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STOCHASTIC MUSIC AS METAPHOR

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PREFACE

The following present the efforts, in a period of two years, to formulate or even better to sculpt a corpus of creative uncertainty around and within the subject, rather than to construct an affirmation or to secure a territory. Research in this sense has more the meaning of discharging, removing or “making sensitive”, rather than of consolidating and arranging. Any progress has been understood as the replacement of the previous questions with new ones, more complex or even complicated, in a way that continuously pushes back any point of final conclusiveness.

To the largest extend, it is compositional needs, (although themselves can be very theoretical), that have prompted theoretical abstractions. These needs can be described in general as the needs to relocate from the “conclusive outcome” to the “open-(ed) construction”, from “appreciation” to “argumentation” and from the “self-sufficient aesthetic” to “artistic as an aperture-towards”. These needs pointed to the search for connecting compositional thought with philosophy.

In the following chapters I will attempt to describe in chronological order the history of steps, which gradually shaped my standpoint towards the subject of this thesis. Although its boundaries had been set from the beginning, there has been some amount of internal motion, so that, at the end there has been produced an array of paths rather than a single direction.

There has been no hypothesis to be proved, neither an initial condition to be extended. I did not set a territory to be thoroughly mapped, neither a number of methods to be fully exploited. What follows is the description of subsequent intersections, which form “routes in the labyrinth”, in the knowledge that these are only few of the possible routes. At some points the route can be bifurcated. In some issues this has been done and in many others it has been either avoided or omitted.

In general, the form of the presentation might have been different. It seems more appropriate if a well-structured and inductive exposition had been chosen. On the other hand, it is more in accordance to the ideas presented, if abandoned fragments, dead-ends, adversities and mischances have their place too. This is implying the underlying transformative forces as well as the ways guiding some persistent "knots" of thought to re-emerge in a new appearance.
In this sense, the reason of existence of the first chapter is to illustrate the presence of some basic concepts in an initial dysfunctional environment, where the very particularity of this (multiple) dysfunction in fact unlocks the route to the next chapter.

It would be also methodologically appropriate to start the exposition by defining "metaphor". In order to do that, I should refer either to linguistics (metaphor, simile, allegory or parable) or to cognitive science. As in a broader sense, metaphor presents one face of analogy and thus analogical thinking, it would be useful to attach the subject to the theoretical research around analogy, as well.
Nevertheless, I consider it more relevant to the context of my research, if I would make those references only occasionally, in the need of the moment. This is so, because from the beginning the term "metaphor" has been, idiosyncratically interpreted, more an open question itself rather than a clear methodological ruler, linked to any of its aforementioned classified variations.
"Metaphor" has been, as much as possible, preserved as it is in its literal form. A noun, which means (in Greek): transfer, replacement, transposition, carrying over. From this point of view all "metaphors" are already formalized (thus somehow self-enclosed) metaphors themselves.

The general idea is that Stochastic Music is not only a solid ground upon or from which metaphoric relations can be formed, but it is also itself a metaphor, a shell, a temporary place, through which a number of elements are being transferred in a particular substantiation. One has two diverging options; either to preserve the shell (and transpose its functions) or to perforate it (and so permit to the contained components to disperse in different directions). In the first chapter an attempt towards the first option is described. The following two chapters are directed towards the second:
"Stochastic Music" consists of course of a (formally) Stochastic and of a Musical component.
In this sense, Stochastic Music is treated as a case of (contextually-based) formalized indeterminacy. Subsequently, it is the context, which is being discussed and replaced, leaving the formalization (the stochastic part) in a (temporary) suspension.

The reverse direction might have been taken. As formally stochastic, (although indifferently formalized), reflects a number of different substantiations of chance, it can be that shifts in the approach of these substantiations will cause shifts in the (musical) context as well. This route still has to be explored.

There is a large number of issues which are not as extensively treated as they would demand. There are also gaps left consciously open, as it usually happens in a work in progress.

CHAPTER ONE

STOCHASTIC NARRATIVES

From naturalistic to quasi-naturalistic

a. General considerations.

It is of some philosophical interest that the relationship of thermodynamics to statistical mechanics shows some similarity to aspects uncovered in functionalist theories of the mind-body relationship. Consider, for example, the fact that systems of very different physical constitutions (say a gas made up of molecules interacting by means of forces on the one hand and on the other hand radiation whose components are energetically coupled wave lengths of light) can share thermodynamic features. They can, for example, be at the same temperature.[...]The parallel with the claim that a functionally defined mental state (a belief, say) can be instantiated in a wide variety of physical devices is clear. Lawrence Sklar,, "Philosophy of Statistical Mechanics", *The Stanford Encyclopedia of Philosophy.*

The music of Yannis Xenakis has been the central point of reference during this study. All other references somehow have been associated to this, while themselves remaining remote from each other. As main reasons for my initial fascination I would mention the profound passion, which makes him possibly the greatest expressionist of the 20th century, the uncompromising disregard for aestheticism, the sublimation of tragic and last (in a row of comments), but not least for a Greek, the incorporation of musical elements of the region (rhythmical, intervalic, timbral and interpretational) in a way that disarms from arguments the innumerable champions of cultural underdevelopment in my proud homeland.

Naturalism in the music of Xenakis is a subject of discussion in another chapter of this thesis. Nevertheless, this precise naturalism has been, in my understanding, the very method to bring the expressive overwhelming about. As far as this chapter is concerned, it is the lack of convenience with physics and architecture, (that means that it is originally a matter of intellectual disposition), that “forced” me towards the attempt to search for some other grounds, upon which it might be possible to construct a musical composition employing stochastic processes, where the space for expressive intensity would be somehow not lost.

It is a phrase of Xenakis, mentioned in a filmed interview (to Harry Halbreich, 1995), which I grabbed as a starting point: that stochastic is the way that "things of life" are happening. In a way, at that moment, I interpreted this expression, which was meeting with my aspirations, as legitimation, in the sense that taking such a direction would not require as a precondition

some bias upon the initial motives of the musical system.

As "things of life", here, I understand what humans consider as "**the realm of themselves-exposed-to-what-they-are-not**", whether this is located inside or outside of "what-they-are".

Events that "determine" human lot, if not by deciding it right away, then by covertly impregnating thoughts, emotions, decisions and deeds. There are those sudden occurrences coming inexplicably, apparently out of nothing, overturning all predictions and confronting us with utterly unexpected circumstances, (**life as history**). But they are also those slowly growing internal modulations, hiding around the margins of our concern, until the moment we realize inevitably the significance of their presence, (**life as an inner experience**). And then, there is this omnipresent ghost, a subject that is the "objectifying object" or the "structuring-structured", in the absence of which both of the previous terms become without place, whereas itself is not a place either, as it incubates what might become but is not (yet), (**life as a possibility**).

My initial idea was to search for (metaphoric) **parallels or correspondences** between Probabilities (as expressed in the music of Xenakis, in terms of Poisson and Wiener processes) and those, so easy to intuitively grasp but so difficult to name, **"matters" of life**, in a way which, similarly to the physiocratic model, requires that the two domains "radiate" upon each other, while they remain "essentially" different and detached.

This should set in front two different tasks. On one side (essentially poetic), to construct formal entities, which would faithfully represent the "subjects" and the "circumstances" (inner or external), in ways that would respond (inward or outward) to the "possibilities". On the other side, to justify why and how the abovementioned would be corresponding to the Stochastic formalization.

After having divided the Xenakis's paradigm in a thematic (thermodynamics) and a structural (stochastic) component, there raises the question: Is the paradigm still valid (usable), or (to which extend) is it possibly leading to the situation (since physics is a material discourse and mathematics (here) a "tautology"), that, as soon as the thematic component is replaced, Mathematical Probabilities will lay in front of what is for them an essentially "non articulable territory", themselves deprived of context?

Reversely: Should it be concluded that Probabilities, as used by Xenakis, indicate a contextual span, which transcends a discourse bound (or even "restricted") to physics in particular?

Time

In order to evaluate to the first question I consider crucial the way one would interpret (and employ) the function of (compositional or "composed") **Time**. This means, roughly, to decide whether "musical" structures (events) **appear in time,** (time being a neutral-inactive background upon which they are, **at-once** placed), or they are **being constructed in, within and-or by time**. To the extend that time is (in some manner) prescribing how and why sequences of non exchangeable order are being placed linearly, (that is, sequences which require temporal flow as a structural element) then it is indeed that Probabilities tend to represent more a rather peripheral "events-switch" mechanism, than an "inherent" formation or organization factor. This seems legitimate, as long as it is being understood as a gradual shift towards "**stochastic Narrative**". In this case, there is less to be expressed about "states and transitions" of a "mass conceived at-once" and more to be told about "routes and history" of a "system formed upon initial terms-components".

(In order to represent the aforementioned in mathematic references, events "in time" appear in basic stochastic processes, for example in fundamental sequences produced by probability distribution functions. These processes are in principle not differentiable. One the other side, events appear "within time", as results of Stochastic Differential Equations. SDE are also considered stochastic processes, their stochastic component varies in size and significance and they are differentiable).

As Narrative, I would define the sequence of time-dependent transformations, which are imposed upon a kernel (a morpheme or a "narreme", term coined by E. Dorfman in 1969**), given that the structural terms of these transformations, although corresponding to the narreme within an (arbitrary) context, are exogenous (but not necessarily heterogeneous) to the structural terms of the narreme itself.**

The specific character of their correspondence will define, (in the case where this is applicable), the type of metaphoric relation involved.

It is obvious that any construction with the intention to "represent" has a metaphoric

dimension. This dimension is minimally present in Stochastic Music, as it is "reconstructing" or "simulating" thermodynamics, but becomes prominent when one would ask from it to formulate an "enactment" to which is remotely relevant.

As far as it concerns the second question:

It is, as expressed by Xenakis, that part of the compositional process is conducted "outside time".

"It is necessary to divide musical construction into two parts: 1.that which pertains to time, a mapping of entities or structures onto the ordered structure of time; and 2.that which is independent of temporal becomingness. There are, therefore, two categories: in time and outside time. Included in the category outside-time are the durations and the constructions (relations and operations) that refer to elements (points, distances, functions) that belong to and that can be expressed on the time axis. The temporal is then reserved to the instantaneous creation" (Formalized music, 207).

Further: "Let us examine the notion of separability, of discontinuity in space. Our immediate consciousness (a mental category?) allows us to imagine separate entities, which, in turn, necessitate contiguity. A void is a unity in this sense, contrarily to time, in which our inherited or acquired mental notions bar us from conceiving the absence of time, its abolition, as an entity sharing time, the primordial flux. Flux either is, or is not. We exist, therefore it is. For the moment we cannot conceive the halting of time. All this is not a paraphrase of Descartes or better yet of Parmenides: it is a presently impassable frontier. (But certainly, by using Parmenides once more, passable: "ΤΟ ΓΑΡ ΑΥΤΟ ΝΟΕΙΝ ΕΣΤΙΝ ΤΕ ΚΑΙ ΕΙΝΑΙ")" (ibid 263). (Greek in text. "For it is the same thinking and being").

