Bouwkunde Reloaded

A new Eco-System

#1_ Research and Reflections

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Graduation Plan

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Introduction. The design studio originates from a theoretical body of knowledge which is meant to break with old paradigms and bring a new way of understanding and dealing with the complexity of our time.
We have been accustomed to a vision of the world in which the intervention of the individual or the collectivity are no longer relevant, as Guattari wrote back in 1989. Instead of a kick to the habit, as he was calling for, the present situation seems to be even more at stake due to the general crisis and the consensus, based on the anthropocentric historical approach, on the fact that there is a linear unfolding of chronology and that is now approaching the end of its trajectory. Most of the best, in fact, seems to be already in the past and the possibilities left for the future appear as finite. The question that we raise here is: how do we escape this anthropocentrism and model the future as really open ended? Or in other words: where does the novelty come from? And how can we create or design something new, that is not already pre-given in the past?

Overview of the design topic. The Design topic is a new faculty of Architecture for the TUDelft. The choice was inspired by the competition made in 2008, after the old faculty was destroyed by a fire. One of the main point of the competition brief, was the call for innovative concepts and solutions in order to be able to accommodate a large and complex programme, but also to design a building with an identity and at the same time a meeting place in which different categories of people can recognize themselves and feel at home.
Overview of the design approach. The approach embrace the so called Post-Humanism in the attempt to overcome the dimension of the single and reach a non-organic duration. Therefore the project will focus on the design of a system, which can deal with complexity but at the same time provide simple solutions.
In order to do that the process won't be oriented to the design of an object but rather to the creation of a "plane of consistency", which may trigger in a second time the emergence of an object.
The scale of the project particularly fits the approach. In order to be able to fulfill the program requirement it is necessary to deal with what Rem Koolhass calls "Bigness". As he explain "A paradox of Bigness is that in spite of the calculation that goes into its planning – in fact, through its very rigidities – it is the one architecture that engineers the unpredictable. Instead of enforcing coexistence, Bigness depends on regimes of freedoms, the assembly of maximum difference. Only bigness can sustain a promiscuous proliferation of events in a single container." (Rem Koolhaas, 1994).
Furthermore, the system presents an open structure. This means that the focus in not on the final form, but rather on the system of rules that shapes it. This way of constructing architecture cannot be defined neither as top down nor as bottom up, but truly relational. In fact although is about autonomous parts coming together, it is not the same as fragmentation: the parts form a whole, the properties of it are not the sum of the properties of the single parts.

Program and design strategy. As the project is expected to provide the best conditions for certain activities to take place, but at the same time to leave room for creativity and self organization to emerge and even interact with the built environment itself, a different way to deal with the program requirements has been chosen. Referring to the concept of stratification as Manuel De Landa is using it in his "Non-organic life", spaces have been organized according, not simply to their function, but to a certain degree of "stratification", that is to say according to a certain degree of freedom in the way matter and energy are organized. We are therefore distinguishing between highly coded spaces, which needs to meet certain technical or other specific requirements; partially coded spaces, which can be identified by a main function but also allows a certain flexibility; and flowing or self-organizing spaces, which can be appropriated and modified by the users or which afford different activities to take places without imposing a hierarchy. This different level of organization find its raison d'etre in the social model of high and low density networks presented by De Landa in his 2006's book.
High density networks, he explains, characterized by strong links are able to provide more resources to their members, but also to constrain them. Low density network, on the contrary, characterized by weak links, are less able to providing resources and constraints to their members but they allows novelty to comes in more easily.
The creation of areas with different potentials within one organism will allows matter and energy to be in a constant flow. Therefore any configuration of the system is not meant to be anyhow final nor stable. It would be more appropriate to refer to it as a metastable condition, in fact the system shouldn't remain fix but it should grow (or decrease) in size and transform itself over time.

Goal. On the premise that "closed systems" in nature and society are not fitted for survival or, in other words, they are too rigid to adapt and to evolve, the expected outcome of the design is not an object, fixed in its form.
The creation of a system with an open structure tries to accomplish a metastable (temporary stable) configuration emerged from a set of rules which will open it up to change and adaptation in time. A second goal of the design is to achieve a productive dialogue between the new faculty and TU Campus. This can be reach by avoiding homogeneity and reasoning in terms of difference (which is not diversity).

Theory and philosophy. Deal with complexity requires an appropriate theoretical background which can give relevance to the discussion, avoiding simple trivial arguments. In particular the project embrace the Ecologial thinking . To give a short explanation of what Ecology is, we can first of all say that Ecology is not a logic of discursive sets, which "seeks to delimit its object", nor it is based on language and on the
"interlocking of fields of signification" but, as Guattari writes, "it is a logic of intensities, the logic of self-referential existential assemblages, engaging non-reversible duration". This "logic of intensities" is related only with "the movement and intensity of evolutive processes".
As Kwinter points out, one of the critical components of the ecological thinking is "the open communicative interplay and integration of continuums that posses very different temporalities or rates of unfolding"

Therefore we can assert that this approach is not limited to a particular scale. What we are confronting with is rather a 'mesoscale'. To explain it in a simple way, we can think to the environment as a multiple-level structure, with smaller units embedded in larger ones, so that it cannot be reduced to a single level of description.

Research method. As we described, the theory driven approach of the studio, required a deep understanding of the terminology involved at both practical and philosophical level. Terms such as ecology, relation, intensity, change, difference, needs to deeply investigated. Acquire this knowledge in an active way, relating it to the field of architecture, which is our area of expertise, provided a frame of relations and influences in which the design is positioned.

