FORMLESS ACCIDENT:
A HAPPENING TOWARDS THE FALL

BY

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THESIS

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ABSTRACT

My research explores the relationship between nature and artefacts in unstable territories, taking as a site of experimentation the Middle Paraná Delta in Argentina. The purpose of the research is to build a theory of design generation from conceptualization of and speculation about that specific site, to apply that theory to pedagogy, and to imagine its contribution to professional practice of design in landscape architecture. The Middle Paraná Delta is characterized by its dynamic physical condition, in which the forces of nature make evident the irrelevance of Biblical and Platonic paradigms through which many contemporary landscape architects still understand the relationship between nature and artefacts. To ensure the authority and transcendence of the designer, Biblical and Platonic paradigms inform systems and methods for producing artefacts based on composition and determination, both characterized by their detachment from natural processes—including social processes as part of nature—and their ability to replace those processes with fixed forms. My research introduces an alternative paradigm—the jungle; a model to operate on it—formless accident: a happening towards the fall; and a series of procedures based on indeterminacy. Paradigm, model, and procedures propose a dissonant subject-subject relationship between artefacts and nature and a process of design as a sequence of finding-transformation-becoming. In this context, the purpose of artefacts is to reveal and allow the manifestation of processes over the time under which there is neither total control nor prediction of final configuration. Ultimately, my hope is that such contributions will positively impact the way humans relate with the rest of nature as well as with other humans.
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I am interested in getting to Time in its unstructured existence. That is, I am interested in how this wild best lives in the jungle—not in the zoo. I am interested in how Time exists before we put our paws on it—our minds, our imagination into it.¹
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CHAPTER 1: INTRODUCTION

THE RELATIONSHIP BETWEEN NATURE AND ARTEFACTS IN LANDSCAPE ARCHITECTURAL DESIGN

The relationship between nature and artefacts has been a recurrent topic of arguments in western theories of landscape architecture. To start with basic concepts, landscape within a context of landscape architecture generally means the art of making land—and all the natural materials associated with land—whereas architecture (arché-technē) is an art of making artifacts. Both landscape and architecture are historically linked with, and informed by parameters, techniques, and strategies of art. Yet, within the single term, landscape architecture, neither word takes clear precedence over the other, nor is there a clear relationship between them. In keeping with that understanding, this thesis tries to redefine the relationship between the two by the means of design theory and procedures.

