inasmuch as the operation allowing to extract the genetic conditions of emergence, is always bound to the *material conditions* determining the specificity of each case. Muriel Combes observes that the explicit reference to physics is "a matter of pinpointing the epistemological role"[5] played by the notion of the individual; that is, emphasis is set upon the tight relation between being in its material development, and the operative dimension of knowledge, which it comes both to acquire and to express.

Given these premises, I will proceed in the following way: first, I will *describe The Fragmented Orchestra* in terms of its aesthetic recomposition of physical and neurophysiological zones of intensity; I will subsequently introduce philosophical concepts such as disparation and individuation; next,

[3] *Ibid.,* p. 11.
[4] *Ibid.,* p. 12.
[5] *Ibid.,* p. 13.

I will relate the heterogeneous dimensions of the artwork and that of the concepts by means of the operative dimension of "rigorous analogy". Last, I will address the role of theoretical concepts as toys by examining the field of problematic tension unfolding between arts and science and philosophy, and addressing issues of epistemic creation and collective sensibility.

**First Squaring: The "tiny brain" as a device of sonic de- and re-composition**

*The Fragmented Orchestra* by Jane Grant, John Matthias and Nick Ryan, interrelates visual, scientific and sonic dimensions into complex patters of de- and re-composition.

These disparate aesthetic compounds are orchestrated together by means of transferring in the realm of aesthetics the operative conditions of a mathematical model currently implemented in brain research. This model[6], accounts for a quantitative description of the electrical activity of single neuronal cells in the brain area called cerebral cortex. This thin section comprising the outermost neuronal layers below the scull, functionally accounts for the area where lower information deriving from specific internal components gets reshaped into the formation of wider and more complex patterns of association. It is the locus where sensory and motor information is combined and integrated with the cognitive processing of thinking and language. In more general terms, and this is important for the argumentative line which follows, the cerebral cortex accounts for the straightforward relation between levels of perceptual experience and processes of abstract composition.

By transposing the functional conditions of mathematics from brain science into the realm of art, *The Fragmented Orchestra* "squares" – in Muriel Combes terminology - the activity of small portions of the cerebral cortex: it artificially reconstructs their dynamics into sonic and visual aesthetic traits.

Significantly, the artificial reconstruction of a small part of cerebral cortex, is not a metaphor of the activity of the human brain. "Squaring" as will be shown, means here to reconstruct *another* cerebral cortex which *aesthetically* modulates and recombines specific levels of expressive and perceptual experience with forms of abstract reduction (the aesthetic action of the involved algorithm).

[6] IZHIKEVICH – GALLY – EDELMAN, "Spike-Timing Dynamics of Neuronal Groups."

The work was widely installed across UK between December 2008 and February 2009. It consisted of 24 fixed geographical locations, including FACT Gallery, Liverpool, University of Plymouth, Landscove Primary School, Devon, The National Portrait Gallery, London, Millennium Stadium, Cardiff and Kielder Observatory, Northumberland. At each of the locations, a 'soundbox' was installed, which consisted of a microphone, a small computer connected to the internet and a Feonic "drive", a device which transmits audio through resonating architectural surfaces.[7]

These sounds were transmitted across the internet and were microgranuled trough the activity of an artificially reconstructed 24 neuron "tiny cerebral cortex" situated in the FACT Gallery in Liverpool. The activity of the cortex was complexified by the introduction of two further computational elements responsible for the interconnection between the activity of single neurons and thus accounting for the creation of the patterns of association which the cerebral cortex is responsible for. Spatial delays in the information propagation between neurons were included, which cause a shift delay in the interconnection between sounds. The time-difference of the arrival of heterogeneous sounds to the "tiny cortex", was registered by another algorithmic component, the so called "Spike Timing dependent Plasticity" which accounts for a modulation of the connection strength between the single neurons, and thus for a reconfiguration of the whole sonic event without erasing the singular specificity of each sonic occasion related to one of the disparate locations. Furthermore, the activity of each artificial neuron dissolved the incoming sound into sound grains thus adding a further level of complexity to the whole design, but doing that trough subtle processes of dephasing and decomposition.

While in the gallery, "the audience, weaving their way through the space, was able to hear the live composition as a whole and listen to each of the sites individually"[8], the artificial brain also accounted for sending back from the gallery sounds to each of the sites scattered in the UK. The public in the gallery was thus not only invited to listen, but also to compose the work by moving through the space, and to take notice of the effects of this composition on an internet site which registered what was happening on each of the heterogeneous geographical places:

[7] Jane GRANT – John MATTHIAS, "Shifting Topographies: Sound and the Fragmented Orchestra." In: RUGG J. – CRAIG M. (eds.), *Spatialities: The Geographies of Art and Architecture*. Bristol: Intellect 2011, p. 50 (50–63).

[8] GRANT – MATTHIAS, "Shifting Topographies: Sound and the Fragmented Orchestra," p. 51.

The sounds of *The Fragmented Orchestra* will vary according to location; wind over Black Fell, inner city traffic, chanting from sports stadia and the chatter of migrating birds arriving for the winter will be combined with incidental and performed sounds from members of the public.[9]

The artificial cortex becomes a machine in terms which get close to the definition given by Deleuze and Guattari[10]: according to them machines are not to be confused with some predetermined structure, but they constitute the mechanisms for creating immanent and transformative relations within the realm of specific concrete constellations. In the case of the fragmented Orchestra, the machine consists in the connection between a layered spatiotemporal dimension which is on one side extended physically (across UK) but whose spatiality solely accounts for the transmission of a non predetermined sonic temporal sequence: "Occasionally, huge sonic 'waves' filled the gallery with sound, whilst at other times, smaller more discrete events occurred which had to be listened more intently."[11] This macroscopic cartography is further connected to the microscopic spatiotemporal patterns in the brain of the listeners/actors. There, the interplay between the spatial distribution of neurons and the evolution of their firings accounts (among other things), for the possibility of the formation of new neuronal junctions (synapses) from a different experience of sensation.

The machinic function of the artificial cortex, can be now understood more clearly within the realm of the complex relation between the macroscopic geographical dimension and the microphysics of brain activity of the listener. The "tiny cortex" relates the heterogeneic dimensions of disparate sounds and neuronal activity, but does this by means of a twofold disjunction. Grant and Matthias insist that the reconstructed brain cannot generate new sound but instead it is "the noise in the system [which] keeps the model buoyant and allows to self generate events from previous stimuli".[12] The oc-

[9] Jane GRANT – John MATTHIAS – Nick RYAN, "The Fragmented Orchestra – About the Project" [online]. 2008. Available at: <http://thefragmentedorchestra.com/about/> [cit. 31. 1. 2013].