Research work. The initial engagement with the theoretical and philosophical references results in the productions of a series of "text-objects" developed for the course AR3DSD070 Media Matters, complementary to the graduation studio. Those products consisted in pictures, models, texts which were triggered by particular concepts we were dealing with.
In parallel a research paper has been developed for the course AR3DSD040 New Urban Questions, setting the premises for the elaboration of the theoretical research which is feeding the design process.
At this purpose the design is not considered as a different moment, separated from the research. The production of models and drawing is not the reproduction of an initial idea, but is truly intended as "research by design". Each product assume a value in itself and for the way it may trigger the next step of the design process.

Relevance. The design acquires particular relevance in the debate on the value of architecture by proposing a possible alternative to the binary opposition between short-terms needs accommodates by temporary architectures and the pursuit of long-term duration which results in rigid monumentality.
The project will be able to accommodate the presents demands and, thanks to its ability to facilitate change, it will also be able to adapt to future needs.
This approach challenge also the practice which associate sustainability only with "green" architecture. What is considered sustainable in ecological terms is an organism that doesn't set as its goal its own survival but which is in constant relation with its environment, or in other words a "flexible organism within a flexible environment" (Bateson, 1972) .

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Embracing Ecology

A new Eco-system for Bouwkunde

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Abstract

"No problem can be solved from the same level of consciousness that created it."

(Albert Einstein)

The essay deals with the possibility of engage with architecture by breaking with the traditional method and praxes and experimenting new paths through the lens of Ecology. In fact, the traditional logic proved to be not flexible enough to embrace and to adapt to the complexity of our present situation. What we introduce here is the ecologic approach which will help us to deal with a variety of different fields and, at the same time, to cast new light on old unsolved problems.

Key words

Ecology | evolution | object | environment | relations | complexity.

Embracing Ecology.

More than ever today, nature has become inseparable from culture; and if we are to understand the interactions between ecosystems, the mechanosphere, and the social and individual universes of reference, we have to learn to think 'transversally'.

(Guattari 1989)

Introduction. The design studio originates from a theoretical body of knowledge which is meant to break with old paradigms and bring a new way of understanding and dealing with the complexity of our time. Therefore the theory inform every aspect of thinking and making architecture. Any representation as such is rejected.
The research embrace in particular the so called Ecological thinking. This is not only the choice of a method, but it has also a deeper political aspect, which comes from the will to engage with the contemporary situation and develop through architecture, a relevant contribution to the debate.
Our time, in fact seems to be characterized not only by a deep and wide-spread crisis, but also by a lack of hope in the future, as all the best seems to be already in the past. However this is not simply due to the so called death of ideology but, as Guattari explains, the reasons are deeper and more complex.
We have been accustomed to a vision of the world in which the intervention of the individual or the collectivity are no longer relevant and we got used to accept and give for granted the necessity to submit to a single power in the name of some kind of superior good, at the point that what we call "equality" is in fact a reduction of differences to a pre-established standard.
This situation calls for a change, not only on the surface, but a complete redefinition of both praxes and methods.

Transdisciplinary[1]**.** To be able to 'kick the habit' and reintroduce change in our society, Guattari in his 1989 'Three Ecologies' wrote that "we need to learn to think transversally"[2]. This opposes the traditional way in which knowledge is organized, which is based on the possibility to fragment the world in a myriad of parts, which can be analyzed and explained as separate. The world we are leaving in does not work in this way. Reality cannot be reduced to single units which work separately from each other. On the contrary, "alles ist Wechselwirkung" [3] to use the words of Alexander von Humboldt, considered as at the origin of Ecology[4].

1 'Transdisciplinary' connotes a research strategy that crosses many disciplinary boundaries to create a holistic approach. It differs from 'interdisciplinary' because the latter concerns the transfer of methods from one discipline to another, allowing research to spill over disciplinary boundaries, but staying within the framework of disciplinary research. Online source: http://en.wikipedia.org/wiki/Transdisciplinarity

2 Felix Guattari, "The Three ecologies ". *New Formations 8*. (1989).

3 "Everything is interconnected" or better, "All is interaction" in Alexander von Humboldt, *Essay on the Geography of Plants*. (Paris, 1807).

4 See: Sanford Kwinter, *"Ecological thinking"* (speech made during the Symposium Protoecologics , organized by Alisa Andrasek and Bruno Juricic, Rovinj, Croatia, August 6-7, 2011).

Therefore to engage with the complexity of the contemporary environment we need an approach that does not fragment the reality, but as Beatson and Guattari call it, an ecologic approach, that embrace reality 'transversally'. Furthermore, the reasons why we choose ecology are that Ecology is free of any reductionism or determinism. In fact, Ecology, on the contrary of history, is not a logic of discursive sets, which "seeks to delimit its object", nor it is based on language and on the "interlocking of fields of signification" but, it has a different logic, as Guattari writes, "it is a logic of intensities, the logic of self-referential existential assemblages, engaging non-reversible duration"[5]. This "logic of intensities" is related only with "the movement and intensity of evolutive processes".[6]
As Kwinter points out, one of the critical components of the ecological thinking is "the open communicative interplay and integration of continuums that posses very different temporalities or rates of unfolding", from which follows that Ecology is not limited to a particular scale. The environment, in fact, has a multiple-level structure, with small units embedded in larger ones, and it cannot be reduced to a single level of description. Thus what we are dealing with is rather a 'meso-scale'.
Moreover, Ecology doesn't conceive anything like submission or consensus or, in other words, there are no transcendent criteria which "overrule the diversity of a population in the name of a shared intent or superior good"[7]. There are no ideal nor standard to reach: it's the end of Functionalism as such. Ecology supports only relations that Stengers defines as 'reciprocal capture': a stable relation in which heterogeneous terms are reciprocally working for the maintenance of the other's existence.