In the past 110 years, the disciplines of landscape ecology, biotechnology, biology, physics and the arts have radically changed their paradigms as a function of new approaches to nature producing an impact on their practices, methods, and artefacts. In fact, we could say that, from Einstein’s theory of the relativity (1905) until now, there has been increasing agreement about the dynamics and indeterminacy of nature, with implications for understanding of artefacts. However, design in landscape architecture and architecture still seems resistant to overcoming the stasis of Biblical and Platonic paradigms through which we have traditionally understood the relationship between nature and artefacts. In fact, from Greek antiquity until the present, design in landscape architecture and architecture has changed interfaces—for example, parametric architecture—and geometries but not the attitude towards nature. Design in both fields replaces nature with fixed forms instead of catalyzing or allowing the manifestation of natural
processes. That fact condemns the disciplines to be in a place of aesthetic and functional irrelevance in contemporary times, most of all in unstable territories. Why such resistance? In *A Landscape Manifesto* (2010), Diana Balmori approaches a similar question and states that contemporary landscape design is incapable of developing a new aesthetics because of two false starting points: the links with a specific tradition within landscape architecture—particularly the English Picturesque—in which nature is replaced by representation through artefacts, and the incapacity of the discipline to develop a new understanding of nature. Balmori states that contemporary understanding of nature as ecology—an evolution of the Enlightenment-Romanticism-Darwinism trajectory—demands a contingency, a new relationship between nature and artefacts, with eagerness like that with which industry generated images at the beginning of the twentieth century: “All things in nature are constantly changing. Landscape artists need to design to allow for changes, while seeking a new course that enhances the coexistence of humans and the rest of nature.” My argument is that stumbling block that prevents design from moving past Biblical and Platonic paradigms is the fact that designers look for transcendence through the artefacts they produce: immortality, or philosopher’s stone. Designers resist catalyzing the process of nature because their ultimate objective is to arrive at fixed forms, in emulation of the image of Eden, or as process of replicating unchanging forms. Nature is still considered totally determined—apparent or not apparent—and artefacts are as determined as that notion of nature. If we compare our artefacts—and a garden can be considered an artefact—then we realize that they would never achieve any kind of relationship with nature except for subjugation and/or representation.
Landscape ecology, biotechnology, biology, and physics have been developing new paradigms, methods, and techniques during the past twenty-years according to new approaches to nature. For instance, in the early 1980s, the “dynamic paradigm” in landscape ecology displaced radically the notions of nature provided earlier by “equilibrium paradigm.”\(^3\) The dynamic paradigm addresses the concept that nature is in a continuing state of variability in space and time. That variability could be more or less stable depending on the severity of disturbances—duration, shape, location, and strength—and the interactions between disturbances, organisms, and physical features of landscape—resistance, resilience, recovery, adaptation, and succession. Landscape ecology has also created new methods for understanding, scaling, and projecting natural processes in space and time based on recent theories developed by other fields, mainly fractal geometry, percolation, and self regulation system theories.\(^4\) Those theories were revolutionary in that they provided new insights for understanding natural (and social) dynamics and processes that were overlooked or ignored in previous paradigms. The three theories
mentioned share the idea that organizations are dynamic and constituted as a result of multiple, complex, internal impulses of the system instead of from a general exterior plan—that is, from local logics instead of from global logics. In fact, the most regular procedures for projecting natural patterns from one scale—space and time—into another are random, recursive, or stochastic. That means that nature should work in a similar way. In other words, Nature is undetermined.

### EQUILIBRIUM PARADIGM

- Species composition is relatively constant in a community.
- Disturbance and succession alter communities but are less important than the climax community itself.
- Ecosystem is self-contained and controlled internally

### DYNAMIC PARADIGM

- Species composition may or may not reach equilibrium based on interactions between disturbance and communities.
- Disturbance is an essential part of ecosystems and ecosystem dynamics.
- Ecosystems are open systems and incorporate disturbances at multiple scales


The arts have also been changing paradigms during the past century as a result of successive new approaches to nature. In the visual arts, Marcel Duchamp was one of the pioneers in changing the paradigms of visual arts at the beginning of twentieth century. For instance, the final product of his work *Dust Breeding* (1920) doesn’t exist as a fixed form. Instead, there is a dispositive that catalyzes dust over the time in a continual becoming. Dada, and surrealism created a new platform for the next generations. In *La Religión Surrealista. Conferencias 1947-1948* (Surrealist Religion) (2008), Georges Bataille explains that the main goal of surrealism was
to displace the authority of tradition, faith, and reason through which we understand nature—our nature and the nature of the rest of nature—and to look for new sources in primitive cultures. The primitive for Bataille was a way to understand the relationship between humans and the rest of nature as a sacred subject-subject relationship, in which passion, chance, and unconsciousness were almost the sole way for humans to be engaged with nature.⁵