[10] Gilles DELEUZE – Felix GUATTARI, *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis – London: University of Minnesota Press 1987, p. 510–511

[11] GRANT – MATTHIAS, "Shifting Topographies: Sound and the Fragmented Orchestra," p. 51.

[12] Ibid., p. 60. See also: Jane GRANT – John MATTHIAS – Tim HODGSON – Eduardo MIRANDA, "Hearing Thinking." *Lecture Notes in Computer Science*, vol. 5484, 2009, p. 237 (234–240); John MATTHIAS – Jane GRANT – Nick RYAN, "The Fragmented Orchestra." In: MIAH, A. (ed.), *Human Futures: Art in an Age of Uncertainty.* Liverpool: FACT – Liverpool University Press 2008, p. 73 (71–75).

currence of this endogenous activity is not a side effect but goes along with "the central artistic aim" of the project, which is "to affect the rupturing of the boundaries between the sensed and the action, removing the sensed and the sensory part of the "self".[13] This makes the "tiny cortex" a sonic instrument of its own, its sound being created by a mathematical modelling of the neurophysiological property of synaptic plasticity. The implementation of this property via mathematical algorithm, accounts for the fact that the microscopic sonic events produced by the firings of each neuron, are encouraged by the enhancement of a wider range of interneuronal connections.[14] That is, sonic events are on one side the expression of *singular* nervous cell activities but at the same time it is those accounting for the construction of interrelation patterns between neurons. And furthermore, the aesthetic significance of the tiny cortex arises as we have seen from a will to create sensory disconnections, and on the other side it is the machine relating geographically distant sounds and brain activities. What are the aesthetic and philosophical inferences of this artistic strategy? Can this machinic (definire) device be translated into an appropriate terminology in order to engage with the aesthetic (or aesthetico-political) question of emergence of collective sensibility?

I address these questions by introducing another artificial entity: the Simondonian and Deleuzian concepts of disparity and individuation. The idea is to open a problematic field between the aesthetic dimension of *The Fragmented Orchestra* and the conceptual lenses of philosophy. I will then show that when entering in relation with the artwork, the concepts become 'toys', inasmuch as they acquire the function of *clinical evaluation* of a work of art. This means that philosophy does not account for a judgement "in terms of transcendent or universal criteria",[15] but examines how the conditions of "formation of new blocks of sensation",[16] concur to the creation of a new aesthetic world (or, more specifically in this case, a new aesthetic brain). What is furthermore important to stress out, is that the "toy" does not exist as a pre-given entity since the beginning. Rather, it gets constructed

[13] GRANT – MATTHIAS – HODGSON – MIRANDA, "Hearing Thinking," p. 234.
[14] Daniel JONES – Jane GRANT – John MATTHIAS – Tim HODGSON – Nick RYAN – Nicholas OUTRAM "The Fragmented Orchestra." *Proceedings of the International Conference on New Interfaces for Musical Expression*, vol. 9, 2009, p. 299 (297–302).
[15] Daniel W. SMITH, "'A Life of Pure Immanence': Deleuze's 'Critique Et Clinique' Project." In: DELEUZE, G., *Essays Critical And Clinical.* Minneapolis – London: University of Minnesota Press 1997, p. liii (i-lvi).
[16] *Ibid*., p. lii.

in the very process of operative tension *with* the aesthetic realm. Construction doesn't mean to "correct" or to change the intrinsic conceptual meaning of philosophical theories, which are de facto already at hand. At the contrary, it means to precisely investigate their movements, strategies and expressions of thought, and to inflect (i.e. differentially deviate) them towards the engagement with distant matters of concern. It means to create what Alberto Toscano defines as "a local resolution of disparation, the invention of a compatibility between heterogeneous domains and demands: an 'emergence produced by asymmetrical captures correlated in time'."[17]

Out of this perspective, it can be seen that *The Fragmented Orchestra* provides the perfectly matching "artistic matter" to the conceptual move I'm interested to follow. First, because it is in itself an expression of the necessity of combining elements of knowledge deriving form heterogeneous epistemologies (that is from physical, neurophysiological, musical and visual art problems), necessity which is reflected by the different backgrounds of the involved actors (the *artist* Jane Grant, the *physicist, musician and composer* John Matthias, and the *composer* Nick Ryan).[18] Second and more significantly, because it has brilliantly resolved the tension between the heterogeneities at stake (in the creation of the "tiny brain", to resume it in synthesis).[19]

The question that now opens up, is how the "tiny cortex" qua resolved artistic disparation, can enact further fields of problematic tension, that is to produce the conditions for other problematic fields between heterogeneous entities to emerge. In order to address this issue, I introduce the philosophical concepts relevant to this realm, in terms of a brief geneaological introduction and an analysis of their unfoldings in the thought of Simondon and Deleuze. Disparity and individuation are relevant inasmuch they constitute the conceptual entities enabling to state the issue of problematic tension from a theoretical point of view.

[17] Alberto TOSCANO, *The Theatre of Production: Philosophy and Individuation Between Kant and Deleuze*. Basingstroke: Palgrave Macmillan 2006, p. 149.
[18] MATTHIAS – GRANT – RYAN, "The Fragmented Orchestra – About the Project."
[19] In this regard it is significant to note that the *Fragmented Orchestra* was awarded with the PRS Foundation New Music Award Prize, recognition being "the most financially prestigious for new music in the UK and [having] been likened to the Turner Prize for music." (MATTHIAS – GRANT – RYAN, "The Fragmented Orchestra – About the Project]). However it is symptomatic that despite this prestigious recognition there is barely any theoretical essays engaging with it. This is related to the fact that more traditional (art) theory approaches are unable to grasp the fundamental heterogeneity at the basis of the work.

**Philosophical concepts: The emergence of dramatization.**

The concept of disparity was coined by the French Epistemologist Gilbert Simondon in the late fifties. Simondon has used this term in order to indicate the tension between different energetic levels as the motor leading towards, what he calls, a process of individuation. The concept of individuation is introduced in order to describe the active element in the emergence and becoming of an individual entity. It opens an important philosophical shift: the individual (i.e. the being, any kind of individuated entity), is taken under consideration not from the point of view of its full constitution, but from its *genesis*. And even more important, the genesis is not inquired from a move a posteriori that is, moving from the perspective of an already constituted individual towards the inquiry of its genetic becoming. Rather, individuation describes the process of becoming individual *as such*.