Ecology & Architecture. In order to illustrate the relevance of Ecology for the research in architecture, let us briefly tackle three main aspects of the debate about architecture.
We claim here that, through the lens of Ecology, we can finally overcome the traditional way of studying architecture as a discipline which seems to revolve around binary choices.
First of all, when we look at architecture and the built environment we always have to deal with the dualism between an object and the context. What Ecology makes clear is that there is no such a thing as an organism (or a building) separate from its environment, but everything revolves around their relations. In fact, Bateson in his 'Ecology of mind', claims the consubstantiality and continuity of an organism and its environment, and borrowing from biology, it explain i.e. how Darwin was wrong about the identification of the unit of survival under 'natural selection'. Today, Bateson argues, we should acknowledge that the unit of survival is " a flexible organism-in-its-environment."[8] The idea of a flexible organism has already been introduced by population geneticist, who, observing that artificially homogenized populations, i.e. of domestic animals or plants, are scarcely fit for survival, introduced the need of heterogeneity in the survival unit. With Bateson we recognize the need to add also the flexible environment at the same level of importance of the flexible organism. Therefore, as there is a constant feedback loop, a mutual self-regulating mechanism in which organisms and environment evolve in parallel, thus a building influences the environment in which it is located and at the same time it is influenced by the environment itself.

5 Guattari, *The Three Ecologies*
6 Guattari explains that by using the world 'process' as counterposed to system and structure, he "seeks to grasp existence in the very act of its constitution, definition, and deterritorialization". In Guattari, *The Three Ecologies.*
7 Isabelle Stengers, *Cosmopolitics I*. (Minneapolis: University of Minnesota Press. 2010), 35.
8 Gregory Beatson. *Steps to an Ecology of Mind*. (San Francisco: Chandler Pub. Co., 1972), 319.

Second, when we look more at the practice of architecture, it seems that we should distinguish between form and process. However, as a matter of fact, form is a product of process.
Ecology goes even further. We don't need a distinction between product and process because free from the slavery of platonic ideas, of a pre-established perfection that all the things should strive to achieve, we work to actualize through a positive act of creation, the virtuality which is transcendent but not transcendental. Therefore any step is not logically necessary, but only contingently obligatory. This is also the end of representation as we used to know it. The claim in fact is that there is no representation as such but everything serve its own purpose. A drawing, a model is not a representation of an initial idea, but it is an artifact in itself, which might be able to trigger certain reactions, which cannot be predicted in advance. Therefore the design itself is not considered as a different moment, separated from the research, but truly 'research by design' and vice versa.
Third, let us have a look at the attempt to combine tradition and innovation. Education in general, and the architecture school in particular, are the ground on which the two come together. However most of the time, institutions, for the way they are structured and organized, are not able to transform and adapt to the present demands.
We can define institutions as 'high density networks'[9], organization characterized by strong links that are able to provide the necessary resources for their members but, at the same time, to constrain them. Institution are based on identity and rules, 'moments of coding', as Massumi[10] would call them, that allows to capture and constrain change. Moreover they are hierarchically organized, which means that, as Deleuze explains, " the system preexist the individual who is integrated in an allotted place"[11].
These characteristics result in a general failure to adapt. According to Guattari, the way to escape this rigidity would be that "any educational or therapeutic institution, or any individual course of treatment should strive to achieve the permanent evolution of both practice and its theoretical framework."[12] How to achieve the ability to adapt and accommodate change in architecture is the main question that this research will try to answer.

Research work. As we already said, research and design, product and process cannot be regarded as separate and there is no ready-made recipe to lead us from theory to practice. We can truly say that what is left is only action!
Let us imagine a field, a 'plane of consistency', which we are populating of artifacts, words and references. In this way we don't act as the architect-god which is determining an object in all its parts, but we accept the reality in its complexity and, by giving some space for the unexpected to happen, we try to saturate the field in order to trigger the emergence of the object out of heterogeneous parts. However this has nothing to do with fragmentation: the parts comes together to create a whole, which properties are not the result of the properties of the single, but depend on the relations that are established in time.
The logic here is not 'arboreal' but 'rhizomatic'[13]: it's a logic of the 'and', in which there is no beginning, nor end but it's only going from the middle to middle. And the middle itself should be regard as an attitude, never as an average.

9 Manuel Delanda *A new philosophy of society: Assemblage Theory and Social Complexity.* (London: Continuum. 2006), 35.
10 See: Brian Massumi, *Parables of the Virtual. Movement, Affect, Sensation.* (Durham & London: Duke University Press. 2002), 70.
11 Gilles Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia.* (Minneapolis: University of Minnesota Press, 1987), 17.
12 Guattari, *The Three Ecologies.*
13 We are referring here to the 'Rhizome theory' formulated by Gilles Deleuze in Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia.*

In fact, in Deleuze's words, the middle "is where things pick up speed."[14]

Outcomes. In order to be able to fully engage with the ecological approach, a deep understanding of the terminology involved at both practical and philosophical level was required. Terms such as ecology, relation, intensity, change, difference, needed to be deeply investigated. Acquire this knowledge in an active way, relating it to the field of architecture, which is our area of expertise, provided the meshwork of relations and influences that we have been describing in this text and in which the design is positioned.

The initial engagement with the theoretical and philosophical references results in the productions of a series of "text-objects" developed for the course AR3DSD070 Media Matters, complementary to the graduation studio. Those products consisted in pictures, models, texts which were triggered by particular concepts we were dealing with.

In parallel, a research paper has been developed for the course AR3DSD040 New Urban Questions, setting the premises for the elaboration of the theoretical research which is feeding the design process.

Furthermore a new cartography has been develop within the framework of the design studio AR4DSD020, which was meant to describe the qualities (rather than quantities) and the tendencies of the site and the program chosen for the design. We use the word 'cartography', to stress the fact that our analysis was not the retroactive 'tracing' of a de facto situation, but, by reasoning in terms of differences, the 'mapping'[15] of the 'capacities'[16] of the place at different scale levels.

14 Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia.* 21.