In music, in the early 1940s, Ianni Xenakis was the first musician to apply stochastic processes and game techniques. Xenakis used Markov theory and methods, the same as those used now in landscape ecology for predicting future processes in nature. In his late work *Arborescence* (1970), Xenakis developed methods such as metastasis, dynamic fluctuations, variations, and successions in music. During the fifties, John Cage, influenced by Eastern approaches to nature, developed new techniques based on chance—for example, tossing the *I-Ching* coins. The *I-Ching*, also called *The Book of Mutations*, is one of the most ancient Chinese books about the relationship between humans and nature. The *I-Ching* is meant to be both philosophical and oracular. When we use it as an oracle, we could predict our future by tossing the three coins six times as Cage did to decide on the scores.⁶ Furthermore, the musician Morton Feldman worked by providing parameters instead of fixing a complete score, thereby attempting to free sounds, time, and performers from the traditional compositional techniques, meanings, and rhetoric of music discipline. In *Marginal Intersection* (1951), *Intersection II* (1951), and *Intermission VI* (1953), Feldman provided different variables for each piece, such as pitch, register, duration of the piece, duration of instrument, or place where the performer should enter into the orchestra. In *Durations*, he experimented with leaving each instrument “out of its own life” and then overlapping all them in a kind of “reverberation” or “kaleidoscope” of sounds.⁷
Many landscape architects have attempted to develop alternative theories about the relationship between nature and artefacts in contemporary times. In a recent essay, “Design against Nature” (2009), Eelco Hooftman, founding partner of Gross Max Landscape Architecture, makes a brief analysis from the seventeenth century to the present and argues that landscape has moved from representation of nature to pure ecology without design. He posits that, during the twentieth century, humans lost the art dimension of landscape by reducing nature to an environmental concept. Hooftman proposes to develop a new hybrid nature-artifact from which the practice of landscape could provide new ecological models. Moreover, in The Landscape Approach (1998), Bernard Lasssus posits that the work of the landscape discipline is to establish a dialog with nature in order to make its potentials manifest. For Lassus, that manifestation is in between nature and artefact, something that he calls substratum, which “makes other existences possible.” When Lassus writes “other,” he refers to two things: first, to go beyond what we perceive as visible in order to make latent processes appear in the site; second, the fact that our actions are always transformative, even when they could be minimal interventions. For example, in the experiment The Tulip (1965), he introduced a white piece of paper into a red tulip without modifying it. From the reflection of light in the piece of paper, he realized that “the tulip encloses an air rosé that separates it from the blue sky.” In other words, the paper was playing the role of an artefact that stole the tulip's color and atmosphere without even touching the flower. Even though the piece of paper didn’t even touch the tulip, the experiment produced a transformation in both Lassus and tulip. “Isn't landscape the same thing?”

As a contribution to the challenges of other disciplines, and the theories of Balmori, Hooftman, and Lassus, my thesis proposes to work within a paradigmatic site in which the forces
of nature operate in such a way that landscape architectural design doesn’t have an option other than to face the issue of the dynamics and indeterminacy of nature, and thus the methods, practices, and artefacts related to nature. For design in landscape architecture, I propose a new paradigm called “The Jungle,” a model called “Formless Accident,” and a series of procedures based on indeterminacy. Even though this approach is based on conceptualization of and speculation about a specific site, the Middle Paraná Delta in Argentina, it is expected to produce a theory of design generation able to be generalized in other similar situations. In this regard, the thesis proposes a dissonant subject-subject relationship between nature and artefacts, and displaces the destiny of artefacts from transcendence to immanence—that is, from fixed forms towards revelation of natural processes over which there is neither total control nor prediction of final configuration. Given that objective, a main question explored in the thesis is: To what degree can we transform while also giving up control? What is the measure of our intervention so that we allow the manifestation of latent processes and at the same time we give up control? Can that be measured?
CHAPTER 2: THEORETICAL CONTEXT

SITE

Figure 2.1. Middle Paraná Delta. Developed by author from original images. Guaraní Aquifer from http://3.bp.blogspot.com/_v-bPjH1MScuA/Sw8gYp4_XJI/AAAAAAAAlkQ/2QMtDDgpnY/s1600/info28.jpg. Middle Paraná Delta satellite photographs from Google Earth.

The research takes the Middle Paraná Delta in Argentina as a site of experimentation. The site is characterized by its formless and unstable physical condition, in which the forces of nature put a dramatic pressure on the stasis of landscape architectural design. The impact of water flooding, the movements of sediments, and the fact that plants and insects destroy everything they find constitute the three main visible qualities of the site.

In ecological terms, the Middle Paraná Delta is a mosaic of wetlands fifty kilometers wide and a hundred kilometers long where we can find several different landscape types characterized by their flooding regimes. Being an alluvial river, the Paraná has a pulsatile
behavior based on constant fluxes of energy and matter in which "balance" could only be perceived over a very long period of time.