To set the focus onto a process, onto something that necessarily entails a level of indeterminacy, does not mean that the content becomes vague. Quite the contrary. Simondon's inquiry regards the determination of precise conditions which are both generative of the process and allow for its sustainability. Brian Massumi[20] calls them "enabling constraints". Enabling constraints can be seen as juncture knots in order to allow for the onset of processes of *metastable resonance*. Processes of resonance, Simondon explains, significantly involve an exchange between already constituted beings, but within a systematics which is not yet fully individuated. The yet individuated part accounts for the ability and the means to produce the exchange, the not yet individuated part, constitutes the "elbow room" which gives space for the occurrence of novelty, that is, allows for the emergence of information which has not yet come to constitution. The dimension of indetermination allowing both for the openness, but also for the potential of novelty, constitutes the dimension of *metastability*. Thinking in terms of resonant metastability within the specifics of this field allows to open a space for both science and arts to be grasped in the dimension of their operative emergence.

It was Gilles Deleuze who rapidly picked up Simondon's notion of disparity and individuation. The fifth chapter of his 1968 ontological treatise "Difference and Repetition", starts with the concept of disparity borrowed from Simondon. In the reading proposed by Deleuze, disparation does not only connect to different energetic levels but also to the Leibnizian theory of

[20] Brian MASSUMI, *Semblance and Event: Activist Philosophy and the Occurrent Arts.* Cambridge, MA: MIT Press 2011, p. 115.

differential calculus. Significantly, this move allows for the inclusion of the *abstract* operative dimension of variables.

Disparation in Deleuze's understanding stands for an infinitesimal difference of intensity. It is conceived as a "difference operator" enacting both the occurrence of visible phenomena and the production of its complex surrounding relations. It is this operational shift, what allows individuation to become performative.

Deleuze understands this performative moment in terms of "dramatization". It is at the level of infinity, Deleuze explains, that the *intensity* of disparity becomes indistinguishable from its *extensity* i.e. from its more proper physical and sensuous qualities. It is in this way that heterogeneous elements are not only able to emerge, but also to acquire a *performative* character, as its very constitution accounts at the same time for the creation of new relations, of new channels of deep communication. In other terms: the metastable resonance between different entities, does not only open for new levels of communication, but lies at the very onset of their conditions of creation. Here is where the onset of the *transductive* condition starts: it accounts for the *actualization,* (the becoming real) of the relation between conditions of creation and modes of metastable communication. In other terms: the "rigorous analogy" introduced above, can now be defined more precisely in terms of intertwining differential processes which involve both microsteps of genetic construction and transmission towards another epistemic dimension.

"Dramatization", in Deleuze's conception, does not only express an ontological condition, i.e. a condition of how being and becoming is understood, but entails also a *pragmatic* aspect, as it can be seen as a „method" defining different modalities of producing a surface of sense.

Two aspects of dramatization are important for the development of the current argument.

1) It contributes to change the idea of how knowledge is understood and how it gets produced. "Knowledge" in its widest "scientific, artistic and philosophical" dimension is understood here "as a comprehensive 'sensing'"[21] and not as being limited to human cognitive processes. This wide perspective changes its definitions and its generative conditions: knowledge is primarily not defined as an act of recognition, which would involve a cognitive act of recalling something which was already preconceived, neither

[21] Christoph BRUNNER, "Slow Practices 11 Theses." In: SCHIESSER, G. – BRUNNER, C. (eds.) *Practices of Experimentation.* Zürich: Zürich University of the Arts 2012, p. 59 (58–69).

as the production of linguistic analogies or visual metaphors, but in terms of *problematization*. A problem is always bound to a field in which it can be stated, where the means to 'solve' it can be assessed, and where also its solutions can be found. Moreover, a problem derives from a compulsion to create. Parafrasing Isabelle Stengers, "You create (knowlegde) when you are forced or obliged to create. You do not create without a 'cause'."[22] Here "cause" is not understood in terms of a linear relation to an effect, but as an indeterminate connection to a broader dimension of sensibility, to an affective "territory". This territory is shaped by the occurrence of intensive encounters. Encounters can be of any kind: "What is encountered may be Socrates, a temple or a demon. It may be grasped in a range of affective tones: wonder, love, hatred, suffering. In whichever tone, its primary characteristic is that it can be only *sensed*."[23] Sensation is primary inasmuch as it creates the *necessity* to engage.

2) It accounts for the creation of *transversal relations* between different modes of creation scientific, artistic or philosophical. Transversal relations are expressive of the *pragmatic* unfoldings of the tension between intensities and extensities which Deleuze conceived to be the core of the movement of "dramatization". Trasversal relations involve the ability to perceive, to engage into and to create *different spatio-temporal modalities*. It is the differential relation in space- time conditions, which is constitutive of the intensity contributing to demarcate the specificity of each aesthetic or philosophical problem. Thinking in these terms, not only allows to better understand the specific conditions involved in each situation, but creates also means to find ruptures into consolidated patterns, and to allow for processes of epistemic transduction to happen.

The concatenation of a series of disparate zones of intensities and extensities lies at the basis of what Deleuze in his book on Michel Foucault,[24] understands as *the diagram qua concept*. Other than the visualization technique depicting a relational exchange between different entities, scales or points, constituting the common definition of the diagram, the conceptual term has a double role, that of a tendency and that of agency. The aspect

[22] *Cf.* Isabelle STENGERS, "Introductory Notes on an Ecology of Practices." *Cultural Studies Review*, vol. 11, 2005, no. 1, p. 191 (183–196).
[23] Gilles DELEUZE, *Difference and* Repetition. Columbia: Columbia University Press 1995, p. 139 [emphasis mine].
[24] Gilles DELEUZE, *Foucault.* London – New York: Continuum 2006.

of tendency refers on the connection between "yet unrealized potentials",[25] that is to the connection between the intensities at the core of the process of dramatization described before. The diagram as agency,[26] refers instead to the *actualisation* of the abstract spatiotemporal modalities in terms of relations between forces and affects, which are always intended to be concrete and singular inasmuch as they emerge within a specific dimension.

In what follows, I will discuss the modalities of diagrammatic agency in relation to the specific *case* of *The Fragmented Orchestra*. Furthermore, I will extend the notion of diagrammatic agency towards that of vectorial translation, i.e. take into account the possibility to translate the affective potential of the work of art towards new dimensions of inquiry.

**Diagrammatic agency: neuronal plasticity and the physics of sounds**

The aim of this section is to address the question of the endogenous plasticity of the "tiny cortex" posed at the end of section two, through the philosophical toy as diagram which has been discussed in the third part of the current article.

