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Intraexpressive resonance in *The Fragmented Orchestra*

Abstract

The Fragmented Orchestra, a transdisciplinary artwork by Jane Grant, John Matthias and Nick Ryan (2008-2009), is analysed from the point of view of its material and epistemic conditions of composition. I examine its core device, an artificially reconstructed 'tiny cerebral cortex' from the point of view of its aesthetic expression and from a theoretical point of view. The aim of the article is to show that the aesthetic content of the work arises from the operative conditions of a double interrelation: the combination of heterogeneous forms of knowledge on one side and its material implementation at the level of the artwork on the other. In this regard I inquire into the connections between the operative logic of the artwork and that of particular philosophical concepts, particularly Deleuze and Guattari's anti-oedipal production of subjectivity and Whitehead's idea of beauty in its recent interpretation by Steven Shaviro.

Introduction

This article examines the transdisciplinary conditions of *The Fragmented Orchestra*, an artwork by the artist Jane Grant, the physicist, musician and composer John Matthias and the composer Nick Ryan that was installed across the UK between December 2008 and February 2009. The interest in this artwork arises from the fact that the relation of different epistemologies is intrinsic to its modalities of construction and expression. That is, transdisciplinary connections do not appear as a posteriori consequence, from previous developments occurred within the specificity of a discipline; rather the necessity of combining elements of heterogeneous knowledge is a constitutive part of its very conditions of composition. These conditions are both reflected in the different epistemological realms that the work traverses – i.e. physical, neurophysiological, sonic and visual art problems – and in the divergent backgrounds of the involved actors (Matthias et al., 2008). As it will be shown, the work has brilliantly resolved the tension between the heterogeneities at stake.

My approach to the task is the following: first, I will describe *The Fragmented Orchestra* in terms of its aesthetic recomposition of physical and neurophysiological zones of intensity; I will subsequently consider its operative logic in terms of philosophical concepts such as Deleuze and Guattari's anti-oedipal production of subjectivity as well as Whitehead's idea of beauty. From there I will draw inferences about the aesthetic dimension of the artwork. I will subsequently examine its artistic modalities of expression in terms of the constitution of heterogeneous collective formations.

Sonic de- and re-composition of the 'tiny brain'

The Fragmented Orchestra consisted of 24 fixed geographical locations in which incoming sounds were recorded. In this configuration, the idea of the neurology of aesthetics and experience as a spatially evoked quality gets manifested:

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 (Matthias et al., 2008).

This means that forms of experience, which are disparate and distant to each other, *intrinsically* contribute to the emergence of a non-reductionist dimension of aesthetic expression. This aesthetic complexity is paralleled by the implementation of a technical device consisting of an artificially reconstructed 24 neuron 'tiny cerebral cortex' situated in the FACT Gallery in Liverpool to which the sounds deriving from the sparse geographical locations were transferred across the internet and subsequently processed.

The artificial cortex was conceptually obtained by transferring to the realm of aesthetics the operative conditions of a mathematical model currently implemented in brain research. This model (Izhikevich et al., 2004), describes quantitatively the electrical activity of neuronal cells in the brain area called the cerebral cortex. The cerebral cortex constitutes a thin section comprising the outermost neuronal layers below the skull and accounts functionally 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 onset of a straightforward relation between levels of perceptual experience and processes of abstract composition.

What makes the work significant is that the artificial reconstruction of a small part of the cerebral cortex is not a metaphor of the activity of the human brain. Instead, the artists propose to reconstruct another cerebral cortex of reduced size, which aesthetically modulates and recombines heterogeneous levels of expressive and perceptual experience. This functional modality accounted for a collective reconfiguration upon different scales involving both the macro level concerning the brains of the participants and the micro level of neural and sonic materiality.

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' (Grant and Matthias, 2011: 51), the artificial brain also accounted for sending back sounds to each of the scattered sites across 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, taking notice of the effects of this composition on an internet site registering

the sonic activity of each sparse place.

At the material level of sonic composition, sounds were micro-granulated through the activity of the 'tiny cortex', which was made doubly complex 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 informational 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, thus leading to 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 achieved through subtle processes of de-phasing and decomposition.

This complex interrelation between macroscopic and microscopic dimensions is what modulates the whole economy of the artwork. The artificial 'tiny' cortex becomes a machinic device interconnecting a layered spatiotemporal dimension, which on one side extends physically (across the UK) but whose spatiality solely accounts for transmitting sounds in a *temporal* sequence. This macroscopic cartography is connected to the microscopic spatiotemporal patterns in the brain of the listeners/actors. It is there, that the interplay between the spatial distribution of neurons and the evolution of their firings accounts (among other things) for the possibility of forming new neuronal junctions (synapses) and thus to induce new experiences of sensation.