One can notice a shift between "outside" and "in absence" of time, as if they express something in depth innerly continuous or homogeneous.

It is becoming clearer that the issue of time is present in its two forms. On one side, seen as a quantity, time can be open to a range of treatments, while itself opens, in turns, access to a range of compositional directions. On the other side, seen as quality, it sets the "impassable frontier", which is not to be taken in account neither in physics nor in mathematics. What is projected upon Physics as (stochastic) temporality, in depth forms part of an ontological (the flux) rather than a "strictly scientific-engineering" discourse, which is mirrored or demonstrated upon thermodynamics. It will become obvious that the music of Xenakis does not per-se describe molecules and clouds, but it exemplifies upon them a mode of **Substantiation of Being**. (The questions of Being-as-time, within-time, outside-time and before-time). And of course this, in turns, will relocate the discourse, attached upon or emerging through stochastic music, from terms of "inventions in musical engineering" to terms of "inventions in musical substantiation". This is going to be the object of a second part of this thesis. In the present state, the discussion is restricted to the territory of "time as

quantity".

It can be argued that a pure stochastic operation consists of a (single) "**ripsis**" (greek for throw, as in "throw a dice"). However this "ripsis" might require time to be sampled, it is fully decided instantaneously. On the contrary, a narrative, although approximated, is in principle undecidable, as it eludes any definitive noetic calculation. A narrative "happens" and, despite of whatever might be said about it, (as comment, interpretation or analysis), this "happening" remains its ultimate ontological character. One might suggest either the supremacy of the narrative to the "comprehensive predictability" of noetic operations, or the predominance of (abstract) cogitation to the "pleonastic impurity" of narratives. Nonetheless, the source of the problem might simply lie in the traditional demand that any theoretical framework should be rigidly timeless, possibly due to those intellectual ethics, that would identify temporal with profane.
Nevertheless, when the discussion focuses on the "matters of life", it is inevitable to acknowledge that any idea about them seen as not a narrative is, at least, sinister.

(It is within the scope of this thesis to point towards methodologies, which incorporate narratives in philosophically stable systems, without producing the derogative conjunction "philosophical narratives". It is though inevitable, before arriving to this point, to walk through the area of their conflictual separation).

b. An initial narrative "relation paradigm"
The spirit of (ancient) tragedy

Without being forgiven, released from the consequences of what we have done, our capacity to act would be confined to one single deed from which we could never recover; we would remain the victims of its consequences forever. Without being bound to the fulfillment of promises, we would never be able to keep our identities; we would be condemned to wander helplessly and without direction in the darkness of each man's lonely heart"
"It is in the nature of beginning that something new is started which cannot be expected from whatever may have happened before. This character of startling unexpectedness is inherent in all beginnings … The fact that man is capable of action means that the unexpected can be expected from him, that he is able to perform what is infinitely improbable. And this again is possible only because each man is unique, so that with each birth something uniquely new comes into the world "

Hanna Arendt, *The Human Condition*. Chicago: University of Chicago Press, 1958.

Although "lyrical" parallelisms between life and natural phenomena may be illustrative, they can become catastrophic if they are being mistaken as explanatory.

And on the other hand, something that is almost "tangible" in the music of Xenakis, is that, for his molecules, Probability represents something far more than a recipe to depict habits or reflexes. What appears to be an incident within a cloud of indifferently equivalent possible variations is charged with the graveness of enormous effort, as if a "call" to be fulfilled. Or in other words, it is not an overall tendency as it is coldly observed from outside, but the infinitesimal "destiny" bursting from within, perceived on a large scale.

One is soon to be aware of the impression that a mass is not only interpreted or interpretable in its entirety, but it also consists of miniscule "explanations". It is made out of a designed sum of "**granular reasoning**" or "**granular causation**" rather than of a collection of incidents "simply" assembled according to invented rules.

At this point, in a strongly subjective and speculative way, in order to open wider the metaphoric reading, which comes dimly into sight, I would draw parallels between this "granular reasoning" and a connection-reference to the tragic spirit, in a sense that (equally) reflects tragedy upon thermodynamics as it infuses thermodynamics into tragedy.

It is a common place to condense the spirit of tragedy in the verse of Sophocles "**We are toys in the hands of the Gods**. We are objects of dicing for the ever-changing moods of unforeseeable forces (that do not take us into account), whilst we think that we are determining ourselves. And it is this very idea of self determination that most of all thoughts, being not true and being not false, devises the (unintended) play of the gods upon us, whilst, on the other hand, its absence would reduce drama to fate.

Tragedy is not about descriptions of suffering. It is triggered by "**hamartia**" (an archers' term; missing the target, miscalculation, wrong choice). Tragic heroes do not violate any ethical law, knowable or secret. Quite on the contrary, their intentions are honest and their actions sound. Their misfortune occurs when the outcome of their integrity is accidentally producing "**peripeteia**" (adventure; reversal of circumstances, "a change by which the action veers round to its opposite, subject always to our rule of probability or necessity."). While extreme emotions are erupting, what prevails is the deployment of a process towards "**lysis**" (resolution) that will deliver a new equilibrium, which might bring either redemption or disaster for the heroes.

Humans, by being grains (made out of determination and chance) in a universe made out of principles and coincidence, carry in themselves the cause of their destiny, the reason of it engulfing them, one by one; the same for everybody, yet inseparable from their monadic trajectories.

In a broad sense, one might say that a molecule of gas is wonderfully designed for a tragic adventure.

c. Isomorphisms, metaphors and analogies.

One might disagree with the aforementioned interpretation of tragedy transferred to the molecular level. Nonetheless, what remains as an interesting observation from this example is that the relation between the structure of tragedy, as described insofar, and the structure of a thermodynamic system, are in a lato - sensu, (operational-preserving) isomorphic. It has to become explicit that I consider the relation as non-mimetic, and any further discussion will try to exclude mimetic associations.

(For the sake of clarity: In abstract Algebra, an **isomorphism** is a bijective map f such that both f and its inverse f^{-1} are **homomorphisms**. In the more general setting of **category theory**, an **isomorphism** is a **morphism** $f: X \to Y$ in a category for which there exists an "inverse" $f^{-1}: Y \to X$, with the property that both $f^{-1}f = \mathrm{id}_X$ and $ff^{-1} = \mathrm{id}_Y$.)

What makes isomorphism more preferred for our purposes, than other types of mapping-relations, is the equality between the participating domains (described as domain and co-domain).

On the contrary, typically metaphorical operations (**conceptual** or **cognitive metaphor)**

require a hierarchy of domains (**Source** and **Target**).

A **mapping** is the systematic set of correspondences that exist between constituent elements of the source and the target domain. Many elements of target concepts come from source do mains and are not preexisting. To know a conceptual metaphor is to know the set of mappings that applies to a given source-target pairing. The same idea of mapping between source and tar get is used to describe analogical reasoning and inferences.

(Or, giving to this process its more general and formal shape:

Reasoning by analogy is a process of, from a given pair (x,f(x)), extrapolating the function f. In the standard modeling, analogical reasoning involves two "objects": the source and the target. The target is supposed to be incomplete and in need for a complete description using the source. The target has an existing part St and a missing part Rt. We assume that we can isolate a situation of the source Ss, which corresponds to a situation of target St, and the result of the source Rs, which correspond to the result of the target Rt. With Bs, the relation between Ss and Rs, we want Bt, the rela tion between St and Rt. (Antoine Cornuéjols (1996). Analogie, principe d'économie et complexité algorithmique. In Actes des 11èmes Journées Françaises de l'Apprentissage. Sète.)

In this "hierarchic" context, within an unalterable (mono)-directionality, it seems inevitable to establish either physics or "poetic representations " as source domain. By doing that, one either attributes quasi-poetic properties to terms of the natural sciences, or attempts to comprehend "poetic" as a quasi-scientific apparatus. It is obvious that both actions will eventually harm the integrity of the terms as well as the intelligibility of their associations.

On the other side, isomorphism offers the possibility for exact and conceptually transparent shaping of the relations between domains, on the basis that those relations are allowed to include only a small amount of properties. (Formally speaking, only one). At this point, achieving "granular reasoning" is not a matter of choice but of logical necessity.

In practical, composition-oriented terms, a source-target approach seems to be leading towards a musical treatment similar to the programmatic music. On the other hand an isomorphic approach requires the limiting of the general plan and the diminishing of the width of correspondences, which in its turn means that a composition can be achieved only by an (organized) accumulation of isomorphisms.

d. Narratives

Retaining the decision to search for “representational units”, which correspond to the basic characteristics of the thermodynamic thematic (appearance-volume, speed-temperature, equilibrium-entropy).

These units are of three types:

“Molecular forms-structures” which represent or “function” as subjects, stable kernels upon or around which sequences will be deployed.

“External circumstances” comprising of (chains of) events, to which the kernels are going to be exposed.

“Inner states”, or “molds of fluidity”, as this is the basic characteristic of inner experience. These molds can substitute or be substituted by the subjects.

The interactions between the units are depending on stochastic algorithms.

In order to form these units on an as much as possible molecular level:

a). It is helpful to locate instances that combine a physical stochastic aspect with a cognitive or emotional expression, for example, the trembling of a voice, while in transition from one psychic state to another, or when shifting form one argument to another.

b). Furthermore, in abstract, "Thought " and "E-motion", (as soon as somebody succeeds in reducing them to aggregates of minute gestures), are processes in time, which are rarely ever deployed in a direct, immediate and determined manner, while on the contrary mostly target their objectives by deviations, recursions, self-cancelations, hesitations, bursts and exhaustions, which indicate some resemblance to Brownian motion. It is also that thoughts as well as emotions always confront something that lies beyond- outside them, to which they have to be related in somehow erratic ways, dynamically transformable.

c). On the other side, any density change, any increase or decrease, any differentiation in the rate of order and ataxy, can be in principle translatable into gestures, which mirror human characteristics. Besides the hylozoistic residue of such a tendency, one might argue that it serves the practical purpose of providing a temporal or quantitative indexation to inner motions, otherwise indiscernible.

There exists a third domain, where stochastic element and human responsiveness meet naturally. This is the domain of somatic (re)-actions, as expression of inner life or as reply to (cognitive or emotional) stimuli.