As already stated, the plasticity of the "tiny cortex" accounts for a complex relation between disparate sounds and brains. On one side it creates a precarious relation between sounds and brain activities at distance between each other. On the other it needs to cut out the connection with external sensory paths, in order to endorse mechanisms of self generation. In order to understand these operations, I will explore the *physical basis of sound creation* which accounts for an analogical translation (in Combes "rigorous" understanding) of the concept of plasticity from the realm of neuroscience to that of music. The plastic action of sound creation is ensured by the activity of the neurogranular sampler,[27] the algorithm at the basis of the artificial neuronal activity.

In his book Sound Ideas, Music, Machines and experience Aden Evens describes the underlying conceptual methodology, defined as granular synthesis. "Granular synthesis approaches sound as very short chunks, or grains. One creates a sound by composing these brief grains, each of which is

[25] Christoph BRUNNER, "Diagramm." *Einunddreissig. Das Magazin des Instituts für Theorie*, vol. 16–17, 2011, p. 64 (63–65).
[26] Eric ALLIEZ, "Diagrammatic Agency Versus Aesthetic Regime of Contemporary Art: Ernesto's Neto's Anti-Leviethan." *Deleuze Studies - The Smooth and the Striated*, vol. 6, 2012, no. 1, p. 10 (6–26).
[27] GRANT – MATTHIAS – HODGSON – MIRANDA, "Hearing Thinking," p. 235.

a *slice of sound* that endures between two and two hundred milliseconds."[28] Significantly, the scale of each grain is treated separately from that of the whole sound by the assignment of a separate set of parameters. Because of this complex division granular synthesis allows to precisely modulate tiniest sonic variations: it is not only the variation itself but also the variability of the variation, which is taken into account. And from a sonic point of view, "variable variation most effectively simulates *real-world sounds and instruments*".[29] That is, the endogenous plasticity of the artificial cortex reconstructs the material reality of the geographically sparse sounds by modulating them through another endogenous materiality, that of the neurogranular sampler, and at the same time connecting them to the plastic material connections in the brains of the listeners. Through the modulation of the variability of noise, the granular synthesis comes to transform the "stasis and consistency of an exact and determinate quantity"[30] which determines "the formal sterility of the digital" and as such to recreate "the rich depth of reality", i.e. the *haecceity of singularity*. Evens explains that actuality, differently than the digital,

> is not the sum of elemental facts [...], but includes essentially a force of productivity that sets in motion. What the digital misses, therefore, is not so much what falls between its thresholds, but the creative power of the actual, that will always defy fixed or static representation. This missing haeccity is not a further difference, not something about the object that gets missed, for any such thing about the object is amenable to digital capture. It is rather a productive difference, a not yet-determined, an ontological fuzziness inherent to the actuality itself.[31]

In the same way than the theoretical "basic unit" of disparity, can lead to a process of individuation only if set in metastable resonance with a wider collective domain, the elementary unit of artificial sound is not distinct and disconnected. The grain is not single but related to "graininess", "a matter of envelopes, layers, densities, variations and the relations among elementary grains"[32]. Furthermore, the activity at the infinitesimal level of the grain is only the minimal step, which influences upper levels of magnitude. At the

[28] Aden Evens, *Sound Ideas: Music, Machines, and Experience*. Minnesota: University of Minnesota Press 2005, p. 106.
[29] *Ibid*., p. 110 [emphasis mine].
[30] *Ibid*., p. 70.
[31] *Ibid*., p. 70–71.
[32] *Ibid*., p. 116–117.

stage of the artificial neuronal activity of the "tiny cortex", the graininess is reflected in a complex correlation between the *rhythmic* (and not random) activity of a single neuron, whose rhythmicity gets complexified ('polychronized') by the action of a certain surrounding group of neurons in a pattern of mutual reinforcement between the activity of the single cell and that of the group.[33]

Understanding the "tiny cortex" not only from its connective qualities, but also from the "friction" of its graininess, requires the introduction of a parallel "curettage" at the theoretical level: that is, to take into account the "break" produced by the encounter between Deleuze's philosophy with Félix Guattari's cartographic compositions. "Their collaboration," Stephen Zepke explains, "allowed Deleuze to find what he felt was missing in his own work, an engagement with real [aesthetico-]political processes".[34] To conceive theory in terms of pragmatic engagement with real frictions, requires a shift in perspective: the question at stake is not only how concepts get *dramatized* into different methodical configurations (i.e., into the possibility to conceive and to express transversal relations between heterocronic dimensions), but also how they become *actualized* into the specificity of an artistic creation (*The Fragmented Orchestra* in this case). It is at this pragmatic stage, that concepts become "toys", or "operative constructs" as Isabelle Stengers puts it. "Operative constructs" are a "matter of effectuation", and not of "explanation and illustration",[35] inasmuch as they deal with the specifics of the creation of an assemblage, i.e. of a partial territory which has to be yet both discovered and produced. Eric Alliez resumes this strategical move from the construction of philosophical concepts, towards the onset of a theory-practice of experimentation, into what he calls the "Guattari-Deleuze effect".[36]

[33] See JONES – GRANT – MATTHIAS – HODGSON – RYAN – OUTRAM, "The Fragmented Orchestra," p. 298.
[34] Stephen ZEPKE, "Eco-Aesthetics: Beyond Structure in the Work of Robert Smithson, Gilles Deleuze and Félix Guattari." In: HERZOGENRATH, B. (ed.), Deleuze/Guattari & Ecology. Basingstroke: Palgrave Macmillan 2009, p. 200 (200–216). Deleuze and Guattari met in 1968, the year in which *Difference and Repetition* was first published. Their first book written together was *Anti-Oedipus: Capitalism and Schizofrenia I,* first published in 1972.
[35] Isabelle STENGERS, "Relaying a War Machine?" In: ALLIEZ, E. – GOFFEY, A. (eds.), *The Guattari Effect*. London – New York: Continuum 2011, p. 141 (134–155).
[36] Eric ALLIEZ, "Conclusion: The Guattari-Deleuze Effect." In: ALLIEZ – GOFFEY (eds.), *The Guattari Effect*, pp. 260–274.

**Becoming toy: the aesthetic individuation of *The Fragmented Orchestra***

Getting back to the realm of the "tiny cortex", the Deleuzo-Guattarian (or Guattaro-Deleuzian) "toys" in their very process of becoming individuated, allow us now to explore specific "spatio-temporal individuations *in* and *as* the world".[37] That is, they allow us to investigate how *The Fragmented Orchestra* recreates the relations between neuronal firings and registers the conditions for them to be experienced both onto an aesthetic and onto an artistic level.