The Middle Paraná Delta is the most dynamic segment of the Guaraní Aquifer, one of the biggest underground fresh water systems in the world. The Guaraní Aquifer covers 1,200,000 km², with a volume of 40,000 km³. Among other factors, the particular dynamic of this site is the result of its physical configuration that took place during the Quaternary period. The slope of the river-bed in this area is lower than in other parts of the delta, propitiating high levels of accumulation and erosion of sediments and successive formation and destruction of islands. The Paraná Delta carries 160 millions of tons per year of suspended sediments. About 80% of these sediments come from the Bermejo River that gives the particular red color of Paraná River. The alluvium of Bermejo is mostly composed of silt and clay, which makes the land unstable for foundations. Another factor is the unpredictability of the Middle Paraná Delta is the large infrequent flooding. For example, a flood in 2007 killed twenty thousand of cattle and destroyed agricultural fields, discouraging the over-exploitation of the land for the last five years. Besides, the site is incommensurable with the instruments we have. In fact, the topographic diagrams of the territory become irrelevant in a short period of time. Since they look for the limit between land and water—which is a tradition from colonization—they fail to represent the fact that the territory is a water-land mixture in relationship with time, space, and several interconnected layers (vertical and horizontal), including the aquifer that is behind the territory. In fact, there are some posts to measure wetlands borders and altitude made before the 1940s that now are placed in the middle of nowhere, since they were abandoned as they became useless. In addition, ownership is difficult to define, since the river erodes, transports, and accumulates sediments, creating and erasing territories constantly.
As a result of those dynamics, the Middle Paraná Delta cannot be measured and therefore resists representation. This is a territory of the endless unknown, the eternal becoming in which nature annihilates each naïve or modern attitude towards the idea of fixed form and progress, since the resilience of nature returns the place to the wildness again and again. The Middle Paraná Delta is a paradigmatic territory that invites us to reimagine a new relationship between nature and artefacts, in which artefacts could allow and explore the potentialities of the manifestation of natural process instead of trying to fight against them. However, during the past fifteen years, traditional anthropogenic activities within the site have called the attention of...
professionals from landscape architecture due to their tendency to come back to traditional paradigms characterized by their inability to face the challenging dynamic that nature introduces in the discipline. A large advertising poster pasted in a wall in Rosario City references that tendency. This is a recreational park on the East bank of the Paraná, just in front of Rosario City, crossing the 50km-wide wetland. The big phrase "Paraíso Terrenal" (Earthly Paradise) means Eden Restored appearing in the present. "Victoria del Agua" (Victory of Water), the name of the recreational park, is really ironic if we think that water finally wins. But Victoria is also the name of the city where the recreational park is located. Lastly, the city is unfortunately called “Victoria” because this is the place where white people exterminated the last tribes of Chaná Timbú, Minuan and Charrúa native populations in 1750s. All of these components illustrate the very reasons why designers are unable to change the paradigms from which they understand the relationship between nature and artefacts.

Figure 2.3. Earthly Paradise. Advertisement of a recreational park in front of the wetland placed in a building in Rosario City. Photograph by Marcelo Barrale.
In 2011, a group of 30 scientists and artists from Argentina, Paraguay, Spain, and the Netherlands participated in an expedition of twenty days along the Paraná River. The expedition was called *Paraná Ra’Anga*, which in Native Guaraní language means “going up Paraná River.” In a documentary about the trip made by Pere Joan, *Remontando el futuro del río* (going up the future of the river), one of the characters thinks aloud about the future of this site:

> I imagine now, after so long time, that what I imagine is conditioned by what I think now. It is difficult for me as well as for anybody to think another thing, rather than the projection of my own catastrophes. Moreover, this place is a result of lots of catastrophes. For instance, we can think that it was a sea, and now…I don’t know…The future of the place… I don’t imagine it as a city or a desert. I think, what will change will be the sight…

**PARADIGM**

One motive for this thesis is based on fascination with the site described above and disappointment with the disciplines of architecture and landscape architecture for not being able to deal with unstable territories. The argument of my research is that those design disciplines informed by Biblical and Platonic paradigms, through which we traditionally understand the relationship between nature and artifact, are irrelevant in formless, unstable territories.