15 To know more about the difference between 'tracing' and 'mapping' see Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia.*

16 Capacities are not functions. In fact, while functions are limited, the capacities of an object are virtually infinite because they depend on relations and they are scale-less. To know more see: Manuel De Landa, *Deleuze and the Genesis of Form,* (1997).

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Field and Architecture

An Eco-logic Approach

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Abstract

The contemporary situation, which Guattari doesn't hesitate to name as an "unprecedently nightmarish historical period"[1] seems to be characterized not only by a deep and wide-spread crisis but also by a lack of hope in the future. This is not simply due to the so called death of ideology, reasons are deeper and more complex. First of all we got used to accept and give for granted the necessity to submit to a single power which can decide for all, in the name of some superior good. We are prisoner of habits, so that we witness the destruction of democracy as something unavoidable. This situation calls louder and louder for a change. A change not only on the surface but a complete redefinition of praxes and models which could enable us to reorient the actual situation towards a really open-ended future.
The traditional ways and logics have proved to be not flexible enough to embrace and to adapt to the complexity of our present situation. What we introduce here is the ecologic approach which will help us to deal with a variety of different fields and, at the same time, to cast new light on old unsolved problems.
The introduction gives a short account of the complexity of the present situation, the state of crisis and the transition from outdated models to an unknown future.
The main body of the essay is divided in two sections. The first one is meant to inform the reader about Ecology.
In fact, to be able to engage with the complexity of the contemporary environment we need an approach that does not fragment the reality in a myriad of fields, but, as Bateson and Guattari call it, an 'ecological approach', that embraces reality transversally[2]. Ecology refers to questions of process and, avoiding any reductionism or determinism , it eliminates the dualism between individuals and environment by claiming their consubstantiality and continuity. The second section turns the discourse to architecture and gets over the notion of architecture as an object separate from its environment.
The conclusion will provide some further reflections on the role of the architecture and the meaning of architecture in the contemporary city.

Key words

Ecology | Architecture | environment | field | difference | complexity | relations

1 Felix Guattari, "The Three ecologies". *New Formations 8.* (1989).
2 Guattari, *The Three Ecologies.*

1. Introduction

"All people are dead, save for those who know; and those who know are dead, save for those who practise; and those who practise are all astray, save for those who act with right intentions; and all those who act with right intentions are all in grave danger."[3]

(Dhu'l Nun circa 820)

Deterioration of conditions. Destruction of the environment, economic crisis, alienation from the society. The future that fifty years ago was full of every possibility, has become an inconvenient topic.
The "current, unprecedently nightmarish historical period" as Guattari defined the present time, seems to claim an unfolding of chronology which, based on the anthropocentric historical approach, is reaching the end of its trajectory, as most of the best seems to be already in the past. How to escape this anthropocentric need for beginnings and ends and model the future as really open ended? Let us keep this question in mind because the answer could emerge in the next sections, and first take a deeper look to the situation of nature, socius and psyche in the current time.
The opening questions here is what happened to the 'natural' environment? We use to consider Nature as a source of energy and material meant to support all the human activities. But in the name of progress, we have been systematically polluting, urbanising, and destroying this crucial environmental support system. The last hundred years have dramatically proved that our 'unlimited supplies' not only have a limit, but also that the whole notion of the environment as an energy source for humans is wrong.

"…if an organism or aggregate of organisms sets to work with a focus on its own survival and thinks that that is the way to select its adaptive moves, its "progress" ends up with a destroyed environment. If the organism ends up destroying its environment, it has in fact destroyed itself."[4]

(Bateson 1972)

What Bateson so clearly express is that Darwin was wrong about the identification of the unit of survival under 'natural selection'. Today, Bateson argues, we should acknowledge that the unit of survival is " a flexible organism-in-its-environment." The idea of a flexible organism has already been introduced by population geneticist, who, observing that ar-

3 Dhu'l Nun, in Whitall N. Perry, *A Treasury of Traditional Wisdom*. (London: George Allen and Unwin, 1971)
4 Gregory Beatson. *Steps to an Ecology of Mind.* (San Francisco: Chandler Pub. Co., 1972), 319.

tificially homogenized populations, i.e of domestic animals or plants, are scarcely fit for survival, introduced the need of heterogeneity in the survival unit. With Bateson we recognize the need to add also the flexible environment at the same level of importance of the flexible organism.
Speaking of environment, we shouldn't forget that, unfortunately, "we live in a time when it is not only animal species that are disappearing; so too are the words, expressions, and gestures of human solidarity"[5]. Guattari is warning us: "it seems equally clear that we are seeing an irreversible degradation of the traditional forces of social regulation". Therefore also the socius needs to be reconsidered. But what Guattari and this essay agree upon is that the response could be in no way a 'return to the past', as some "modernist capitalist formations" are trying to promote.
Guattari's analysis at this point becomes very precise. What he calls "integrated world capitalism" (IWC) is, he argues, growing stronger by moving its centers of power away from the structures of production of goods and services and "towards structures of production of signs, of syntax, and - by exercising control over the media, advertising, opinion polls, etc. - of subjectivity". The mechanism of accumulation of subjective power leads to what Guattari refers to as a "kind of existential rigidification of actors in the domain of the social".
What emerges from this discourse is that as the IWC has become at the same time productive, economic, and subjective or in other words "its determinates are at once material, formal, final, and efficient". The level at which it operates is not anymore the social one, but it has entered "the most unconscious levels of subjectivity", and by "the introjections of repressive power by the oppressed themselves", it has become strong enough to disturb and condition the opinion of the single. "Singularity is either evaded, or entrapped within specialist apparatuses and frames of reference."[6]

"The task facing us in the future is not that of seeking a mind-numbing and infantilizing consensus, but of cultivating dissensus and the singular production of existence."[7]

(Guattari 1989)

A call for redefinition. The conditions of the contemporary situation can no longer be ignored. As, already in the 80', Guattari was claiming, the time has come to "kick the habit" and to debunk the belief that some power elite or single brain will find a way out from the current crisis.
"If today, human relationships with the socius, the psyche, and 'nature' are increasingly deteriorating, then this is attributable, not only to objective damage and pollution, but to the ignorance and fatalistic passivity with which those issues are confronted by individuals and responsible authorities."[8] As Guattari argues, we have been accustomed to a vision of the world in which the intervention of the individual or the collectivity are no longer relevant. Therefore, whatever is the problem at hand, no matter of the extent of its consequences, we are more likely to passively accept it.