The aforementioned associations might be used as “guidelines for defining building blocks”, in an attempt to construct more complex quasi-naturalistic formations. It is though evident that by being referential they do not recall or instigate causative relations, thus, in themselves, are not able to provide compositional momentum, in a intrinsic mode similar to the way that Epicurean “clinamen” (swerve) provides motion to a molecule. (Epicurus is the first to introduce the idea that atoms are swerving (instead of just being placed) in the void, therefore chance is inherent in the universe).

A (temporary) solution for this problem of prompting motion comes from Structuralism. If referentiality is not treated as a neutral-inert arrangement but as an “active” entity itself, then motion can be created from the activity of, or the action upon, the “**structure of referentiality”**.

(According to the patriarch of structuralism F. de Saussure (1857–1913), a sign is composed of the *signifier* and the *signified*. These cannot be conceptualized as separate entities but rather as a **mapping**. The Saussurean **sign** exists only at the level of the **synchronic system**, in which signs are defined by their relative and hierarchical privileges of co-occurrence.
Similarly, according to a more “transitional” approach, Structuralism argues that a specific do main of culture may be understood by means of a structure—modeled on language—that is distinct both from the organizations of reality and those of ideas or the imagination—the **"third order"**. In Lacan's (1901-1981) psychoanalytic theory, for example, the structural order of "the symbolic" is distinguished both from "the real" and "the Imaginary"; similarly, in Althusser's (1918-1990) marxist theory, the structural order of the capitalist mode of production is distinct both from the actual, real agents involved in its relations and from the ideological forms in which those relations are understood.)

In a more recent context:

Molino was to introduce […] a level of analysis, which has been taken to the heart of contemporary music semiotics: he referred to this third level as the niveau nître, or neutral level. This views the object as a work of art, objectified from the processes of creation or interpretation. It assumes that the symbolic form is analyzable as an object *in itself,* and was pounced upon by Nattiez who adopted it as *the trace* [‘la trace’]. Outside the process of musical creation (in composition) and interpretation (by a musician in performance) [in terms of the *poietic* dimension], and individual interpretation (by the audience) [in terms of the *esthesic* dimension], **there exists an audible trace which can be analyzed as an aural, scientific and entirely objectifiable object**.

(Zachàr Laskewicz , Music as Language)

What can be productively useful out of all these, (in a heavily interpretative and rather manipulative reading), is the idea that, either upon an entirely neutral analysis territory,

(created in the Molino-Nattiez model), or through a transformative "third" factor (in Lacan's theory), whatever referential relation appears as-by intention, forms a new situation (emancipated from the intention as well as the intended, as much as from the poles of reference), for the mere reason that the intention has existed, as it has existed, in this and not any other way. **Hence, any referential relations create, by the right of their existence, a new statement, which is disconnected from its origins and stands as it is. The particular manner, by which this statement comes to existence, is embedded in the particularity of its structure, which is the structure of the referential relation.**

The aforementioned have the following consequences:
In the narrow space of quasi-naturalistic references, if one, for example, assigns a particular process on the instance of a trembling voice, most possibly in order to continue on the same line adding motion to the initial situation, by changing its energy state, he would ask from the voice to become screaming or whispering and so on, obtaining rather simplistic anecdotal solutions. Using though, as compositional tool, not the modulations of the assignment, but, instead, the idea that he has **structured, (rooted)** the reference in this and no other assignment, he can provide motion to his composition by deciding how to deal with this structured reference, in regard to any other possible references, which might include or exclude this one, continue or interrupt it, as long as these new references indicate (in some context) change of energy state. This indicates a (theoretically limitless) vertical expansion of the structural scope. In the context of this expansion, whilst the primary layer comprises elements of different constitutions, the outward layers are homologous, therefore causative relations are more likely to be established between them.

In a general formulation the contribution of structuralist influence can be depicted as:
[.....[the stochastic narrative of [the stochastic narrative of ("**stochastic narratives in a poetic context**" as well as for "**poetic narratives in a stochastic context**")]].....].

Obviously, what must be avoided is repetition ad absurdum.

From quasi-naturalistic to abstract.

The outcome of the research insofar is that, having set quasi-isomorphic relations between naturalistic and quasi-naturalistic elements, in “poetically” oriented narrative references, as fundamental grains of a composition, we have come to realize that, we can not only operate “within” these references but also most effectively “upon” them, to a theoretical N-th level of layered, interdependent structures. This assumption leads to a number of possibilities:
(Keeping in mind that what appears theoretically accessible is very difficult, laborious and complicated to apply).

The N-th level of structure might be an expression of the N-th degree of the same structural plan, or it might be the deployment of a combination or coexistence of various or different structural plans.

Any, single or multiple structural plans might be designed according to a naturalistic model, but, could be also independently-autonomously designed, according to some rules and-or operations.

Any given set of rules and operations, might be inalterable throughout the whole process or could be itself subjected to transformations, in ways that can be set, to a theoretical M-th order.

Of course, the question that arises is how to locate the role of probabilities in the navigation through these networks of conceptual constellations. Besides Probability, which is empirically rooted in mathematics, it is necessary to introduce **Logical Probability** (as formalized by Carnap in the 1950’s) as an additional tool, which supports the non-naturalistic operations introduced.

Having set these guidelines, we can now re-examine the inherent validity of the initial conjectures, set as granular relations between the “matters of life” and naturalistic stochastic phenomena. It is becoming evident that, even if their argumentation might doubted, the fact that they manifest a validly structured intention, can legitimately prompt a compositional process, as long as this process is founded upon “reasoning on intentionality” and not upon

the “provability” of the relations themselves. (Even though, one might suggest that, an evidently incorrect original relation might very well conduct a composition, by putting emphasis and building upon the very incorrectness of it).

Beyond the logical or technical accuracy of forming the particular (associative) references, what seems more important is to form those that are susceptible to “meaningful” enlargements, in the same manner one would treat any poetic “ideas”, as “quasi-true” in a truly-really functioning meander of “quasi-real” relations.

Within or through this discussion there are some issues that have appeared, which are going to open the way for further questions:

While in the thermodynamic paradigm all (musical) objects are of the same substitution and order, in this paradigm objects are diversified (in structure) and divided (in function) into “subjects-objects” and “circumstances”.

While in the thermodynamic paradigm we deal with an “objective” presentation, here we deal with an “objectified” representation.

CHAPTER TWO

"STOCHASTIC" AS (IN) ONTOLOGICAL RESEARCH

….music is like geometric figures and numbers, which are the universal forms of all possible objects of experience and applicable to them all *a priori*, not, however, in an abstract manner but vividly and thoroughly fixed... "

" This relationship can be really well expressed in the language of the scholastics, when we say: ideas are the *universalia post rem [universals after the fact]*; music, however, gives the *universalia ante rem [universals before the fact]*, and reality the *universalia in re [universals in the fact]*."

F. Nietzche, the Birth of Tragedy.

If I wish to argue with the stable hierarchy of Nature, it will not hear me. Even listening to me is unnatural to Nature. Nature contains me, the human, as its only critical counter-friend. Yet Nature cannot argue since it can only report. It will respond to reports, yet I, and that is one more problem, refuse to join the stable hierarchy of "things being the way they are". I'll face reality and facts if they are seductive.

If I wish to argue with the stable hierarchies of Beliefs, they will not only deny one another, but also use the logical syllogisms which I use to keep thinking flexible, for denouncing my thinking for being logical. Well, it is. And that completes the articulation and formulation of the problem:

If we wish to liberate human societies from the violent inflexibility of stable hierarchies of power, nature, and beliefs, we still must use hierarchies of logics, creativities, imaginations and visions, yet keep these hierarchies not stable, but floating. With floating hierarchies we can argue, play, and, most likely, in time compose human societies where discrimination is a festival while the word "against" will be banned.

Herbert Brun.

One might conceive the statement "music as ontological research" in two different ways. First, and formally accurate, it is a research upon the ontology of music ("what is music"). But this is not the case here. What is meant in the context of my research is music being constructed as the outcome of research upon the conditions of construction in general, which, in turns, originates in research upon "what-is-(there)-to-be-constructed" and upon "what-is-there-as-constructed". (Thus, music reflecting, representing, exemplifying, materializing, "bringing-in-being" the modes of this what-is-(to-be), in ways to be further clarified). Since "Stochastic", due to its "theoretically privileged" position, is the focal point, the discussion will be invisibly built around it.

1. “Nature”

In the following paragraphs, the objective is to investigate briefly the philosophical foundation of Stochastic music, as expressed in the paradigm of Xenakis. This foundation manifests itself, especially during his early and middle period (until the late 1970’s), in the reference to ‘nature”, as this is emerging through the natural sciences and mathematics, continuously and multiply significant. On one side in the paradigm of thermodynamics (as a source of concepts and functions), leading to the realization of compositions, where instruments should be substituting molecules (i.e *Pithoprakta, 1955-6, Eonta, 1963*), and on the other side in the application of logical operations (set theory, games theory, sonification of “architectural” structures) where sound represents what has been complexly conceived in terms of “generative processes” towards “natural objects”. (In this sense, the glissandi in “*Metastaseis*” although mathematical abstractions in principle, seem to have been conceived as “formalized mater” rather than as abstract ideas).

It is an extremely demanding and complicated task to define what falls under the term “nature” and how this is subsequently incorporated in a philosophical context, in general. It is though necessary to specify my points of interest in it, in the context of Xenakis’s music. On one side it is not spirit, consequently it announces a non-religious departure point. On the other side “nature” is an all-encompassing “object”, possessing a particular existential modus, which is being observed and comprehended, in a particular manner (science), by a “non existent” subject (or an entity which “tells itself ” independently of its becoming), which, although has a natural dimension (is a natural being), stands outside or opposite “nature”, as an alien spectator of it.

Throughout his book, (Formalized music), Xenakis makes a large amount of references, linking the mathematical processes (mainly upon examples from physics he is using in order to generate music), to a number of philosophers, mostly ancient Greeks, in such a way, that it becomes clear that he considers the scientific methods, as the manifestation and operating mode of philosophy. Thus, he establishes philosophic enquiry as the kernel of his artistic as well as scientific thought. By doing this, he is transforming musical ontology and language in an unprecedented way.

Among the philosophers mentioned in Formalized Music, Pythagoras and prominently

Parmenides are the centers of reference.

It is in Parmenides, where, for the first in real philosophical language, domains of existence and knowledge appear (in various modes of duality) apparently irreconcilable: Aletheia (truth) and doxa (opinion), Nooumenon and phenomenon, "(e)On" (what-is) and "me-on" (what-is-not). And furthermore, their recognition and transcendence, by "identification", (disputable how and where), between "noein" (thinking) and "einai" (being), creates an immense amount of density, concentrated upon the fundamental concept of "One", that either resolves in absolute Stasis (as in the epigones of the "Eleatic" school), or calls for a reassessment of the whole ontology upon a simple two-dimensional question, (there exists or "one" or "many"). This problem is, as postulated in this way, (I would follow this line of interpretation), the greatest legacy of the Parmenideian thought.