Rhythm, the authors of a *Thousand Plateaus* state, is there where there is a transcoded passage "between that which is constructed and that what grows naturally, between mutations from the inorganic to the organic [...] yet without that series constituting a progression".[38] This transcoded passage between, is what the 'tiny cortex' intrinsically enacts by connecting heterogeneous disparities (the recorded sounds and the activity of the brain cells of the listeners), and endogenously constructs through the synthetic properties of noise. Given the excursus about the material basis of sonic generation, I intend now to get closer to the "paradox" of the transcoding mechanism of the "tiny cortex", i.e. to the assertion that the sonic development in the neurogranular sampler can *only* develop endogenously, i.e. by blockage of external sensory paths which on the other side constitute its necessary source.

We are here in front of a machinic device whose operational input (i.e. its feed) is characterized by a connective synthesis between distant singularities; at the same time it necessitates the disjunction from its sources, in order to produce the desired sonic events. Knowing from the *Anti-Oedipus* that the "equation" relating connection and disjunction leads to the definition of conjunction,[39] I want to pursue the current inquiry by asking under which conditions the synthesis of conjunction which Deleuze and Guattari refer to in their description of the forces constitutive of a process of subjectivation, could be transposed to the realm of an artificial device, whose "sense" is that of creating sonic events out of the tension between heterogeneus disparities pertaining to the collective realm of non-linguistic forms of expression.

[37] Stephen ZEPKE, "Becoming a Citizen of the World: Deleuze Between Allan Kaprow and Adrian Piper." In: CULL, L. (ed.), *Deleuze and Performance*. Edinburgh: Edinburgh University Press 2009, p. 112 (109–125), [emphasis, mine].
[38] DELEUZE – GUATTARI, *A Thousand Plateaus: Capitalism and Schizophrenia,* p. 313.
[39] Gilles DELEUZE – Felix GUATTARI, *Anti-Oedipus: Capitalism and Schizophrenia*. New York: Penguin Books 2009, p. 36–41.

In the *Antio-edipus*, the connective synthesis of production is the "pre-subjective or transsubjective" stage,[40] inasmuch as it solely produces relations between the heterogeneous singularities of Kleinian "partial objects". It does not involve any cognitive stage, but operates mechanically by the action of basic Freudian drives. The disjunctive synthesis of recording is "estranging" in the sense that it is regulated by anti-productive mechanisms, acting as blockers towards the unleash of connective relations. "The effect of anti-production on the connective syntheses then, is to desexualize desire [...], and thereby constitute a surface that *records* networks of relations among connections, instead of producing connections themselves."[41] Disjunction induces repression, but constitutes also the mechanism for potential freedom inasmuch as it registers the conditions of productive connections and allows a multiplication and a diversification of the relations between them; it accounts for the psychic ability of registering singularities and forming chains.[42] It is in the third stage, the conjunctive synthesis, that newly re-activated productive connections of desire, are attracted to the recording surface of disjunctive points, and enact "an entire network of new syntheses"; the points on the disjuncted grid become loci of intensities and enact possible paths of becoming. It is only with conjunctive synthesis, that " "a" subject – or rather "some" subjectivity"[43] can be discerned. Importantly, the subject of the conjunctive synthesis has nothing to do with a fixed identity, inasmuch as this precarious and transitory stage "is a *product* of its experiences, rather than being their ground or their precondition"[44]. The subject emerging from experiences,

> extracts "a residual share" of their content as a sort of "recompense" for its perpetual dispossession, [thus becoming] [...] a *supplement*, a marginal epiphenomenon, a "mere residuum." It is "a spare part adjacent to the machine," a byproduct of processes that both precede it and go beyond it. [...] And yet, there is something splendid and glorious about the subject of the conjunctive synthesis – despite its marginality and its transience. For it lives an "experience of intensive quantities in their pure state, to a point that is almost unbearable

[40] Steven SHAVIRO, *The Third (Conjunctive) Synthesis* [online]. 2008. Available at: <http://www.shaviro.com/Blog/?p=648> [cit. 31. 1. 2013].
[41] Eugene W. HOLLAND, *Deleuze and Guattari's Anti-Oedipus: Introduction to Schizoanalysis.* London – New York: Routledge 1999, p. 28 [emphasis, mine].
[42] Felix GUATTARI – Gilles DELEUZE, "The First Positive Task of Schizoanalysis." In: GENOSKO, G. (ed.) *The Guattari Reader.* New York – Oxford: Wiley-Blackwell 1996, p. 92.
[43] HOLLAND, *Deleuze and Guattari's Anti-Oedipus: Introduction to Schizoanalysis,* p. 36.
[44] SHAVIRO, "The Third (Conjunctive) Synthesis."

> – a celibate misery and glory experienced to the fullest, like a cry suspended between life and death, an intense feeling of transition, states of pure, naked intensity stripped of all shape and form." In other words, it lives a purely *aesthetic* condition.[45]

It is by a procedure of conceptual extraction of the *operations* at the basis of the Antioedipal production of subjectivity, and their recomposition into the realm of an artificial process of creation of sounds, that we can now start to appreciate the "tiny cortex" from its aesthetic dimension: its 'machinic function' sets the conditions for pure encounters between heterogeneous sonic dimensions and their (artificial) neurophysiological substrates of capture and elaboration. The basic material procedure of decomposing heterogeneous sounds into their graininess, reduces on one side the sound to its minimal conditions and in so doing, allows to lie bare (and thus to perceive) its qualitative properties such as density and variation. This means that what gets transmitted, is not only the re-composition of disparate heterogeneous sounds but also a "residual share", of the original experience determining the conditions of sonic production.

What the wired and wireless internet connections are conveying from the fragmented geography of sparse sites to the ear/brains of receivers, is not solely a composite sonic sequence out of sparse singular happenings, but also the *intensity* of the differential relations between the sounds. The "paradox" of the artificial conjunction lies in the *subtraction* intrinsic in the materiality and process of graininess. Subtraction which produces *both* the detachment from the sonic origins *and* accounts for the creation of new tones. It is in the realm of this double articulation that the heterogeneous sonic elements get interlaced into the dynamics of a "stronger synthesis". Deleuze and Guattari explain:

> It is clear that what is necessary to make sound travel, and to travel around sound, is very pure and simple sound, an emission or wave without harmonics [...]. The more rarefied the atmosphere, the more disparate elements you will find. Your synthesis of disparate elements will all be the *stronger* if you proceed with a sober gesture, an act of consistency, capture or extraction that works in a material that is no longer meager but prodigiously simplified, creatively limited, selected. For there is no imagination outside of technique.[46]

[45] *Ibid*.
[46] DELEUZE – GUATTARI, *A Thousand Plateaus,* p. 344–345.