5 Guattari, *The Three Ecologies.*
6 All the fragments in this paragraphs can be found in Guattari, *The Three Ecologies.*
7 Guattari, *The Three Ecologies.*
8 Guattari, *The Three Ecologies.*

As Guattari continues, this is not just a matter of the so called 'death of ideology' or rediscover of some kind of universal value, "The decisive factor, it seems to me," Guattari says, " is the general inflexibility of social and psychological praxes - their failure to adapt - as well as a widespread incapacity to perceive the erroneousness of partitioning off the real into a number of separate fields". If we don't abandon the blind passivity and face with new eyes and new approach the complexity of our situation we will end up with what he calls "infantilization of opinion", the homologation of ideals and the destruction of democracy, or in other words the death of society as we know it.

"More than ever today, nature has become inseparable from culture; and if we are to understand the interactions between ecosystems, the mechanosphere,and the social and individual universes of reference, we have to learn to think 'transversally'[9]

(Guattari 1989)

Thus to engage with the complexity of the contemporary environment we need an approach that does not fragment the reality in a myriad of fields, but, as Beatson and Guattari call it, an ecological approach, that embraces reality 'transversally'.
The starting point is the acceptance of a de facto situation, characterized, as we saw before in this introduction, by a deterioration of conditions and, at the same time, by the irreversibility of change, and the impossibility to slow down the speed of techno-scientific progress. With this it is needed a redefinition of praxes and methods in order to be finally able to engage with and reorient the change.

9 Guattari, *The Three Ecologies.*

2. Eco-logic

"Alles ist Wechselwirkung"[11]

(von Humboldt, 1807)

Everything is interaction. Let us now try to understand how transversal thinking works within Ecology.
First of all we need to free ourselves from the traditional approaches of reductionism and determinism.
The traditional way in which knowledge is organized is based on the possibility to fragment the world in a myriad of parts, which can be analyzed and explained as separate. The world we are living in does not work in this way. Reality cannot be reduced to single units which work separately from each others.
Individual and society or living beings and their environment cannot be regarded as different matters: one cannot exist without the other. Therefore, while traditional approaches are on hold trying to bridge the gap between them, ecology goes further by recognizing their continuity and consubstantiality, and asserts that life can never be separate from its form.
The origin of Ecology can be traced to the beginning of the 19th century when a new way of thinking about forms as something interconnected with the environment was introduced by the natural scientist Alexander von Humboldt with his work, and, in particular, with his 1802's 'Essay on the geography of plants'[10]. Van Humboldt showed how plant's shapes, sizes and behaviour were dependent on variables in the immediate environment such as altitude, climate, soil latitude, etc. "One and the same genotype was seen to express itself along a wide spectrum of variations according to which conditions it encounters in temporal and spatial location. The same seed will produce essentially different plants depending on the particular make up of the variables that it encountered."[11] Van Humboldt was among the firsts to embed the study of forms within a field of influences. In particular, his is the notion of form as an expression of embedded forces.
The other main contribution to the moulding of ecology comes from Van Humboldt's colleague Wolfgang von Goethe, who nearly ten years before him, published " The metamorphosis of plants"[12], which some today consider as the origin of Dynamic Systems thinking.
Goethe, with his essay, supplies a single model of explanation for both the diversity of vegetal forms in the world as well as for the diversity of organs forms within a single plant or a family. This model provides the tool for a shift from the traditional 'typological thinking' based on species and genera, to the 'genetic habit of mind', which sees form as an active process of generation improvisation and expression.

10 von Humboldt, *Essay on the Geography of Plants.*
11 Sanford Kwinter, "Ecological thinking" (speech made during the Symposium *Protoecologics* , organized by Alisa Andrasek and Bruno Juricic, Rovinj, Croatia, August 6-7, 2011).
12 Wolfgang von Goethe, *The metamorphosis of plants.* (1790).

Eco-logic. Ecology dismisses "pseudo-scientific paradigms" and the quest of objectivity based on facts.
The main reason why it can do that is, according to Guattari, that ecologies are governed by a "*different logic* from that of ordinary communication between speakers and listeners".
Eco-logy is not a logic of discursive sets, which "seeks to delimit an object", nor it is based on language and on the "interlocking of fields of signification" but, as Guattari writes, "it is a logic of intensities, the logic of self-referential existential assemblages, engaging non-reversible duration". This "logic of intensities" is related only with "the movement and intensity of evolutive processes".[13]
As Kwinter points out, one of the critical components of the ecological thinking is "the open communicative interplay and integration of continuums that posses very different temporalities or rates of unfolding"[14]. Therefore we can assert that this approach is not limited to a particular scale. What we are confronting with is rather a 'mesoscale'. To explain it in a simple way, we can think to the environment as a multiple-level structure, with smaller units embedded in larger ones, so that it cannot be reduced to a single level of description.
Let us underline another important shift which is introduced by Eco-logic.
Eco-logic concerns itself with questions of process and with the way in which new value are produced. As Stengers points out, those values do not transcend the situation to which they are related; in other words " they are about the production of new relations that are added to a situation already produced by a multiplicity of relations."[15]
Therefore ecology doesn't conceive anything like submission or consensus. There are no transcendent criteria which overrule the diversity of a population "in the name of a shared intent or a superior good".
What Ecology support is "reciprocal capture"[16], as Stengers calls it. A process which is different from all the other and which is not based on any interest which transcends its terms, but it brings a stable relation in which the terms are reciprocally working for the maintenance of the other's existence.