Xenakis, being deeply, and rather idiosyncratically, influenced by Parmenides, echoes the substantiation of "being" as "nature" (considering, unconventionally, Parmenides as the first materialist), whereas its counterpart "noein", without a natural locus, (since any other thought upon it suggests a religious thought), obviously resides, under unclear terms, in the mind of the composer. Consequently, the identification between being and thinking is occurring as a truthful and fruitful correspondence between nature and the mind, in Xenakis's territory of choice, of which Parmenides is the intellectual ancestor, and that is thermodynamics.

In this general framework, Xenakis is solving equations of the kinetic theory of gasses (Maxwell-Boltzmann), by which he engineers musical motions. Alternatively, he is using basic stochastic processes in order to build sequences of events, or he is employing mathematic concepts and operations (naïve set theory, games theory) in order to define structures and development tactics.

At this point our inquiry has to confront an evaluation of Xenakis's references themselves, while, additionally, it has to comment on the credibility of the ways he adapts them in his environment of thought. Both subjects being extremely complicated and extensive, one might simply escape the difficulty, by pointing out what seems to be a dichotomy in the situation. On one side, the salient position, which (natural) philosophy takes in compositional thought (and not less, Parmenides in particular), suggests a major development. On the other side, this very orientation and adherence towards ancient philosophy, as admiration and nostalgia for the Greek spirit, forces philosophy and subsequently mathematics and physics contemplate backwards, thus function within what, at the present state of affairs, is already an archaism. Nevertheless, one has to note that what appears to be archaic, in terms of background thought,

turns out to “surpass the present”, in terms of musical manifestation. Also important, one has to detect a deep connection between the archaism of the theoretical orientation and the tragic viscosity of the music, coming to suspect that possibly this choice has been related to a profound artistic decision.

Thus, comments as the following form a good introduction to the problematic, which is to be developed, although they possibly succeed in describing the circumstances but fail to comprehend the situations.

.....We are therefore faced with two notions of the relationship between music and mathematics: 1) The first, which I call the engineering relationship, begins with a proven mathematical formula and then proposes that musical formulae can be derived from it by translating and transcribing the symbolic letters in it. For example, one might take a stochastic formula (an equation that establishes a mathematical equality between two terms) and then apply this formula in the musical domain. In this case there is no musical computation as such. Moreover, there is not really any mathematical calculation either involved in this formula for although the original formula might have been a product of mathematical reasoning and computation, it has been taken by the engineer as a given result, divorced from its original context. The engineer is not interested in how the formula can be mathematically derived. He treats it as a "dogma" and his motives are purely operational. The view of the musician-engineer is therefore that musical logic can be obtained by a transference of mathematical logic by means of this formula, which it suits him to use as 'ready currency.' Musical reasoning is supposed to be guaranteed by its isomorphism with mathematical reasoning. This type of attitude comes under the heading of metonymy since it involves the substitution of a musical entity (or a musical letter: a note) with a mathematical letter.[...]
(Francois Nicolas, “What can we hope for from the musical logics established in the 20th century? , 2000)

It seems indeed that the (functional) definition of the compositional “noein” is somehow problematic in the music of Xenakis. Although the calculations (and the related concepts) are exposed (as an exemplification or a suggestion of the “noumenon” outside (or before?) the phenomenon), it is unclear which is the “substance” of the calculations themselves (unless primitively enough are considered as the noumenon-as-it-is). Furthermore, the ontological character of the calculating entity, in mathematical terms, is totally absent. What is missing, is the expected operation of this entity, (a subject), upon the object (the formulation), which should be expressed through the detailed, clear and refined, foundation, formation and transformation methods, which applies while developing its material (that creates finally a manifold of meanings). This element, although overwhelmingly present musically, remains invisible, on the level of analysis.

The aforementioned difficulties suggest partly discontinuities in the thinking of the composer but mostly express internal frictions of the principles he adopts, received

unresolved and maintained in an undecided state. The lack of clarity, on the formative level, causes difficulties in interpreting how precisely the "product" of noumenon transforms itself (or provokes something) into a phenomenon. Given that mathematical (and modal) facts are abstract in the sense of lying outside space and time, it follows that there is no possibility of "identifying" them with the kind of natural facts that have physical effects. Further, how do we decide that mathematics is indeed a morphism (instead of anything else) of nature? How is "nature" structurally enclosed in itself? If self-contained and non-referential, then how does it emerge authentically in the noesis?

So, for example:
How may the cinetic equations of gasses be justified and explained? In the discussions concerning the problem of irreversibility that ensued after Boltzmann's work, attention was focussed on a fundamental assumption he made: the hypothesis with regard to collision numbers. This time-asymmetrical assumption posited that the motions of the molecules in a gas were statistically uncorrelated prior to the molecules colliding. In deriving any of the other kinetic equations a similar such posit must be made. Some general methods for deriving such equations are the master equation approach and an approach that relies upon coarse-graining the phase space of points representing the micro-states of the system into finite cells and assuming fixed transition probabilities from cell to cell (Markov assumption). But such an assumption was not derived from the underlying dynamics of the system, and, for all they knew so far, might have been inconsistent with that dynamics.(Lawrens Sklar ibid).

A situation to consider appears also in the foundation of *creating structures ex nihilo. (Formalized music, 207 and the following).* It seems that "ex nihilo" represents only the combinatorial or variational projections of the outside-time structures, ("the designation of an unclarified complement", F. M, 203). In other words it is more of an absence structurally preceding a presence, an empty space to be filled in, rather than an eliminating void or a indiscernible alterity. As a result of this, "creating" can be reduced to "fabricating".

It is overwhelmingly above the scope of this discussion to fully confront the aforementioned issues, which have been outlined in scribbles. In order to do this, one has to perform a thorough investigation of philosophy, through at least three centuries of evolution. What can be extremely briefly said is that, while the (dividing) border between "what-is-as-it-is" (the Being, or in particular "nature") and "what-is-as-evidence-of-Being" (noein), has been analyzed (and attacked) from many perspectives, it is in part of the 20th century philosophy that employed mathematics as prominent tool, in order to approach the discourse. In this territory, I have in mind: Edmund Husserl (also including as a consequence the Phenomenological deviations and prominently Heidegger), The Vienna circle; (which

produced the huge gulf, which is so difficult to classify as logical positivism), the efforts made from the side of mathematicians (directly or indirectly targeting the issue), such as the Gottingen school (Hilbert, Godel, Zermelo, between others) and the independent (or unorthodox) interpretations of the work of Georg Cantor. In the last ones belong two philosophers, which are going to lead the discussion further: Cornelius Castoriadis (1922-1997) and Alain Badiou (1937).

The purpose of examining the ontological part of their work is to attempt founding grounds, upon which one can eventually build compositional guidelines and-or models, (within the paradigm of music as an object of-for ontological research) and in order to rationally replace the thermodynamic model. These grounds should be addressing the same general problematic, which Xenakis inherits from Parmenides, (as in effect this is translatable into the core of the problematic of modernity), but in a way that, if not eases the problems already mentioned, at least transposes them to a contemporary context.

2. Castoriadis and Badiou

Within the scope of ontological research, through mathematics, as mentioned above, there are two major conclusions to be drawn, which can be present separately or simultaneously, depending on the direction taken.

a) The idea of a “natural object”, existing “as-it-is”, waiting to be revealed by a mind, which stands-outside, in an “as-it-is” state, uninvolved with the state of the natural object is being replaced.

b) The idea that the natural object is being understood in a manner of thought, which (even in the sense that its “conceptual topology” is determinately fixed) is deterministic in structure but indeterministic in occurrence, is being abandoned in favor either of a direction that considers structure as interpretation (of a formal language) or of direction that introduces indeterminacy into the thought-about-the-structure or into the-structure-of-thought.

This last direction opens the area for discussing, in general, the terms and conditions of “any possible” indeterministic system of thought, seen as paradigm for the construction of “any possible” indeterministic musical-compositional system. This direction, of obviously extreme difficulties, is not going to be taken here. Instead, there will be presented two systematic

thoughts, with neighboring types of structural indeterminacy, which have been the paradigms for my analytic and compositional efforts, during the last period of time.

The guidelines for this chapter are formed as follows: To redefine and relocate the substantiation of “the omnipresent object” and “the invisible subject”, in such a way that:
a) the communication between the two can be established in terms similarly belonging to both, b) these terms are going to maintain the diversity of the two, c) the terms are not referential, but actually imply consequences on both, d) presuppose, include or cause stochastic elements to interfere, either in the founding of “comprehension” of the two, or in the processes, which transverse between them.
In order to work in this direction, the ideas of C. Castoriadis and A. Badiou will be (inevitably with some plasticity) summarized and introduced. The two philosophers have a number of things in common. Belonging to the French political philosophy environment intellectuals, they are both marxists in background as well as students of Lacan. Political activists, which have been deeply influenced by the events of May 1968 in Paris, in which in some way participated. Aside of the similarities or the common starting grounds, they develop different directions in their thought, to the point that their ideas become unfriendly to each other. Nevertheless, my intention is to combine them, in the context that they express aspects of the same range of fundamental directions, so that a number of contradictions, antinomies and dichotomies, nesting in these directions will be shown too. Furthermore, since both of them suggest that they are working in open systems, it is interesting to test the result of the openness of their ideas, by applying them on the same ground of questions.

1. C. Castoriadis

The following present a (personal) reading of Castoriadis, in an attempt to concentrate only on this part of his thought, that has specific interest, within the scope of this thesis. An amount of issues has been omitted or left without discussion, as long as it does not harm seriously the articulation of the ideas in focus.

Cornelius Castoriadis was born in Constantinople (1922). His family moved to Athens the same year. During the Occupation he joined a trotskyist resistance group, which lead to persecution both from the Germans and the Communist Party controlled Resistance. Before the outburst of the civil war (1946-49), being in life danger from the Right government aggression and the Left retaliations, he took refugee in France, under the protection of the french government, which this way saved around 800 young (mostly upper class) greek intellectuals, whose involvement with the Left would make their staying in Greece death-dealing. In Paris (with Lyotard and G. Debord participating) he formed the group “socialisme ou barbarie”. In 1961 he rejected Marx(ism). In 1974 he started practicing psychoanalysis. The same year he published his opus magnum “The imaginary institution of the Society”. In his 1980 *Facing The War* text, he took the view that the Soviet Union had become the primary world military power. To sustain this, in the context of its visible economic inferiority in the civilian sector, he proposed that this society may no longer be dominated by the party-state bureaucracy but by a "stratocracy"- a separate and dominant military sector with expansionist designs on the world. He further argued that this meant there was no internal class dynamic, which could lead to social revolution within Soviet society and that change could only occur through foreign intervention. Since then, for adopting such a cold-war argumentation, in the moment that disarmament was becoming a major issue, he has been seen by many as a defrock revolutionary. He died in 1997.