The *technical* construction of the "tiny cortex", is what shapes the overall aesthetic (and artistic) dimension *of The Fragmented Orchestra*. The algorithmic modelization of its basic elements, the grains, allows for the creation of "time patterns and rhythms", which on one side reproduce the 'internal' neurological rhythms, as they derive from the implementation of a mathematical model simulating neurophysiological activity in the brain[47]. The 'effect' of this reconstruction which follows certain neurophysiological paths of the brain (that of the cerebral cortex) in a deep and precise way but nonetheless does it *artificially,* is that of an estrangement: the "'internal' neurological rhythms", which the granular synthesis reshapes, "appear unfamiliar to us"[48]. This is because the granular element acts as a threshold and thus introduces a new "sensual boundary: below a duration of around twenty milliseconds, all sounds are perceived as 'clicks' and it is impossible for us to distinguish the frequencies of the sound sources".[49]

The granulation thus produces a new sonic event which in its very act of becoming, "circumvents any 'motor' action, which we would expect to occur in a real brain/body in which a sense precedes processing which causes action".[50] It does it by extracting, through a process of subtraction, both from the brain/body physiology and from the sounds in nature the "rarefied atmosphere" which Deleuze and Guattari conceive as being necessary in order to reorganize the sonico-physiological material into a novel 'plane' of constistency. The very moment in which the motor action is prevented on a physiological level (in the body/brain of the listeners), is also that in which it gets artificially extended in the processing of the 'tiny cortex' *itself*. It is the schizo-event of 'cutting' certain physiological spatiotemporal-conditions and 'pasting' them as a process of construction of a distant and 'neutral' nervous system, which allows for the re-configuration of the sensual input on a wider level. Out of this perspective, the "tiny cortex" constitutes a basis for a "strong synthesis" of the disparate, basis which is both material (it consists into the activity of a portion of artificially reconstructed cortex) and immaterial (the artificial neurons are not bound to any "real" physiological process) and whose degree of consistency is determined by extraction and creative selection of and from its sources.

[47] IZHIKEVICH – GALLY – EDELMAN, "Spike-Timing Dynamics of Neuronal Groups."
[48] GRANT – MATTHIAS, "Shifting Topographies: Sound and the Fragmented Orchestra," p. 57.
[49] *Ibid*.
[50] *Ibid*., p. 58.

How do all these technical considerations, concerning the materiality and the artificiality (i.e. the formation) of *The Fragmented Orchestra,* concur towards a (possible) grasping of its aesthetic and artistic value? The process of composition between heterogeneities which gets synthesized into the sonic event and subsequently rearranged into the formation of neurophysiological states, fits into the realm of the Whitehedian "aesthetics of the Beautiful"[51], i.e. an aesthetics in which the "production of the new" does not arise from a gesture of overcoming (the real), but instead emerges out of a transformation of existing heterogeneous forms of expression towards the constitution of novel singularities.[52] Stephen Shaviro emphasizes the importance of this understanding of aesthetics in terms of a (political) "act of resistance"[53]. If practices of "sampling, recombination and reappropriation"[54] do constitute a common generality in contemporary capitalist culture, the aesthetic concern becomes that of redirecting the "logic" of these practices towards the "novelty" of beauty. *Because* novelty and beauty are currently abused and misused in such a heavy and omnipresent manner, it becomes all the more important to evaluate them according to their enabling potential towards generating what Whitehead understands as a "creative event".[55]

Whitehead defines beauty as "the mutual adaptation of the several factors in an occasion of experience";[56] adaptation is never happening casually, but "implies an end", an aim which emerges in the process of adaptation itself. The aim does not predetermine experience but rather constitutes its consequence. This perspective, Shaviro states, "is what opens the doors to novelty. Every achievement of unity is something that has never existed before: something different, something radically new".[57] Novelty arises when multiple entities reach the level of unity, a unity which is never permanent, but only in "continual transition". The fact that novelty cannot be deter-

[51] Steven SHAVIRO, *Without Criteria: Kant, Whitehead, Deleuze, and Aesthetics.* Cambridge, MA: MIT Press 2009, p. 151. In this regard it is relevant to note that Shaviro's argumentative line towards this idea of aesthetics, unfolds through the development of the three Antioedipal syntheses explained before. This, he states, is the crucial moment in which Deleuze and Guattari encounter Marx and, indirectly, Whitehead (p. 125–127).
[52] Alfred N. WHITEHEAD, *Process and Reality (Gifford Lectures Delivered in the University of Edinburgh During the Session 1927-28).* Detroit: Free Press 1979, p. 21.
[53] This definition originates from Gilles DELEUZE, *Two Regimes of Madness: Texts and Interviews 1975–1995.* Cambridge, MA: Semiotext(e) 2007, p. 317.
[54] SHAVIRO, *Without Criteria,* p. 171.
[55] Ibid., p. 154–157.
[56] Alfred N. WHITEHEAD, *Adventures of Ideas.* Detroit: Free Press,1967, p. 252.
[57] SHAVIRO, *Without Criteria,* p. 73.

mined in terms of a particularity which establishes it, doesn't mean that it is boundless; Whitehead's whole ontology 'grounds' in creativity. "Creativity is an ultimate principle and a universal ground, only because – and precisely because – it is featureless and neutral, entirely without a character of its own".[58] Because of its generic neutrality this ultimate principle cannot be determined by any "metaphysical authorization", or by an "ethical imperative"; instead it requires aesthetic constraints. By drawing a relation between the philosophies of Kant and Whitehead, Shaviro proposes to elaborate a "constructivist account of the conditions of receptivity, or sensibility"[59]; that is, he identifies aesthetic constraints as the necessary conditions which account for the production of novelty.