The function of the artificial cortex can be thus framed within the complex relation between the macroscopic geographical dimension in which the artwork takes place and the microphysical brain activity of the listeners. The 'tiny cortex' relates the heterogeneous dimensions of disparate sounds and neuronal activity, not linearly but by 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' (Grant and Matthias, 2011: 60; Grant et al., 2009: 237; Matthias et al., 2008: 73). The occurrence 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' (Grant et al., 2009: 234).

In what follows I will examine the logic of the cut between the sensed and the sensory, logic which the authors themselves define as being their core ambition in relation to the question of composition of the disparate i.e. the modality by which the artwork has come to emergence. I will address this artistic strategy from the perspective of its procedures of construction and subsequently develop aesthetic

and philosophical inferences out of the composition of the artwork.

Sensory dis/connections and the materiality of sound

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 in order to endorse mechanisms of self generation, it needs to cut out the connection with external sensory paths. In the attempt to understand these operations, I will explore the *physical basis of sound creation*, which accounts for a translation 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 (Grant et al., 2009: 235), which constitutes the basis for the algorithm generating the artificial neuronal activity.

In his book *Sound Ideas, Music, Machines and Experience* (2005), Aden Evens describes the methodology of 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 a *slice of sound* that endures between two and two hundred milliseconds' (Evens, 2005: 106). Because of this complex division, granular synthesis allows to precisely modulate the tiniest sonic variations: it is not only the variation itself but also the variability of the variation, which is taken into consideration. This has an important consequence, as 'variable variation most effectively simulates *real-world sounds and instruments*' (Evens, 2005: 110). The artificial cortex reconstructs the material reality of sparse sounds by modulating them through its own endogenous materiality, and by tracing a subsequent relation to the brain activity of the listeners. This procedure accounts for the transformation of the 'stasis and consistency of an exact and determinate quantity' -- 'the formal sterility of the digital' -- and to recreate 'the rich depth of reality', i.e. the *haecceity of singularity* (Evens, 2005: 70).

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' (Evens, 2005: 116-117). Furthermore, the activity at the infinitesimal level of the grain is only the minimal step, which influences upper levels of magnitude. At the 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 pattern gets complexified ('polychronized') by the action of a certain surrounding group of neurons in a mutual reinforcement between the activity of the single cell and that of the group (Jones et al., 2009: 298). It is at this microscopical material level that the operation of transcoding between levels entailing a difference in kind (like the ones relative to the composition of participants and those concerning the sonic dimension) acquires a degree of rhythmic consistency. The logic of this consistency is explained by Deleuze and Guattari in *A Thousand Plateaus* (1987). Rhythm, they argue, 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' (Deleuze and Guattari, 1987: 313). This transcoded passage 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. That is, the 'tiny cortex' constitutes a machinic device whose operational input (i.e. its feed) is characterized by a connection between distant singularities (the sparse sounds) but whose working conditions necessitate a form of disjunction from its sources as well.

In *Matter and Memory* (1991), Henry Bergson has understood the body in its physiological function as the medium by which discarded perceptions can be materially recomposed in terms of the constitution of a perceptual compound which is not anymore belonging to a particular subject, but entails instead a form of collectivity in its very conditions of formation (Bergson, 1991: 36). My attempt here is to think along Bergson's theoretical operation and thereby to address, from a conceptual point of view, the operative conditions of the 'tiny' artificial cortex in terms of production of a collective compound of sonic sensation. It is by taking the point of view of this material form of constitution of sonic presubjective stages that I draw a connection between the artistic operation of connection and disjunction done by Grant Matthias and Ryan and the philosophical one, which Gilles Deleuze and Felix Guattari propose in *Anti-Oedipus* (2009). In the first volume of *Capitalism and Schizophrenia* (1987), the French philosophers examine the relation between connection and disjunction in terms of an 'equation', which produces forms of subjectivation developing outside any identitarian framing (Deleuze and Guattari, 2009: 36-41). My concern here addresses the question under which conditions the synthesis of conjunction could be transposed towards the realm of an artificial device. Following the definition assigned by Deleuze and Guattari to conjunction as a force within the process of subjectivation, the 'meaning' of this artistic dispositive would be that of creating a collective sonic 'subject' from the tension between heterogeneous disparities.