His departure point of analysis is the social institutions (in the meaning of conventions). He observes that all institutions consist of two components. On one hand, all the elements, which are associated with the function (appear for or from the function of the institution). On the other hand there is another component, which is non associable to the functions and non-deducible from them, but which, nevertheless, is establishing institutions, as such. This is due to the infusion of symbolic, by this component, into the function, so that the function transcends itself and becomes signification. Castoriadis is calling this component “imaginary”. Consequently all institutions are “imaginary institutions” or “imaginarily instituted”. According to him, all societies although they are self-instituted, they attribute the imaginary component to some factor, which lies outside them (god, nature, the economic necessity e.c.t), thus they become alienated to themselves.

(Applying the aforementioned, closer to our territory of discourse, upon the term “law of nature”, we come to recognize two components. On one hand the law, which is representing a function, that can be very reasonable, but remains (here) empty of meaning without the

presence of "nature". On the other hand, "nature" is nothing more than a symbolic space, which is (here) completely foreign, unless seen as the space where laws are applicable. The bonding of the two components makes the term legitimate and the relation significant).

In order to study and support his conclusions, Castoriadis is analyzing the process of thought, (which is producing the "imaginary institutions"), by following its two components: the thinking subject and the thinking activity. In order to comprehend the activity, he is attempting an analysis of the definition of naive sets, given by Cantor. ("The imaginary institution of society, 320-370).

The outcome of this analysis can be briefly and roughly outlined as follows: The first terms of logic and mathematics are non-definable. Objects and the relations, which must derive from operations, must be substantiated in order these operations to become possible. This substantiation (of objects) is the function of **"Legein"**, (translatable as telling, counting, announcing). Through this function (and its operations, similar to the operations of Set theory), we form sets (of any possible size or any kind of objects), which we "design", (name), thus transform in "telestic" objects, and as long as we stably "identify" the sum of their elements with their "designation", we use them in strata.

"In order to be able to talk about a Set, or to think of a Set, **we must be able to choose-select-pose- collect-count-tell objects**. The nature of those objects is of small interest.[..] we must be able to set those objects as definite, in the sense of a decisionistic- practical definition, as distinguished..." (ibid 322).

This noetic operation, ("Legein"), which is accumulating "designated" Sets of objects, is inadequate to produce Thought, unless coupled with "**Teuchein**", (collecting-adapting-creating), which also functions with operations similar to these of Set theory. This operation is evaluating- validating the Sets, products of "legein", on the principle "substitutable-equivalent- unique". Whatever appears to be unique deserves further processing. It gains "usage value", which is translatable as instrumentality, either in a known territory of application, or, the most important, "**in-order-to-make-be-what-is-not**" (ibid, 379). By means of this, any thought could be modified and-or expanded of extended.

Legein and teuchein form the two sides-faces of what Castoriadis calls **"ensembliste-identitaire"** logic. It represents the core of a number of processes, which are historically stratified and are social products that constitute societies' self-illustration. It is also repeatable within each person's history, on one side during the stages of individual development and on the other side as the major issue of the person's "socialization".

One could conceive high level logical operations or highly abstract conceptual objects as

very dense stratifications of legein and teuchein, which have been accumulating in long periods of history of thought, but are being received “at once”, as identical to their “overall” signification, which “should be preserved stable”. And, while on a higher level (strata) they function upon operations, which are, at least, differentiated, in depth all differentiations are stratified Sets of elementary Set operations. Since in legein nests the imaginary as in teuchein the functional, Castoriadis, concludes that “imaginary institutions” are to be found(ed) in the minutest function of thought.

The aforementioned indicate that two places, the object of though and the thinking subject, are being constructed both, simultaneously, upon the edge of a thinking process, as it proceeds, at the same rate, as it is being itself constructed. Consequently, the “apparent border” between the object and the subject, (which have acquired both equal state of different character), is becoming a matter of positioning of this edge. The “being” of the subject is always relevant-relative (but never the same) to the “being” of the object and vice-versa. This is roughly, what Castoriadis calls: “**being towards**”. Being towards is an ongoing process, not an object neither a subject, which requires “creative imagination” from the subject, in order to be maintained. A number of unclear issues, as those arising from the need for “places” or the setting of “boundaries”, which are otherwise seen as “fundamental strata”, are to be clarified through the use of Psychoanalytical terms, received mostly from Freud and Lacan.
A hypothetical (individual or social) subject hypothetically produces from the depth an (historically and dynamically constantly re-located) infinite amount of imaginary and functional (as well as combinatorial) possibilities (modes), in a flow, which Castoriadis terms as “**magmatic state**”. This state is emerging on the surface as creative imagination (the ability to form “imaginary” institutions). Magmatic state lies itself beyond “ensemblistic” logic, as it is the necessary term for ensemblistic logic to function, and, for Castoriadis, it can be, as a description, compared with the ancient Greek description of Chaos (being something other than total disorder).
Considering that, as the Greeks would suggest, a “birth from Chaos” is the birth of Democracy. Similarly, after a long and complicated argumentation Castoriadis terms the “**projection of autonomy**”, which describes a condition of societies, consisting of self-determined members, which are aware of the fact that themselves, in awareness of self-determination, form their institutions.

In order to exemplify, by quotation, the ideas exposed on a micro-scale, as they are projected

on a larger perspective, it is useful to present a few short passages:

Even if I deduce from A all the preconditions or consequences, which it requires or produces, if I clarify all the rules to which it is referring and which define A, in the fact that it is, such-as-it-is, I will be never, nevertheless able to construct or produce B. It is the same as to say, as far and to the degree that B is defined, that its definitions themselves cannot be defined by the definitions of A, these definitions are *others.* Or, the "being" of B is not a product of the "being" of A, but that as a "being" comes from *nothing* and *nowhere*- it is not coming-from *(pro-venit) ,* but it is arriving *(ad-venit)* - that it is *creation.*(ibid, 285).

Let us return to the issues of alterity [...]By saying that figure B is other than figure A, in the meaning we give here to this term, we say that from A to B there is *essential indeterminacy.* This evidently, does not mean that indeterminacy is total, that, whatever is determinable on B must be other than what is determinable on A. There might be and in fact there is always persistence and survival of some of the terms. The "reification" of these terms and the endorsement that the surviving terms are always and necessarily the "principal" and " essential" terms, is the metaphysic standpoint of *substantia-essentia,* a translation and purification within the "identificatory" reference system, of the social-historical institution of the "thing" (res), in the general sense. (ibid 291).

In its first " state" and its first "organization" - in the antipodes of what we mean by the terms "state" and "organization"- the subject, if subject exists, cannot be referring but to itself, a distinction between itself and the rest of the world is no and cannot be set. To the degree we can talk, in this context, about a "world" of the "subject", this world is identifying with itself. Proto- subject and proto-world are absolutely overlapping. (ibid 415).

Although the ideas mentioned until here, represent a small area in the thought of Castoriadis, they are crucial for its foundation. What is important to realize, when approaching these ideas, is that they are in fact very deeply aware of the genealogy of thinking, within the life of an individual (seen as-through biological, psychological and cognitive stratifications) or-and the archeology of Thought within societies. Therefore, his intention is not to raise the curtain and reveal the truth, but to elucidate the present state (the "projection-imperative of elucidation"), to his knowledge that it is only a node in multiple routes, leading to the next nodes. (The corridors in the labyrinth, as he calls them).

Although obvious that Castoriadis inherits elements of the Phenomenological and the Semiotic problematic, in my opinion he contributes in at least two issues: On one hand, he solves the problematic concepts of a static subject opposing, even in complemental relation, a static object, which both must be revealed instead of substantiated (produced-emerge). On the other hand, he avoids self-referentiality, by setting any system of significations in existence, only under the precondition of "something" existing "outside" this system.

Although Castoriadis himself was projecting his ideas upon music, seeing it as a space for improvisation, (where musicians exercise their autonomy, as in a laboratory of what an

autonomous society might be functioning like), it is not difficult, I think, to extract from them principles applicable on personal works, with a more stable form. Apart from the general principle of a work founded upon an autonomous, non referential-dependent or non-obligatorily justifiable "conceptual gesture", it is, I think, an important compositional kernel to understand formal elements of any scale as Sets, in the context of the aforementioned. (In terms of substantiation, functions- operations and, as result, significations, whatever they might be). In the sense of "being- towards", it is rather obvious, that a progression trajectory is been formed as much as it forms, thus it is not being imposed. Consequently elements are not modifiable-transformable "beings" but constantly "coming to being" together, "upon the turns" of the progression course, which, in terms, cannot foresee or exclude any general design. In my perspective, the differences between such a model and improvisation are, on one hand that it suggests mostly choice of (re)- decision(s) instead of mostly choices of options and, on the other hand it is based on conceptual- hypothesis argumentation, which exceeds questions of mood (mode).

One extremely important issue is the "axis" of possible-impossible", which sets the basic indeterminacy of the system. What it "does-does not do", "contains-does not contain", "operates upon- operationally excludes", (which can be analyzed from many points of view, or by the formation of various parametric sets) form the line "where it tends to - takes distance from", which is to some degree stochastic. Here raises of course the question, which kind of approach towards randomness seems appropriate to deal with this particular form of stochastic. Although empirical probability can be reasonably applied on the lower levels of operations, it appears non-relevant in operations of higher level, which are meant for conceptually denser but numerically indifferent formations. In this territory Logical probability seems more suitable, although this direction, in fact, creates the need for a selection system, which would be formed as reflection of the functions of "teuchein", minimizing mechanical procedures.

It is also important to notice that any process, in its motion, creates History, in an accumulative as well as qualitative manner. Therefore, what, on a previous stage of the Discourse appeared to be formed as an "external" or "heterogeneous" narrative, in this context it exists as an "inherent structural narrative", or in other words: the narrative of the genealogy of the compositional process itself, is, in turn, an outcome of the composition.

2. A. Badiou

A. Badiou was born in Rabat, (1937). He was from an early stage involved with the left in France, profoundly influenced by the events of May 1968, and "militantly" active on the Maoist side of the post- May far left movement. Considering 1977 as the year that signals the dying out of the revolutionary movement, his writing becomes more technical and complex, (Théorie du sujet, 1982, and his magnum opus, Being and Event, 1988). Nevertheless, it seems that his idea remains the same, in the sense of attempting to construct a large scale opus, which would precisely express the spirit of the Parisian May, through its French-Maoist perspective (denouncing Mao himself), in as much depth and elaboration as possible. Apart from being a professor of philosophy and a theater writer, he remains politically active, selecting mostly provocative and controversial issues.