From this brief outline, we understand that the beauty of *The Fragmented Orchestra* can be grasped in the aesthetic process of constructing the generic "tiny cortex". That is, in the operation of redirecting sounds, perceptions, neuronal activity pertaining to specific subjects or objects towards a level of impersonal and therefore indifferent 'grounding'. This is a gesture that affirms the "ubiquity of creativity",[60] i.e. that creation can come from any kind of human and non-human sources (or resources). It is this ubiquity that accounts for the emergence of beauty in a potential state, I.e it demarcates a general compatibility for integration, without yet producing the act of integration itself.[61]

With the ideas of novelty and beauty, Whitehead provides the enabling conceptual means by which the question of the consistency necessary for synthesizing the disparate can be framed onto an aesthetic level. Because these notions derive from the affirmation of creativity in its widest understanding, they "respond to the singularity of every occasion of experience".[62] From this point of view, the procedure of sonic extraction by granular synthesis is a novel reconfiguration of diverse peripheral sounds in distant relation with accidental listeners.

What remains to be discussed now, is how to frame *The Fragmented Orchestra* from its artistic side. That is, how the Whiteheadian concepts of novelty and beauty can be understood in their actualization within the specificity of the "process of production" enacted by the artwork. I will proceed with the question of how the sonic production under consideration can

[58] *Ibid*., p. 150.
[59] *Ibid*., p. 51.
[60] *Ibid*., p. 158.
[61] *Ibid*., p. 73.
[62] *Ibid*., p. 150.

be thought in terms of transforming the "residual share" emerging out of the third conjunctive synthesis into the pragmatics of a collective enunciation in the realm of art. Enunciation is here understood in terms of the definition that Félix Guattari gave in his last book *Chaosmosis*; as the emergence of a collective "logic of non-discursive intensities"[63], i.e. the valorization of all "pre-personal, polyphonic, collective and machinic"[64] modes of production, which are currently kept suppressed by the semiotic one. It is by the inclusion of this complex and rich tissue of singularities within the realm of theory, that the "novelty" characterizing the sonic event of *The Fragmented Orchestra,* can be grasped conceptually.

**Second Squaring: art as a process of collective synaptogenesis**

In the previous paragraph I have introduced the Whitehedian notion of beauty in terms of a conceptual definition. The question to be addressed now, is how beauty gets constructed within the realm of the constraints relative to the artwork under consideration. Otherwise stated, how the heterogeneous "occasions of experience", are adapted into the formation of the artistic "object".

The first problematic issue in this regard, is that although *The Fragmented Orchestra*, "covered a vast area of physical space", the 'object' did not exist as such. Grant and Matthias clarify:

> Whilst there were 24 connected sites and a central exhibition area, the real 'space' of the work was in the connectivity of the sites, the in between, in the temporal firing events of the work. All that was evident regarding the materials of the work were speakers, 'soundboxes', wires, microphones, and a central "listening space".[65]

Given these conditions, the question arises, why the distinction between art and aesthetics should still be maintained. In "art and experience", John Dewey[66] has defined as *artistic* the moment of the making of art, and as *aesthetic* its perceptual potential, i.e. the experience that one can make out of it. Given the complex system of feedbacks between sonic inputs and the reac-

[63] Felix GUATTARI, *Chaosmosis: An Ethico-Aesthetic Paradigm.* Bloomington: Indiana University Press 1995, p. 22.
[64] *Ibid*., p. 21.
[65] GRANT – MATTHIAS, "Shifting Topographies," p. 55–56.
[66] John DEWEY, *Art as Experience.* New York: Perigee Trade 2005, p. 162.

tions of the listeners, it is clear that *The Fragmented Orchestra* has blurred these categories from their very roots. The reason why I nonetheless propose to make use of these concepts, is because I want to question them in terms of their relation in-between. That is, I want to understand them as operative constraints along the definition given by Stengers, and ask about how they can be reshaped by the conditions set by the artwork. First of all, the current artistic frame accounts for the necessity of redefining the "artistic object" in terms of a fragmentary complexity without specific locality.

In order to address the issue of grasping the non local dynamics from an artistic point of view, I follow Stephen Zepke's thesis, according to which Félix Guattari "remakes" the Duchampian readymade by fragmenting art into "polyphonic" and "multiplicatory" *processes* of individuation. Guattari, Zepke argues, has transposed the Duchampian 'nominalist' paradigm – according to which everyone is able to *consciously decide* about what is to be considered art – in the realm of an aesthetic paradigm "that does not efface art but marks its renewed relevance within contemporary life".[67] The Duchampian aesthetic decision, generic inasmuch as it could come from any *rational* being, is transposed into the indifference of a proto-aesthetic[68] – realm; the semiotic act of speaking out a decision gets translated into an "event of enunciation" which includes a wider range of human and non-human modalities of expression.[69] Zepke exemplifies the shift from the readymade as

[67] ZEPKE, "Becoming a Citizen of the World," p. 112.

[68] The term protoaesthetic is an expression by Guattari, by which he intends to emphasise that his focus does not lie on "institutionalized art, to its works manifested in the social field, but to a dimension of creation in a nascent state, perpetually in advance of itself". GUATTARI, *Chaosmosis*, p. 102.

[69] Zepke's argument is that Guattari's reading turns the Duchampian "conceptual readymade" into an "affectual readymade". The parallel examination of Duchamp's *oeuvre* with the work of the Russian literary critic Mikhail Bakhtin, allowed Guattari to revalue aesthetically not the object itself but the involved creative act. With this move, Guattari kept from Duchamp the desideratum of an 'aesthetics of indifference', unbounded from a specific actor, skill or taste. On the other, he strongly rejected the mental operation of consciousness at the basis of the readymade as "object" (the "nominalism" by which art gets valued). See ZEPKE, "Becoming a Citizen of the World." Out of this argumentative line Zepke has begun to retrace the conditions for an alternative geology of contemporary art, along the work of John Cage, Allan Kaprow, Robert Smithson, and Adrian Piper, as well as articulating its political potential (see Stephen ZEPKE, "From Aestehtic Autonomy to Autonomist Aesthetics: Art and Life in Guattari." In: *The Guattari Effect*, pp. 205–219. My former analysis of the graphical notations of the composer Anestis Logothetis is situated in this line of research. See Claudia MONGINI, "Sign and Information: On Anestis Logothetis' Graphical Notations." In: ZEPKE S. – O'SULLIVAN S. (eds.), *Deleuze and Contemporary Art*. Edinburgh: Edinburgh University Press 2010, p. 227–245.

object to the 'event' of "making ready", in the discussion of the score which Allan Kaprow associated to his performances "Happenings". Especially in the work after 1961, Kaprow spoke in terms of score – i.e. explicitly importing the concept of musical notation in the sphere of performative art – as a possibility for projecting the sheer magnitude and unforseeable details in the real world" onto a neutral plane. The project was to create a "plan(e) of composition", whose organizational principle gets directly constructed in "the Happening in an ongoing, aleatory and autopoietic feedback loop [...] in which the question of individual subjective expression is subsumed by that of the construction of an individuation of the world."[70]