In *Anti-Oedipus* (2009), the connective synthesis of production is the 'presubjective or transsubjective' stage (Shaviro, 2008) the disjunctive synthesis of recording is 'estranging' as it is regulated by anti-productive mechanisms, acting as blockers towards the unleashing of connective relations. Disjunction induces repression, but also constitutes the mechanism for potential freedom inasmuch as it registers the conditions of productive connections and allows diversification of the relations between them; it accounts for the psychic ability of registering singularities and forming chains (Guattari and Deleuze, 1996: 92). It is in the third stage, the conjunctive synthesis, that newly reactivated productive connections of desire are attracted to the recording surface of disjunctive points and enact 'an entire network of new syntheses' (Holland, 1999: 36); the disjointed points on the grid become loci of intensities and enact possible paths of becoming. It is only with conjunctive synthesis, that ' "a" subject – or rather "some" subjectivity' can be discerned (Holland, 1999: 36). 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'

(Shaviro, 2008). The subject emerging from such 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"'(Shaviro, 2008). It is a spare part adjacent to the machine,

a byproduct of processes that both precedes 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 as an experience of intensive quantities in their pure state, to a point that is almost unbearable — 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 (Shaviro, 2008).

In other words, it lives a purely *aesthetic* condition. In this stage -- the conjunctive synthesis -- newly reactivated productive connections of desire are attracted to the recording surface of disjunctive points. An entire configuration of new syntheses will be created and new paths of becoming will be enacted.

By following a procedure of conceptual extraction of the *operations* at the basis of the anti-oedipal production of subjectivity, and their recomposition into the realm of an artificial process of sonic creation, we can start to appreciate the 'tiny cortex' from its aesthetic dimension: its 'machinic function' sets the conditions for pure encounters between heterogeneous sounds and their (artificial) neurophysiological substrates of capture and elaboration. The material procedure of sonic decomposition into graininess reduces on one side 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. What gets transmitted is not only the recomposition 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, a subtraction that 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 meagre but prodigiously simplified, creatively limited, selected. For there is no imagination outside of technique. (Deleuze and Guattari, 1987: 344-345).

Modalities of aesthetic composition

The *technical* construction of the 'tiny cortex' is what shapes the overall aesthetic (and artistic) dimension of *The Fragmented Orchestra*. The algorithmic modelling of its basic elements, the grains, allows for the creation of 'time patterns and rhythms', which reproduce the 'internal' neurological rhythms as they derive from the implementation of a mathematical model simulating neurophysiological activity in the brain (Izhikevich et al., 2004). 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 so *artificially*, is that of an estrangement: the internal neurological rhythms, which the granular synthesis reshapes, 'appear unfamiliar to us' (Grant and Matthias, 2011: 57). 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' (Grant and Matthias, 2011: 57).

Granulation 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' (Grant and Matthias, 2011: 58). It does so 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 consistency (Deleuze and Guattari, 1987: 344-345). 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. This basis is both material as it consists into the activity of a portion of artificially reconstructed cortex and immaterial, as the artificial neurons are not bound to any 'real' physiological process. Its degree of consistency is determined by extraction and creative selection of and from its sources.

This process of composition has similarities to what Alfred N. Whitehead has defined as an 'aesthetics of the Beautiful' (Shaviro, 2009: 151), an aesthetics in which the 'production of the new' does not arise from a gesture of overcoming (the real), but emerges out of a transformation of existing heterogeneous forms of expression towards the constitution of novel singularities (Whitehead, 1979: 21). Stephen Shaviro emphasizes the importance of this understanding of aesthetics in

terms of a (political) 'act of resistance'. If practices of 'sampling, recombination and reappropriation' (Shaviro, 2009: 171) 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. Since 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' (Shaviro, 2009: 154-157).

Whitehead defines 'beauty' as 'the mutual adaptation of the several factors in an occasion of experience' (Whitehead, 1967: 252). Adaptation is never happening casually, but 'implies an end', an aim that 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' (Shaviro, 2009: 73). Novelty arises when multiple entities reach the level of unity, a unity that is never permanent, but only in 'continual transition'. The fact that novelty cannot be determined in terms of a particularity that establishes it doesn't mean that it is boundless; Whitehead's whole ontology is grounded 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' (Shaviro, 2009: 150). Due to its generic neutrality, this principle cannot ultimately 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' (Shaviro, 2009: 51). He identifies aesthetic constraints as the necessary conditions which account for the production of novelty. In this operation, Shaviro both follows and unfolds the Deleuzian reading of Kant's third critique. In an essay named *The Idea of Genesis in Kant's Aesthetics*, as well as in his monograph about Kant (Deleuze 2004: 61; 1997b: 91), the French philosopher emphasizes that the aesthetic common sense is not only presupposed, but gets generated out of the agreement between imagination and reason. The operation at stake in the process of constituting a relation between discordant faculties becomes a question of design, of composition. It is this genetic moment, which allows an understanding of aesthetics from the point of view of its creative potential.¹ Stephen Zepke has noted how the problem of the development of aesthetics, from the point of view of genesis, gets developed one step further in the common work of Deleuze and Guattari: 'After meeting Guattari, and with his help, Deleuze attempts to take Kant beyond Kant by materializing the sublime differences in aesthetic syntheses, in rhythms' (Zepke 2011: 81).