13 Guattari explains that by using the world 'process' as counterposed to system and structure, he "seeks to grasp existence in the very act of its constitution, definition, and deterritorialization". In Guattari, *The Three Ecologies.*
14 Sanford Kwinter, *Ecological thinking.*
15 Isabelle Stengers, *Cosmopolitics I.* (Minneapolis: University of Minnesota Press. 2010), 33.
16 Stengers, *Cosmopolitics I.* 35.

3. Architecture and Field

"Rilke wrote: 'these trees are magnificent, but even more magnificent is the sublime and moving space between them, as though with their growth it too increased'."[17]

(Bachelard 1958)

Bodies and relations. Let us now introduce the reader to the discourse on space, which becomes relevant for us, not only because space is one of the main issues around which the architecture investigation revolves, but also because we can find here another way to overcome the static space-object relation in favour of the transitional fields relation.
The debate on nature, essence and mode of existence of space dates back to the Antiquity, but for the purpose of this essay, let us briefly lay out those voices which alternate between the conception of space as absolute or relational.
According to Newton, space is distinct from bodies and it exist independently of the existence of bodies. Therefore he introduces the notion of 'absolute space' which is "similar and immovable"[18] and its parts do not change their relation with respect to one another. In the same years, but on the opposite front, we can situate the contribution of Gottfried W. Leibniz, who promoted a notion of space not as something occupied by bodies but rather as no more than the collection of spatial relations between bodies or their possible location. The main problem that these investigations of space were not able to solve completely was about motion and it was formulated as such: "if the space that a body occupies literally is the matter of the body, then when the body — i.e., the matter — moves, so does the space that it occupies."[19]
The necessity of absolute space comes from the impossibility of explaining phenomena like rotation and acceleration on a purely relationalist account. Newtonian space provided the absolute frame of reference within which each object can have motion.
During the 19th century, several physicist and mathematicians tackles the issue of space. Important figures were, with no doubt, Henri Poincare[20] and Ernst Mach. The latter, in particular, introduces another way to look at Newton's theory according to which the notion of absolute space is simply not needed anymore.[21]
However, to reach the fundamental turning point of the all discourse, we have to wait till the beginning of the 20th century with Einstein.

17 Gaston Bachelard, *The poetics of space*, (Boston: Beacon Press:1994 (1958)).
18 Scholium to the Definitions in *Philosophiae Naturalis Principia Mathematica*, Bk. 1 (1689); trans. Andrew Motte (1729), rev. Florian Cajori, (Berkeley: University of California Press, 1934). 6-12.
19 Nick Huggett, and C. Hoefer, "Absolute and Relational Theories of Space and Motion", *The Stanford Encyclopedia of Philosophy (Fall 2009 Edition),* Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/fall2009/entries/spacetime-theories/>.
20 To know more see: Henri Poincaré, *The Relativity of Space* from Henri Poincaré, *Science & Method* (1897).available at http://www.marxists.org/reference/subject/philosophy/works/fr/poincare.htm
21 To know more see: Ernst Mach, *Science of Mechanics* (1883).

With the Principle of Relativity, motion could be explained without the need of any frame of reference such as the absolute space or any other fixed medium. But even more important, spatial relativity seems to prove that, as objects exist independently of the mind, also space can have the same kind of independent existence. Einstein also states that, even if space can be without bodies, it is always constituted by fields.
In the general theory of relativity he postulates that gravity can modify the geometric structure of spacetime itself. Therefore objects are not completely separated from space but, by the means of gravity, they can distort the space itself.[22]
But what exactly is a field? And how this change the traditional way of 'being in a space'?

"The field describes a space of propagation, of effects. It contains no matter or material points, but rather functions, vectors, and speeds. It describes local relations of difference within fields of celerity, transmission, or of careering points - in a word, what Minkowski called, the world."

(Kwinter 1986)

Field Conditions. In recent years 'field conditions' has become related to non-linear dynamics, mathematical field theory and other complex computational model of evolutionary change. To keep the discourse on a general level of understanding we could say, paraphrasing Allen, that field conditions are a way to accept and to include the complexity and unpredictability of our reality. But let us try to go more specific in this notion in order to find out how it can be applied to architecture.
"To generalize – Allen writes - a field condition would be any formal or spatial matrix capable of unifying diverse elements while respecting the identity of each."[23]
As he explains, the field is not a metaphor but a material condition which has to do with organization, matter and making. Let us describe more in details what this means.
The organizational configuration of field is the one of aggregates, not hierarchically or geometrically organized according to some principle of symmetry or axiality, but with no clear borders and characterized by porosity and interconnectivity at the local level.
Field conditions are relational, not figural. "Form matters –Allen says- but not so much the form of things, as the form between things."[24] Thus, the overall shape looses importance in favour of the relationship among parts.