The neutral "plane" re-constructing the happening in terms of individuation, is the element allowing to draw a line of continuity between Kaprow's score and the "tiny cortex" of *The Fragmented Orchestra*. In the last case, the operative conditions of the "score" are defined by the way the artificial neurons of the "tiny cortex" treat the incoming sound. This mechanism, called neurogranular sampler,[71] is the specific algorithmic implementation of the idea of granular synthesis described before; it triggers (i.e. extracts) grains of sound from the original pattern. "The resulting sound therefore consists of short bursts of the original sample triggered by the cortical neurons. It is a sonification of the cortical firing patterns."[72] This means that the heard result is the activity of the neurons, filled up with the content of the original sound. The artificial neurons of the "tiny cortex" thus transform the specificity of a particular sound into an "indifferent" shape, which nonetheless reproduces the tension of the original tonalities. The neuronal action contracts the original sound and in so doing extracts its "residual share", i.e. its expressive modalities.[73] It unleashes the sonic forces to a bare state of sensation and recomposes them into a new chain of machinic processes. A conjunctive chain: its connectivity creatively plays out its non-connectivity by accentuating the sheer presence of "the unexpungeable difference between the sheer individuality of [sonic and perceptive] events".[74]

Sound as a mean of expression as such, becomes of prior significance in the constitution of this realm of generic indifference, inasmuch as "it has the

[70] *Ibid*., p. 113.
[71] Eduardo MIRANDA – John MATTHIAS, "Music Neurotechnology for Sound Synthesis: Sound Synthesis with Spiking Neuronal Networks." *Leonardo*, vol. 42, 2009, no. 5, pp. 439–442.
[72] GRANT – MATTHIAS – HODGSON – MIRANDA, "Hearing Thinking," p. 235.
[73] EVENS, *Sound Ideas: Music, Machines, and Experience*, p. 18–19.
[74] MASSUMI, *Semblance and Event*, p. 21.

ability to create a space without a tangible physical presence".[75] Sound opens the pathway towards the creation of what Guattari calls "partial modules of temporalization", a break with the "hypothetical projection" of "a time of generalized equivalence".[76] That is, sound or better said the procedure of becoming sonic ("sonification") *modulates* different spatio-temporal conditions by recomposing them into a novel dimension. It differentiates space-time situations and creates what Deleuze calls "spatio-temporal dynamisms: that is [...] agitations of space, holes of time, pure syntheses of space, direction and rhythms." "These dynamisms", Deleuze continues, "always presuppose a field in which they are produced, outside of which they would not be produced"[77]. Thus the question arises, how to define the field of action proper to the artwork.

> At the geo-macroscopical level of temporality, because of the lack of consistent service of internet broadband lines, an artificial latency was built in into the sonic transmission, in order to avoid cuts in the stream. This had the effect that "a sound event is not echoed back for several seconds of time. Though not intentional, this serves to accentuate the vast distances travelled by audio signals out of the geographical network." This latency constituted the refrain of the broad geographical space.[78]

This broad latency resonated with the time holes given by the microscopic delays in nerve cell transmission at the level of the brain of the listeners. Axonal conduction delays refer to the time required for a nervous signal to travel from its initiation site at the centre of the cell, towards its periphery terminals, where transmission to other neurons gets enacted through synapses. These delays get to assume a wider significance when the activity of more cells is taken under consideration, as they concur to shape the strengths of the connections between groups of neurons. "Tipically, a connection will be increased if a pre-synaptic neuron causes a postsynaptic neuron to fire. The connection is depressed if the firing of the postsynaptic neuron occurs before the pre-synaptic neuron has fired, a phenomenon known as 'Spike-Timing Dependent Plasticity'."[79]

[75] GRANT – MATTHIAS, "Shifting Topographies," p. 56.
[76] GUATTARI, *Chaosmosis*, p. 16.
[77] Gilles DELEUZE, *Desert Islands And Other Texts, 1953–1974*. Lapoujade, D. (ed.). Cambridge, MA: Semiotext(e) 2004, p. 94–95.
[78] JONES – GRANT – MATTHIAS – HODGSON – RYAN – OUTRAM, "The Fragmented Orchestra," p. 300–301.
[79] GRANT – MATTHIAS, "Shifting Topographies: Sound and the Fragmented Orchestra," p. 55.

By means of its operation of heterogeneous reassembling, the "tiny cortex" counteractualizes[80] both the virtual cavities of the web and the neurophysiological gaps in the brain into another fragmental dimension: the synthetic action of sound-grains. It makes the rhythmic nature of sound explicit, inasmuch as it lies bare its "intense moments of widely varying lengths"[81]. It does this by extracting the time movements from specific material conditions – the functional shift of the differential equations originally envisaged to model human neuronal activity and the internet delay – and recomposing them at the level of another physical motor: the graininess of the artificial grains. Duchamp's "artistic object" is thus pushed at its very limit of dissolution; at the point in which the semiotic circuitry between the object and its nominal collective judgement crumbles and gets recomposed into "an abstract machinic transversality".[82] The "tiny cortex" reshapes different temporalities into a generic mutative form which partains to the rich enunciative registers of a generic polivocal collectivity. By establishing complex (non)local relations between singular neuro-sonic disparities, the *Fragmented Orchestra* rewires the plastic modulations at the level of single brains into a wider circuitry entailing the potential for a collective neuronal regeneration. New sonic formations induce different sensual experiences which might become the onset for an enhanced synapto-genetic formation in single brains. These novel particular configurations feed back into the collective ability to react plastically to the plasticity of our brains.[83]

It is at this level of practical mutual action, that an ethical component can be perceived in its emergence. An ethics which is not the 'philosophical imperative' the way Shaviro has criticised it, but an "enabling constraint" for a wider dimension of ethico-aesthetic *experimentation*. A concomitant creation of the conditions for an emergent collective sensibility, in which the philosophical toy intervenes in terms of a partial actant.

[80] This concept is explained by Deleuze in *Negotiations* (Gilles DELEUZE, *Negotiations 1972–1990*. New York: Columbia University Press, 1997, p. 202); it denotes the action upon any kind of activity channelled into predefined paths and roles, and its operative transformation into a new dimension of composition.
[81] EVENS, *Sound Ideas,* p. 116.
[82] GUATTARI, *Chaosmosis*, p. 107.
[83] Catherine MALABOU, *What Should We Do with Our Brain?* New York: Fordham University Press 2008, p. 30.