Badiou forms in his work a network of relations-references to both continental and analytical philosophy. His fundamental departure point is that "mathematics is ontology". In particular he sees in Axiomatic Set theory one fundamental notion, "the ability to regard any collection of objects as a single entity". What set theory provides is precisely a way of describing terms whose only distinguishing principle is distinction itself. By introducing the (operational, in the reflection of ontological) terms **Consistent and Inconsistent multiplicity,** in order to describe **presentational** (mathematical or substantiated) opposite to **abstract** notions of multiplicity, he forms after a very rigorous argumentation the term "**count-as-one"** (one might interpret: multiplicity treated as singularity), attributing to sets consisting of subsets the property of being considered as one unit, in response to the question of the-one or the-many. On the other hand, by applying the "axiom of foundation" (one of the Zermelo-Fraenkel axioms of set theory, For any nonempty set X there is some y**belongs to** X such that $y \cap X =$ **void**), he introduces **void** as the counterpart of any inconsistent multiplicity, thus excluding the possibility of One of any kind, (One-is-not), in this way stating something that could be structurally (but not in the content) relevant to the magmatic state, in the terms of Castoriadis. From this point on, the axiom of foundation lies under most of the thoughts to be expressed, and as an analogy, makes them, despite their difficult formulation, easier to understand.

Badiou maintains that ontology is a "structured presentation" or in other words a "situation", while on the other hand he sees in unpresentable inconsistency the very "substance" of every consistent structure. **"The whole effort of Badiou's philosophy (as distinct from his ontology) has been to equate this unpresentable inconsistency of no-thing with the very being of every consistent situation, but to reserve the articulation of this equation to the subject of a truth procedure. Access to inconsistency can be only subjective: though it**

can never be grasped as the object of knowledge, it is occasionally possible to affirm its truth." (P. Hallward, A subject to truth, 93)

If one would extremely briefly and roughly define a situation as a state of inclusive representation of subsets (parts) as counted for one (or from a different perspective: the state of "knowledge"), then the central idea of Badiou's ontology is the idea that what the state seeks to foreclose through the power of its count is the **void** of the situation, (what the situation is not), and the event that in each case reveals it. An event, (as something that lies outside ontology), is a rupture in the "knowledge" of a situation and it triggers a **"truth procedure"**.

It is very complicated and difficult to locate what according to Badiou "truth" is, except that it is not "A truth". It is not a statement neither a permanent-essential state to replace temporary-phenomenal states. It is not certitude, nor something-in-itself. "Truth is the minimal consistency which indicates in the situation the inconsistency that it is". Or, "precisely as the truth of its situation, each truth, in its essential inconsistency, is an exposure of the "sameness" of being". If one would like to brutally simplify, then, truth-of-a-situation is the entry of the unnamable or the unknowable, through the rupture in the knowledge-of-the-situation, (the event), which will force the knowledge to be re-written. Furthermore, approaching truth one must simultaneously approach "**subject**", as a topology, a "local configuration of a generic procedure".

"What an event exposes is the void of a situation S, that is, the pure being of what it presents (what it counts as one), in the suspension of all re-presentation. The subject is, first and foremost, a response to this exposure, an attempt to articulate its implications. if the event reveals the void of a situation, it is from this void that the subject constitutes himself as fragment of a truth process. it is the void that separates him from the situation or the place, inscribing him in a trajectory without precedent. The subject is he who chooses to persevere in this distance from himself inspired by the revelation of the void- the void which is the very being of the place". (A. Badiou, Handbook of inaesthetics, (H) 88).

Strictly speaking, it is the truth that "induces" its subjects, and not the other way around. Truths are infinite accumulations; subjects amount only to finite "points" of a truth. The subject is nothing other, in its being, than a truth grasped in its pure point; it is a vanishing quantity of truth, a differential eclipse of its unfinishable infinity. The inventive truth that is tonal music or transfinite mathematics infinitely exceeds the finite investigations (musical works, theorems) made by those subjects called Schoenberg or Cantor, even though what this

truth amounts to at any finite stage of its accumulation will be made up solely of the collection of those works or theorems. (quotations of Badiou in Hallward, ibid, 142).

According to Badiou there are four types of truth procedures: Love, Art (inaesthetics), Politics and Science. As opposed to aesthetic speculation, "inaesthetics" describes the strictly intraphilosophical effects produced by the independent existence of some works of art. (H, 7). What art teaches is nothing other than its existence. It is simply a matter of encountering this existence, which means: thinking a thought. (H, 21). Or, instead of "formalizing the formless" and "purifying the impure", the sole task of an affirmative art is the effort to render visible all that, which, from the perspective of the establishment, is invisible or nonexistent.

Eventually Badiou is (currently) developing the idea that **Being is essentially being-there** (a *Dasein*, in terms of Heidegger), where being-there is conceivable in terms of relation. In order to arrive at the specifications of this relation (being and appearing) he is employing elements of mathematical Category Theory.

A fundamental issue of indeterminacy in Badiou's system nests in the occurrence of an "event". An event being intransitive to the particularity of the situation, that inserts unpredictability and incalculability to the "when and how" of its circumstances. A second issue of indeterminacy appears by the fact that an event requires a (subjective- faithful) decision in order to "produce" truth. This decision appears at first as the decision of an undecidable or as the valorization of something without value. Even so, any process initialized is unfinishable and open. It is an in-the-form-of-singularity (subjective) construction of an infinite generic multiplicity. Nevertheless, what diversifies this type of indeterminacy, to the ones described before, is the fact that, unlike their structure "(relatively) solid initial terms > uncertain outcome", it presents a structure of the type "uncertain initial terms > consequent outcome".
In my approach, it is not inaesthetics in particular the focal point upon Badiou's ideas, in the attempt to extract elements, which would guide musical composition, as inaesthetics functions on the opposite side of the required process. It is the utilization of Set Theory (in the context that incorporates axiomatic set theory, but goes further than that, finally to Parmenides), in the formation of Situations. A situation calls for a subject (a compositional "logical" mind) to decide upon the possibilities of making "visible" what structurally is lying outside this situation (as its void).

In a way, what happens in a model that follows Castoriadis, with small-scale overlapping flows, in this case occurs in large steps, or with incalculable gaps, preceded and followed by periods of apparent inertia. In a mechanism of pure logical operations (whether deriving from Set or Category Theories) their is a constant directionality towards **what-is-not-being-here**, although the particular new situation, which is going to realize this absence as "consistent presence" is decidable and under evaluation. This in-decidability makes the directionality unclear at close range, nevertheless in a large scale evident, as a trajectory. Two elements that can demand overturn of situations are, on one hand "saturation" of the situation (all known possibilities within are present) and, on the other hand, "self-enclosure" (not all but the same possibilities repeatedly appear).

A temporary summary

1.

Although Castoriadis and Badiou would disagree on a number of issues (the foundation of logic, the thinking operations, the (historical) substantiation of the subject, the accumulation of truths or the accumulation of significations), they do provide to one, which would, temporarily, take a distance from confronting the full consequences of their disagreements, a somehow complementary view towards the same direction. It might be postulated that where Castoriadis concludes, Badiou initializes his thought, or in other words, that Castoriadis describes the micro scale and the molecular forces, as if extracted from a (historically or consistently) given ground, of that, which Badiou describes on a macro scale, with massive energies, projected upon the generic, inconsistent space of possibilities.

When their systematizations are seen as sources for the creation of compositional models, apart from the (valuable) "Poetry of Ideas" they offer, they provide with means to:
a) Form basic units (sets) and relate them to each other (Legein-Teuchein or Set and Category

theory).

b) Form strata, accumulations and or situations (localizations) of these basic units.

c) Suggest methods and operations for the internal organization of these formations, providing reasonable structure and mobility.

d) Suggest concepts and methods to expand and subvert the formations in extremely meaningful ways.

e) Provide concepts and operations in order to design compositional trajectories, with theoretically infinite possibilities, witch can be also stratified, enfolded and expanded-subverted (as multiplicities-as-one).

f) Offer fundamental ideas concerning the general aspects of composition, without setting aesthetic terms-norms.

g) Maintain the subject as a central and-or decisive factor of any compositional process.

h) Require (a variable amount of) indeterminacy, as necessary term for the function of a process.

i) Maintain the "outer limits" of any composition "open". The "materia prima", the "fundamental terms-operations" and the "final outcome" cannot be decided.

j) Inherently set responsibilities upon the composer, which exceed the territory of technical articulation.

Although one might be tempted to use these "guidelines" in a mimetic way, that is, re-construct on purpose what he would think that illustrates theory, in fact they suggest a thought, which is not particularly suitable or inappropriate for any specific material neither can be, in principle, represented in an properly pre-designed manner. What they suggest is a topology of methods, rather than methods themselves, a "dynamic field" but not a corpus. This might seem from a certain perspective as a weak point, in the sense that, as far as I understand, they cannot produce (automated) "generators" of basic material, neither "generators", which would prompt the progression of a composition. However, generation can become possible if one abandons the expectation of a canonically functioning automation and adopts the idea of forming "local consistencies", based, in principle, on a non-mechanically activated condition or decision. In fact, such treatment is preventing the system from becoming artificially closed and continuous as well as from acquiring particular stylistic characteristics.

2.

In the first chapter, the main issues had been the ways of presenting contact points between the (subjective) experience of life and its "corresponding" naturalistic aspects integrated in the formation of multilayered (stochastic) narratives. In that context, the narreme was motivated by an exogenous source or mechanism, in a way that its "happening" would be always an elusive accident in the perspective of any theory. Having gone through the analysis of the second chapter, it seems further unnecessary that an accident would either stop or "freeze" theory and exile it outside of time. This is either because, (partly remembering the axiom of foundation and partly considering the narreme as a situation), the exteriority (in its particular character) of the two is itself a source of reasoning within the theory, or because the narrative accident transforms (trough teuchein) theory, (melds in the accumulation of significations, disappears as an unpredictable flaw and returns as a newly acquired argument).

Furthermore, having set, in the beginning, as "things of life", the realm where humans experience "themselves-exposed-to-what-they-are-not", we can say that the borders between each one of the terms participating in this definition have now become mobile and to some extend passable. Thus, the mobility within the quotes, seen on a granular level, can possibly offer to this definition the equivalent of what the clinamen offers to the molecule.

CHAPTER THREE

FORMING MUSICAL ENTITIES

(General concepts and basic terms, upon which a compositional process can be established).