22 To know more see: Lawrence Sklar, *Philosophy of Physics* (London: Oxford University Press, 1992), 43
23 Stan Allen. "From Object to Field: Field Conditions in Architecture and Urbanism". In *Space Readers. Heterogeneous Space in Architecture*. Ed. Michael Hensel et al.,118-143, (London: Jon Wiley &Sons Ldt, 2009), 120.
24 Allen. *From Object to Field: Field Conditions in Architecture and Urbanism*, 120

"One of the essential characteristics of the dream of multiplicity is that each element ceaselessly varies and alters its distance in relations to the others...These variable distances are not extensive quantities divisible by each other; rather each is indivisible, or 'relatively indivisible, in other words they are not divisible above or below a certain threshold, they cannot increase or diminish without changing their nature"[25]

(Deleuze & Guattari 1988)

The focus on relations is a key point in the broader philosophical discourse of radical empiricism.
According to Deleuze, relations have an ontological status separate from the terms of the relation. Therefore those relations are themselves responsible for the behavior of the field. "Field conditions in this sense becomes a way to rethink questions of identity and difference: part to whole, local difference and overall stability."[26]
Usually the parts of which the field is composed are a huge number of relatively small and similar entities that are repeated on a sufficiently big scale. In this way the field itself could be considered as virtually infinite.
However the parts are not simply fragments of the whole. The whole is produced by the coming together of those parts but it is not just the sum of them. In fact, as Delanda writes: "the properties of a whole cannot be reduced to those of its parts because they are the result, not of an aggregation of the components own properties, but of the actual exercise of their capacities".[27]
Furthermore "field conditions treat constraints as opportunities"[28]. Indeed, as they imply the direct engagement with the messiness of reality, some characteristics of a specific site could be regarded as "restrictions" to the infinitude of possibilities and, thus, as enabling starting point for the production of something new.
Bringing this knowledge back to architecture, we can show not only how change and contingency are reintroduced in the discipline but also understand where the real change comes from and how it could be oriented.

"More than a formal configuration, the field conditions implies an architecture that admits change, accident and improvisation. It is an architecture not invested in durability, stability and certainty, but an architecture that leaves space for uncertainty of the real."[29]

(Allen 1997)

25 Gilles Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia*. (Minneapolis: University of Minnesota Press, 1987), 30-31
26 Allen, *From Object to Field. Field Conditions in Architecture and Urbanism*. 130
27 Manuel Delanda *A new philosophy of society: Assemblage Theory and Social Complexity*. (London: Continuum. 2006), 11
28 Allen, *From Object to Field. Field Conditions in Architecture and Urbanism*. 119
29 Allen, *From Object to Field. Field Conditions in Architecture and Urbanism*. 142

4. Conclusions

Novelty and change. As we have seen in the previous sections, field conditions allow to rethink questions of organization and relation, of identity and change, tackling different topics that, most of the times, are presented only as binary choices: natural and artificial, part and whole, building and environment, form and process.
Based on this, let us sketch out some conclusions, which are by no means final, but rather starting point for bringing the discussion to a more architectural level.
First of all let us recalls the question formulated in the introduction of this essay. Where does the novelty comes from? At this point we have the elements to understand the answer that Deleuze gives to this question.
Exteriority of relations and capacities are key concepts for this purpose. As Massumi explains, if we get rid of the assumption that the terms of a relation precede their interrelating, or that they are already constituted, we can begin to see how this is connected with the notion of change itself[30]. In fact, according to Massumi, if the terms of a relations can just realize an external configuration that is already implicit, as a possibility, in the form of those terms, then everything is already given in advance and no real innovation seems possible. "Is only by asserting the exteriority of the relation to its term"[31] says Massumi, that this can be avoided. Furthermore the potential interactions which an organism may have cannot be given in advance, thus opening the field to a infinite number of potentials. The actual outcome of this relational field is once again something different from the potential one. This because according to Deleuze "actual terms never resembles the singularities they incarnate".[32]

> *"We know anything about a body until we know what it can do, what its affects are , how they can or cannot enter in composition with other affects, with the affects of another body, either to destroy that body or to be destroyed by it, either to exchange actions and passions with it or to join with it in composing a more powerful body ."*[33]
>
> (Deleuze & Guattari 1987)

Shaping conditions. Second, at this point, a new understanding of form and architecture can be conceived: "the figure could be understood not a demarcated object read against a stable field, but as an effect emerging from the field itself: as a moment of intensities, as a peak or valley within a continuous field." [34]
This eventually, eliminates the dualism between buildings and environment, in favour of the valorization of the relations between them. When a building is constructed, it operates in a continuum at different scale level: the building influence

30 Brian Massumi, *Parables of the Virtual. Movement, Affect, Sensation*. (Durham & London: Duke University Press. 2002), 70
31 Massumi, *Parables of the Virtual. Movement, Affect, Sensation*. 70
32 Gilles Deleuze. *Difference and repetition*. (New York: Columbia University Press, 1994), 212
33 Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia*. 257
34 Allen, *From Object to Field. Field Conditions in Architecture and Urbanism*. 142

the environment in which is located by changing the shape of it and, at the same time, it is influenced by the environment itself. At a smaller scale the building defines conditions for the users but at the same time the users can act on the building transforming it.
In this prospective, the role of the architect assumes a different meaning. The architect is not anymore the one who is delivering a fixed set of instruction, he is rather the one who is shaping conditions for allowing certain things to happens, and leaving space for the unpredictable.

At last, let us underline one more characteristic of the field. “Field conditions have the ability to make abstract forces visible”[35]. In this they recalls the sometimes forgotten, ability of architecture to point “to a world outside this world”[36]. In other words they “reaffirm the capacity of an abstract system to carry meaning, and trigger differences”[37].

35 Allen, *From Object to Field. Field Conditions in Architecture and Urbanism.* 120
36 Unger “The better futures of Architecture”, *Anyone,* (new York:Rizzoli, 1991), 36
37 Allen, *From Object to Field. Field Conditions in Architecture and Urbanism.* 134

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Ecology Displayed

Design for Bouwkunde

Ecology Displayed.

More than ever today, nature has become inseparable from culture; and if we are to understand the interactions between ecosystems, the mechanosphere, and the social and individual universes of reference, we have to learn to think 'transversally'.