From this brief outline, we might argue that the aesthetic synthesis protracted by *The Fragmented Orchestra* can be grasped in the development of the generic 'tiny cortex'. That is, it concerns the operation of redirecting sounds, perceptions and 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' (Shaviro, 2009: 158), 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, in that it demarcates a general compatibility for integration, without yet producing the act of integration itself (Shaviro, 2009: 73). The beauty of *The Fragmented Orchestra* can thus be grasped in the aesthetic process of constructing the generic 'tiny cortex'. This process gets concretized in the operation of redirecting sounds, perceptions and neuronal activity pertaining to specific subjects or objects towards a level of impersonal 'grounding', a form of 'ubiquity of creativity' (Shaviro, 2009: 158); both human and non-human resources can therefore be potential origins. The act of subtraction inherent in the process of graininess accounts for a procedure of creative selection determining the synthesis of the disparate in its consistency. The procedure of sonic extraction by granular synthesis becomes a novel reconfiguration of diverse peripheral sounds in distant relation with accidental listeners.

An art of indifference

Given these aesthetic considerations, I intend to pursue the argument by an inquiry about the artistic side of *The Fragmented Orchestra*. I will proceed with the question of how the sonic production under consideration can be thought in terms of transforming the 'residual share' emerging out of the third conjunctive synthesis into the pragmatics of a collective artistic enunciation. In this regard, I investigate how the 'tiny cortex' of *The Fragmented Orchestra* processes the incoming sound. I will show that the artificial neurons of the 'tiny cortex' transform the specificity of a particular sound into an 'indifferent' shape, reproducing the tension of the original tonalities. Sound, as a means of expression, thus becomes of prior significance in the constitution of this realm of generic indifference, inasmuch as 'it has the ability to create a space without a tangible physical presence' (Grant and Matthias, 2011b). The authors 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' (Grant and Matthias, 2011: 55-56).

The space thus gets defined by the way the artificial neurons of the 'tiny cortex' treat the incoming sound. This mechanism, called a neurogranular sampler (Miranda and Matthias, 2009), 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' (Grant et al., 2009: 235). 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 (Evens, 2005: 18-19). 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' (Massumi, 2011: 21).

Such a kind of space (or space-time) 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' (Guattari, 1995: 16). 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' (Deleuze, 2004: 94-95). How do the dynamisms act within the specificity of the artwork under consideration?

Aesthetic formations of collective subjectivity

At the geo-macroscopical level of temporality the lack of consistent service of internet broadband lines accounted for an artificial latency. This had the effect that 'a sound event is not echoed back for several seconds of time; it accentuated the vast distances travelled by audio signals along the geographical network' (Jones et al., 2009: 300-301). 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 peripheral 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:

Typically 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" (Grant and Matthias, 2011: 55).

By means of its operation of heterogeneous reassembling, the 'tiny cortex' 'counteractualizes' (Deleuze, 1997a: 202) 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' (Evens, 2005: 116). 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.

In the establishment of 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 configurations feed back into the collective ability to react plastically to the plasticity of our brains (Malabou 2008: 30). It is at this level of pragmatic mutual action that the aesthetic plane of composition becomes enriched by a level of creation for the emerging conditions of collective sensibility. Seen from this perspective, *The Fragmented Orchestra* might provide the basis for the formation of a territory of wider ethico-aesthetic experimentation.

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1. There is however, an important difference to be addressed between the readings of Deleuze and Shaviri. Deleuze's work on Kant emphasizes the idea of aesthetics qua *genesis*; it entails the unfolding of a process out of the constitution of a tension between the activity of divergent faculties (Deleuze, 2004: 62). This tension gets resolved in the analytic of the sublime where the divergent forces are driven towards a level of agreement. Shaviri on the other side draws a relation between Kant's critiques and the works of A.N. Whitehead. His perspective focuses upon the aesthetic *event*, intended as the outcome process of an encounter. What is central here is not anymore the question of the sublime, but that of beauty. This conceptual change privileges Whitehead's notion of proposition upon that of judgement. Proposition encompasses any sort of feelings that are generated from thought, while judgement reduces the range upon *some* particular feelings (Shaviri, 2009: 2-3)

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Biography

Claudia Mongini is a researcher based between Vienna and Paris. She first studied physics at the University of Turin, where she wrote a Ph.D. on chaos theory and neuroscience and engaged in philosophy and fine arts in Vienna. Since 2001 she has been dealing with scientifico-artistic crossovers, both within her artistic practice and her theoretical research. Her current project examines transdisciplinary intersections between divergent modalities of production, by departing from a critical revision of concepts such as matter, abstraction and information. This project is realized in collaboration with the department of *Pratiques et Théories du Sens* at the University of Paris 8, where she is enrolled on a second Ph.D.