To think is not to get out of the cave. It is not to replace the uncertainty of shadows by the clear-cut outlines of the things themselves, the flame's flickering glow for the light of the true Sun. To think is to enter the labyrinth [...] it is to lose oneself amidst galleries which exist only because we never tire of digging them; to turn round and round at the end of a cul-de-sac whose entrance has been shut off behind us- until, inexplicably, this spinning around opens up in the surrounding wall's cracks which offer passage. (C. Castoriadis, Crossroads in the labyrinth).

1. Any substantial identification (any specific being) is a product of constant ontological self-alteration, which is founded upon (magmatic in principle) self-institution, (which consists of theoretical signification, subsequent praxis and their recursion).

2. Any substantial identification, seen as a situation, can be forced to modification or collapse by (accidentally) encountering its void (been recognized as such).

3. Participation in a "truth procedure" is nothing other than a fundamental shift in the regime of possibility that structures a situation.

According to these, we can suggest intrinsically non-deterministic processes, which either from outward or from inward can define or set trajectories of operations upon procedures and material (forces and place), in terms of musical composition.

In the previous chapter two systems of thought have been presented, which are going to be simultaneously the paradigm for the further steps. This simultaneity does not indicate fusion (between thoughts that differ from each other). It is intending, as result of a personal decision, on one hand to enlarge-enhance-associate the similarities, so that not only one thought will dominate a space that cannot be dominated. On the other hand, it is suggesting a complementarity, for reasons of application, in one area of acknowledged difficulty. While the thought of Castoriadis has better access to micro-structural developments and tends to be blurry on a large scale, the thought of Badiou has sharpness on a wide range but tends to lack specification on the micro-scale. Keeping in mind their differences, as issues not to be addressed at the present moment, I try to hold to their similarities to the degree that this is not producing an eclectic combination. What I consider as most important is that, by doing this, I

attempt to form an instrument which permits theoretically some equally clear, although not selfsame, understanding of the micro as well as the macro level of a compositional process. Artistically speaking, despite the theoretical compromise, it might eventually prove beneficial that (these particular) seeds of “dissonance” are being inevitably inserted in the same framework. But it is still premature to come to a decision on this matter.

This chapter will treat a number of issues, which are shaping my compositional practice(s). Following the principal idea of “being-towards” or “being-there”, practice needs two initial (hypothetical) fields: One is to-become “being”, indicating all the elements of “subjective character” (meaning two enfolded different things: on one hand, anything within the composition which is going to become “a subject” and on the other hand anything that will give evidence of the “composing subject”). The other is to-become “there”, (indicating, on one hand the place in which “subjects” will come to being and on the other hand the place in which the “composing subject” will become evident, as such). Both fields are theoretically “different” to each other, but they are set and conceived “at once” together.
At the same time the general idea requires two procedural generative motions within and across the two areas: One from the “magmatic” or “inconsistent” towards the specific and the other reversely. These motions will be realized in a number of methods.
Accordingly practice will be divided in working “upon areas” and working “upon motions”. Operating upon the diversified domains is going to be done to some extend separately, although this should be understood most of the time as a result of practical limitations, as formal precision would require an “at once” set area (or, better, two areas initially perfectly overlapping with each other), which would grow towards two directions, while similarly both motions should be simultaneously active, from the beginning.

Work will be split in two phases, indicating two directions: The first one, bottom-up, from the indiscernibly small, without character (yet) and confined, towards the large, particular and extensive, is going to give rise, (in terms of areas) to “entities” and “fields- places”, locally related to each other, (as an expression of emerging possibilities, in terms of motions). The second phase is top-down, from the generic towards the specific, will decide upon these

possibilities; define the strategies and the course and shape of the composition (representing the motions from, within, around and towards entities and places.) Obviously there is an amount of operations that belong to the second phase, which exists in the first phase too and vice versa, but the separation remains clear. These two phases are going to occur in turn, in overview of increasingly larger areas of a composition. Their meeting points as well as their procedural relations form an object of discussion.

If in need to describe in short the compositional process in general, it would be: performing sequences of indeterminately structured interventions upon arbitrarily formed and situated matter.

1. FIRST PHASE (bottom-up).

The **first step** of the first phase consists of producing a quantity (a collection) of material, which would represent something similar to the sculptor's clay, a substance that is equally neutral and crucial, replaceable and unique. My intention is to form this material in a way that, at a very low, almost unnoticeable level, it will contain some property, which when enlarged or highlighted will give a characteristic result.
The types of materials usually collected are deriving from the following methods:

a). Cauchy and Wiener type sequences of stochastic processes in a number of variants. The length of these sequences can vary from a few seconds to several minutes. The structure may be very simple or quite complex.

b). Sequences of transformations, with a random element, of lists (stockpiles) of metric (rhythmic) values, which produce a (variably) semi periodic texture of variable density.

c). Morphemes, short in duration, non extendable in construction, clusters of events, which may or may not have a formal approximation.

d). Simple gestures of variable length and duration, which are designed upon visual information or in reference to actual physical gestures. They are also produced in variations.

e). Recordings of "improvised" sequences, performed upon natural sound sources, which might be musical instruments or not. The point of interest is the territory where the physicality of the musical sound and the musicality of the non-musical sound approach each other. This comment applies on both; the timbre characteristics of the sounds themselves as well as the gestures, which have been employed in, order the sounds to be produced.
The improvised sequences are created with the help of "instructions" (notated or graphically notated, stating the location and the amount of freedom of interpretation) or of "descriptions". By this I mean non-formal, verbal explanations, of how to interpret a "pattern", for example a verse of a poem, a paragraph of prose or a suitable painting.

The aforementioned kinds of materials represent a list of preferences. This list might be enlarged and modified.

The first two types of materials are produced algorithmically, with the assistance of programs as AC-Toolbox, (mainly), and Max-Msp. The outcome is either preserved in the form of a midi-file (in order to be used in the production of a multiplicity of sounds) or it is directly transformed to sound (with the use of the Nord-Modular environment, Super Collider and MSP.
Alternatively, the sound can be produced by the used of pre-recorded samples of instruments. In this case attention is given to avoiding the imitation of the instrument. For this either a technically impossible performance is constructed or impossible sounds (in terms of register, polyphony, envelope characteristics) are obtained.

In general the initial materials are meant to provide some antithetic and –or heterogeneous tendencies, (which can be multiply grouped), between formal and informal, temporal (suggesting different types of temporal behaviours) and extra-temporal, conceived and acted, open end closed, extendable and fixed, abstract and concrete, invented and discovered. The particular appearances of these tendencies are being thought as the peculiarities, which are going to induce the specific character in the generative processes to be applied. In fact, these tendencies are the organization principles for the formation of the primary Sets (ordered or not). These are the "genes" of a composition. And somehow these genes must be taken into

account but not be pre-composed, in order to open an area of alterity and accidental, upon the initial circumstances. Even more, one might describe this step, as dropping and then lifting some fishing net, in a "pond" with contextually important objects in its bed.

In the **second step** of this phase the internal construction of the materials produced insofar will be temporarily forgotten. They are going to be treated as "found-objects", so that some "force" is going to be exerted upon them, in order to introduce them to conditions that are not arising from within but imposed from outside. These external conditions, generally speaking, of the same character as the internal ones, can be temporal, frequency (pitch) related or timbre-related. They can be defined either by the parameters of a "mechanical (or algorithmic) process" or by abstract, non-calculable decisions. Generally, this is a step where a large number of "engineered transformations" will be produced, either with the means of the analogue studio techniques or those of granular synthesis.

a). Fragmentation would be the process to alter the density of an object (Cauchy process), while Segmentation would adjust its manifestation in time (a walk or a conditional appearance).

b). Contraction and expansion adjust overall temporal and pitch behaviours. This, (whenever possible), can be performed in a variety of ways or scales and in successive steps, altering considerably the initial objects.

c). "Engineered processing" is also adjusting the timbre or the "character" of objects, in successive steps under the same or different directions (parameters).

These processing steps create a number of variations, which should be considered as copies, multiples and-or derivatives of the initial objects, as seen from a number of "deforming" mirrors. This view either enhances or amplifies whatever would be perceived as their original properties, or it erases it, opening the chance for new identities to be formed. The superimposing of the variations can express these tendencies in a more vivid way. Amplification can be shown as multiplication (when all variations tend towards the same direction) or as augmentation (when the variations tend to neighbouring directions, thus enlarging the initial properties). A clear, accumulative overview of the "history" of the

processing can be shown in the case when the initial object is exhibited, “wrapped with” (surrounded by) its derivations. This technique can be applied in interesting ways, because the particular manner it will be performed exposes well the properties targeted, the operations employed and the significance that time had in the execution of these operations.

[What is difficult to describe, as it is somehow elusive and laborious, is the relation between the issues mentioned in the second chapter and the way they are being applied in practice. As an example, the analysis of the metaphorical term “enhance” can give an indication: Enhance, in reference to an initial object suggests addition, multiplication, complementation or intersection? Does it suggest replacement, extension, interchangeability or mutation? (In terms of logic) does it suggest an argument (syllogism) or a statement; is it a predicate or a reduction? Is it causal or causative? Does it suggest a structural modification or does it function as an equivalent? Is it directionally interpretable or equivocal? Does it suggest a vector or a surface? Does it create gaps or compactness? Does it imply or reveal the interference of an action or is it a stasis that conceals its generation? Does it overshadow or does it recall whatever it does not contain?]

On the other hand, the superimposition of conflicting or contradictive variations, although rarely usable, is a good tool in analysing the misfortunes of this stage, which, in the long term, should have their participation, seen in the affirmative as well as the negative way, in the directionality of a composition. Furthermore, it makes clear some “limits of ability” or “limits of possibility”, which are to be taken in serious consideration for-in the deployment of the process.

In the **third step** of this phase the amounts of loosely connected materials, created insofar, will be organized in a way that will produce either more solidly decided “blocks” or more clearly structured “situations”. These entities that previously were handled as objects, now are becoming (in a technical manner) local “subjects”, in order “being(s)” and correspondingly “there(s)” to come to existence.

Seen as “blocks”, the materials are sets, (multiplicities-as-one), openly available to be related to other sets, in terms of accumulation, morphisms and intersection, as well as in terms of combinatorial operations upon their perceived or decided “identities”.

Seen as “situations”, they are treated as closed and localized bodies, which are not to undergo any internal modification, but are to receive responds only from “the outside”, in the forms of continuity and discontinuity or broader defined: “connection” or “disconnection” (“de-liaison” would be the term borrowed from Badiou).
In order to arrange and lock the locality of the situations a number of tactics will be used. With the help of AC-Toolbox, “time grids” or “entry-delays” will be constructed (in the form of midi files). Time grids indicate points, which allow (or forbid) the occurrence of incidents, leaving the actual occurrence upon decision. Entry delays determine obligatory starting and optionally ending points. It is possible that this arrangement appears in layers or dendritic formations, requiring a further planning of the terms that condition them.
It is also possible that forming situations can be done upon initially non-measurable means. A gesture, a notion of shape, volume or (a non rhythmically conceived) pulsation can be such means. Temporal arrangement can be the outcome of some condition. As a simple form of it, it can be decided that the occurrence of particular incidents on one layer triggers certain incidents on another layer. This technic can receive a large amount of inventive variations.