(Guattari 1989)

Introduction. The guidelines of the design task given in the studio are based on the brief of the competition hold in 2008 with the intention to re-build a new faculty of architecture within the TU campus in Delft.
Although few years have passed and many things have changed - one for all the new Bouwkunde has found its new identity in the former main building in Julianalaan - the challenge was taken and the chance was worth.
The choice of subject truly served the purpose of learning how to engage with the complexity of the reality we are leaving in, which manifest itself everywhere, even in those spots that seem to be too familiar for being still interesting.
How to start with a fresh mind? The traditional approaches, entangled in linear logic and binary thinking, wouldn't have take the project very far. The disclosure came by looking at reality through the lens of Ecology, avoiding any reductionism or determinism.
In fact, Ecology embraces reality "transversally", it's related to "movement and intensities of the evolutive processes"[1] and it's not based on language, so it's not a logic that seek to delimit it's object, but it rather focuses on relations.

Communicative interplay. As Kwinter points out, one of the critical components of the ecological thinking is "the open communicative interplay and integration of continuums that posses very different temporalities or rates of unfolding", from which follows that Ecology is not limited to a particular scale. The environment, in fact, has a multiple-level structure, with small units embedded in larger ones, and it cannot be reduced to a single level of description.
This logic can be also applied at any design scale, and this constitute one of the premises which led to the decision of maintaining the location of the architecture faculty within the broader context of the technical university campus.
The relationship between the two can be described by the attempt of never trying to merge the new into the existing, but rather by reasoning in the terms of difference, avoiding omogeneity in order to engage the two in a reciprocal interested relationship. The building doesn't submit itself to identity or representation, thus it can be considered as an open field where the fullest range of possible events can take place, addressing different users.
In other words, this would be what Stengers defines as 'reciprocal capture': a stable relation in which heterogeneous terms are reciprocally working for the maintenance of the other's existence.

1 Guattari explains that by using the world 'process' as counterposed to system and structure, he "seeks to grasp existence in the very act of its constitution, definition, and deterritorialization". In Guattari, *The Three Ecologies.*

Ecology & Architecture. The claim of the research developed in the studio is that through the lens of Ecology, we can eventually overcome the traditional way of studying architecture as a discipline which seems to revolve around binary choices.
As we have already tackle the issue of object/ context relationship, let us move the another traditional opposition between form and process. We can start by considering form as a product of process.
Ecology goes even further. We don't need a distinction between product and process because free from the slavery of platonic ideas, of a pre-established perfection that all the things should strive to achieve, we work to actualize, through a positive act of creation, the virtuality which is transcendent but not transcendental. Therefore any step is not logically necessary, but only contingently obligatory. This is also the end of representation as we used to know it. The claim in fact is that there is no representation as such but everything serve its own purpose. A drawing, a model is not a representation of an initial idea, but it is an artifact in itself, which might be able to trigger certain reactions, which cannot be predicted in advance. Therefore the design itself is not considered as a different moment, separated from the research, but truly 'research by design' and vice versa.
Let us imagine a field, a 'plane of consistency', which we are populating of artifacts, words and references. Here we don't act as the architect-god which is determining an object in all its parts, but we accept the reality in its complexity and, by giving some space for the unexpected to happen, we try to saturate the field in order to trigger the emergence of the object out of heterogeneous parts.
Therefore the design process was a continuous attempt to modulate and progressively saturate the field with different conditions. The system that emerged presents an "open structure", in which there is no single focus on the final form, but on the set of rules that shapes it.
Furthermore, as in nature the most complex patterns derive from the simplest rules, so the visual complexity, the variety of elements and spaces produced, derived from a set of simple rules, established prior to the design.
This way of constructing architecture is neither top down, nor bottom u, but truly relational. In fact, although is about different parts coming together, it is not the same as fragmentation: the parts form a whole which properties are not the sum of the properties of the single parts.

"The ideal of the artist is never to reproduce the same work ad infinitum...
Similarly, any educational or therapeutic institution, or any individual course of treatment,
should strive to achieve the permanent evolution of both practice and its theoretical framework."

(Guattari 1989)

Accommodate change. How to achieve the ability to adapt and accommodate change in architecture is the main question that was formulated in the previous research paper and which was address in the design at the different scales: from architecture to detail. Let us try to explain how this is achieved in the design.

First of all it is important to keep in mind the notion of space not as something to be created by tracing borders. Space is in fact not dimensional but directional, or in other words space is not empty but full of vector - a vector field.
Every point in space is associated with a vector. Those vectors indicates sets of conditions which are to be activated in time.
The design offers to its users a field populated by different sets of conditions, thus by not prescribing a top-down organizational scheme, it provides for different attractors, which can be recognized by users as more suitable for certain activities to take place. As the conditions within the building changes during the day, so the attractor points will change, influenced by climatic and environmental factors, but also by users themselves.
While the structure stays the same, what can be done within the building cannot be predicted or enforced by the architect.
Furthermore, the logic according to which the different sets of conditions come together is not 'arboreal', but 'rhizomatic'[2]: it's a logic of the 'and', in which there is no beginning, nor end but it's only going from the middle to middle. And the middle itself should be regard as an attitude, never as an average. In fact, in Deleuze's words, the middle "is where things pick up speed."[3]

Conclusion. The coherence between the theoretical exploration and the architectural result has been brought to such a level that the second could be used as an illustration of the first.
Therefore all the design choices which step away from conventional building practice, efficiency, traditional know how, are to be reconsidered in the light of this deeply theoretical informed nature of the project itself.
The design is to be regarded as the outcome of a non-linear process which in all its phases was characterized by the will of make into architecture a set of logics and theoretical assessments not originally formulated or linked to architecture.
The capability of Ecological thinking and rhizomatic logic to address complexity was what made this link possible.

2 We are referring here to the 'Rhizome theory' formulated by Gilles Deleuze in Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia.*
3 Deleuze and Felix Guattari. *A Thousand Plateaus: Capitalism Schizophrenia*. 21.

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