Alternatively, constructing blocks and situations can be done upon the evaluation of the emergence, produced by the stratification of materials. In this case, intuition, trial and error, chance and patience play an important role. Emergence can create distant variations of practically the same material and most important, it can ascribe unexpected and unforeseen properties to it, in such a strong way, as if they have been revealed instead of “affixed”.

Blocks and situations can be formed upon methods dealing with their conceptually defined properties (based upon their “identities”). This area, practically requiring the exhaustion of the previous practices, marks the transition from the first to the second phase.

During these bottom-up steps I consider important to be aware of two elements:
As first, that each of the processed materials remains “in essence” autonomous”, it is attached but not adhered or assimilated. (Conflict is seen as equally important as accord).
As second, that the tendency to enhance or subvert each other, presented by the materials “themselves”, outlines in the clearest way, the tensions and the directions which are arising “from the inside”.

During this phase many of the operations that introduce or impose probability are borrowed

from the empirical “mathematical engineering” of randomness, although the non-deterministic character of the underlying thought, has itself little to do with this particular character of formulation. This is happening for a number of reasons:

a). The substantiation of indeterminacy in the “thought of the processes” has not been sufficiently discussed.

b). Although the “guidelines” emphasize on “subjective” actions and decisions, they require an element of automatic generation of randomness as well. It is possible to arrange that this randomness will appear in the shape of various tactics, but a direct reference to the methods of Stochastic Music, apart from efficient, seems also to be appropriate, in terms of aesthetic as well as structural reasons (being the most suitable to transfer the materiality of the “natural” under-layer, upon which a composition is constructed).

2. SECOND PHASE (top-down).

Whereas the first phase is about forming “places”, the second phase is about the mark of what is “without place”. Originating in Badiou’s “Inconsistency” and in Castoriadis’s “Magmatic”, conceiving "thinking" as a dynamic (irresolute) process of elucidation (Castoriadis), or as a prescription (constitution) of truth (Badiou), it is on the activity of thinking, targeting towards that already present, to draw the trail of what can only be subtracted or reflected.

Activism upon imperatives

In a manner of speaking, the means and the methods are available (subject-situation-event, and-or legein-teuchein), but they do not come into being unless called. And the way to do this does not involve contemplation but “thought-action”. Upon a ground, (which is “truth” for Badiou and “elucidation” for Castoriadis) the motivating action takes the shape of an imperative or a projection (fidelity to the Event and Autonomy respectively).

Similarly this phase of a compositional process is meant to deal with the general ontological "support" as being assembled, penetrated, interpreted or discharged, with-by the energies of a consciously constituted frame of "activism", (addressing at its very edge issues as voluntarism and-or decisionism).
This activism (interventionism) upon what is already there, (as following Castoriadis: any thought, in order to be made requires an already made thought), will be experienced upon the formations (the consistencies, the assembled identities), through motions (and leaps), (which are also, in turns, enfolded consistencies and "institutions"), as "trajectory" of the composition.

Trajectories

Any truth is the (local and temporal) truth of its situation the same way any elucidation is the elucidation of the present state. Accordingly, it should be impossible to imagine trajectories of general application and of systematized form. Put in other words, a trajectory is not the expectation for something to happen according to a design, but the awareness of something that has happened, through (but not as) designations. This is eventually leading to the idea of a work, which is not an "object" but a "diagram" or a "location specific registration".
The term "trajectory" itself is partly incorrect, since it is not (always) possible a trajectory to be continuously registered. Still it is preferable, as it states an abstract time-sensitive, versatile way to describe the idea that all the actions that either the appearance of the Void or the signification (structuring) source are undertaking transform "formations" into "form" as their trace.
In other words the work is not "an explanation" (an example, a localization) of a formal but of a formative idea; a constant gambling on a self-construction, a self-discovery.
As work consists of layers of primary processes, it is consequent to proceed with layers of trajectories as well.

The scope of aspirations or ambitions of the trajectories can be obviously vastly extensive and

extremely demanding (from the musically alert to the socially militant, indicating all the possibilities of enfolding one into the other). Furthermore it is in effect impossible to separate and catastrophic to disconnect, (being acts of forgery and hoax), their "philosophical poetry" from their technical aspects. Bearing this in mind, further discussion will concentrate on the methods, seen as the "palpable" thread guiding to the abstract.

In general I would suggest two large schemes, as to roughly approach possible trajectories: On one side they give shape, (in a broad(er) range), to what retains its character as "micro-scale self determination" (a scheme of Parataxis). On the other side, they integrate or enfold units into "corpuses" (a scheme of Hypotaxis). In this sense they function similarly to the low level, micro-scale operations, performed during the formation of "places". What differentiates trajectories from places is that latter are solitary, peculiar and "identifiable" while the former are singular, generic and "deprived of identity", (in the sense that they do not "represent" but are only "represented-upon").
It might be a question whether a trajectory, although different than a "situation", should be also treated as a situation itself. A primary comment on this is that while a situation, as a set, is (temporarily, upon the grounds of a trajectory) described and closed, a trajectory is not. If it should be somehow identified with itself, then the next step would be to produce this kind of thought, which being tautological, antithetic or dialectic, is in its depth cyclical. In this sense, a "flow" been set opposite to a "stasis" creates circles ad infinitum. A trajectory is not a second order logic or a meta-language, forming "sets of operations", which, in turn, can be replaced by other "sets of operations". Quite on the contrary, trajectories are the expression of the "non-assembling" principle, thus the point of their function is not to form stable and repeatable collections of actions but to express constant self-alteration. Therefore, a "flow", as a trajectory, is not what it is, due to the existence of a "stasis" (as its void), but it is due to the fact that it can be broken down or disrupted without causing the disruption of the processes that have formed it. (These processes being traceable around the particular location where a particular flow is to be found). Consequently, as soon as a "flow" becomes a fixed method, an "assembled situation", it ceases to be, as a trajectory, or, put in other words, turns into a "cul-de-sac" which has to be bypassed. The aforementioned indicate the importance of "using" trajectories in order to actively "target" something; as tools of investigation or clarification and not as neutral routines, which presumably are going to achieve something by their mere application.

As far as it concerns the generic element, a trajectory can concentrate upon a single direction (simple or complex) or can combine a multiplicity of directions. For example, the modestly simple idea of a "flow" can be more complexly refined as a "uniform continuous (quasi-mechanical, engineered) flow" in juxtaposition to a "flow, perceived through the observation of (discrete) displacements of objects" or "a constant alteration of states, within which some elements remain unaltered" or "a temporally associated occurrence of groups of certain types of incidents upon a static layer" or " a (constant) continuous transition of weightiness between layers of incidents". In addition, any of these flows can be combined with the rest, and, further, can point to something else; a flow as a physical outcome (ergodic, energy dependent, entropic), as continuity opposite to discontinuity, as complementarity to static, as transition from-to or as perpetuity. A trajectory, which would equally refine and employ, for example, types of discontinuity opposite to those of a flow, would follow (incorporate) two directions.

The directions of relatively simple trajectories can be, in their overall intentionality, on one hand behavior-oriented or gestural, (in other words, descriptive or expressive), and on the other hand paradigmatic (exegetic) or heuristic-historic (evolutionary, combinatorial, accumulative).

Enlarging the range and number of trajectories is in principle an action, which requires the simultaneous "targeting" of a larger number of objectives. Within the questions: "what-is-(not)-there" and "under which condition(s) it is (not) there" one can find an infinite amount of possibilities in order to re-formulate an infinite number of accessible routes to deal with the possible answers.

Ruptures

Within this scope, the “elucidation of-and-through self-alteration” as well as the question of “truth” will be faced under the two possible conditions of a radical modification of terms (an Event or a new institution): on one hand as “connection” (an adherence to the previous situation) or as “disconnection” (a Rupture). It is legitimate that a rupture can be forced into the horizon of the possibilities, by a sudden infusion of new elements, as long as this can be somehow supported by the course of the construction, either in an instance when the limits of what-there-is have opened gaps (there is nothing, empty space), or when the conditions open themselves to the prospect of a transformation or a replacement. Since there is not a reason to limit the material only to this “present-ed” in the initial stage of the composition, ruptures are “allowed” to happen freely. In a deeper sense a rupture is expressing the self-cancelation of the whole compositional process in an affirmative way; to the extend that the composition tends to identify with its processed material and recognize itself through its own accumulation, a drastic modification of grounds points out the principal energies, as they “outlive” their investitures, and reconfirms the materials, as they “survive” their significations.

INSTEAD OF A CONCLUSION

The second part of this thesis concentrated upon two models of indeterminacy structurally different than the naturalistic-thermodynamic. The non-deterministic aspects of the models have been outlined but not systematically explored. This is to a certain extend due to the fact that their "substantiation" requires a reformulation of 'randomness". It is obvious that a part of "random" is now depending on (organized) decision, (something that might be called locality, circumstantiality, chance, accidental or incidental signification). There remains another part, which is still covered by the empirical random processes, as known from the thermodynamic model, although their context has been modified. Nevertheless, it appears that there has emerged an area, which cannot be satisfied by the two previous conditions of "probability". And even more, as expected, this area stays unclear in the shadow, as long as a condition suitable for it does not bring it to the foreground. The search for the suitable condition requires a re-discussion, within the scope of the compositional context, of the interpretations of chance-probability in general.
Given the options, (frequency, logical, propensity, epistemic, predictive, decision-theory probabilities), it is becoming evident that there is a number of possible conceptual foundations, (not all of them in principle compatible with the initial environment), upon which the discussion can be conducted.

Furthermore, a systematic exploration of the models (which is not to be meant as systematization of the models themselves) requires a deeper understanding of Axiomatic Set Theories as well as Category Theory.

The intention is that, through this systematic exploration, what at the moment is a corpus of principles and guidelines will produce eventually detailed and specific compositional models.

Furthermore, (although it always dominates the foreground), it still remains the most remote and inaccessible to be tackled in its generality: the development of the discourse around the compositional imperatives.

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Content of the submitted CD

The CD contains four works that were composed during the period of the Master's research:

1. Flux-3 (fixed media, 2 channels), 2010
2. Engines (fixed media, 2 channels), 2010-11
3. La semaine saglante I (fixed media, 2 channels reduction of a 4 channels piece),2011
4. La semaine saglante II (fixed media, 2 channels reduction of a 4 channels piece),2011