The Biblical paradigm, shared by Abrahamic faiths, understands the first stage of the world as the pre-Edenic formless nature that becomes form in the Garden of Eden. When Adam eats the fruit of the “Tree of Knowledge of the Good and Evil,” he is expelled from Eden in an event called the Fall. From then until now, in places culturally impacted by Biblical thought, landscape architecture returns to the image of Eden again and again in an effort to invoke Eden
and anticipate Eden restored, in which several trees of life will appear, with fruit available for eating. We can see that paradigm through the history of western gardens and even in more contemporary works, such as the *High Line* in New York (2003).

The Platonic paradigm frames nature as totally determined and notions of art and science as inherited or imprinted in the human mind as archetypes. In the Allegory of the Cave, Plato says that what we see is only the shadow of real forms that are not directly perceived by humans. According to Plato, humans can only understand reality—nature—through a process of repetition of archetypes because forms are supposed to be immaterial and a-spatial—that is, outside of and detached from physicality. That is the reason why the main sciences considered by Plato were rhetoric and geometry, not physics. Knowledge of archetypical geometry was considered by Plato to be a medium to access the philosopher’s stone.\textsuperscript{15}

\textbf{PLATONIC PARADIGM.} Form. Eternity as apprehension of unchanging forms

\textit{Make a circle out of a man and a woman, out of this a square, out of this a triangle, make a circle and you will have the Philosopher’s stone.}


“We meld the particular with universal archetypal forms so that the local ethos of a place is never lost or homogenized.” Nelson Byrd Woltz. www.nbwla.com

In Michael Maier’s emblem book *Atalanta Fugiens Hoc Est, Emblematum Nova de Secretis Naturae Chymica* (1964; 1st ed., 1617), the epigram to emblem 21 says:

Make a circle out of a man and a woman/ From which a quadrangular body arises with equal sides/Derive from it a triangle, which is in contact on all sides with a round sphere:/ Then the Stone will have come into existence/ if such a great thing is not immediately clear in your mind/ then you know, that you will understand everything, if you understand the theory of Geometry.\(^{16}\)

We can see this paradigm also in the history of architecture and landscape architecture or in contemporary works, such as the *Darden Towe* park in Albemarle County, Virginia. According to its own web page, Nelson Byrd Woltz firm works with archetypes.\(^ {17}\)

The Biblical and Platonic paradigms share an idea of a first, formless, chaotic stage of the world that becomes form thanks to the work of a God or Superior Nature, which “settles the conflict.”\(^ {18}\) Along those lines, in the first poem of his *Metamorphoses* (1st. Ed. 43 BCE), called “The origin of the world,” Ovid writes:

Before there was land or sea or overarching sky/ Nature’s face was one throughout the universe/ Chaos as they call it: a crude, unsorted mass/ Nothing but an inert lump, the concentrated/ Discordant seeds of disconnected entities/ But land impossible to walk, nonnavigable water/ Lightless air, nothing held its shape/ And each thing crowded the other out. In one body/ Some God, or superior nature, settled this conflict.\(^ {19}\)

The disciplines of design have traditionally moved between these two systems of reference—Biblical and Platonic—in order to return the power of that God or Superior Nature to designers in an effort to embody their power, and doing so, achieve their own transcendence through their products: artefacts. Besides, both paradigms are deferred from the present—the
Biblical in the past as Eden, the Platonic in the future as Utopia—and pursue the fulfillment of a plan that means eternity: the New Jerusalem for Biblical, the philosopher’s stone for the Platonic. In Biblical terms, landscape architects could achieve the second Jerusalem by reproducing or emulating the image of Eden; in Platonic terms, they could achieve the philosopher’s stone by moving through the process of apprehension of unchanging forms. Biblical design methods work with composition, Platonic with determination. In other words, the Biblical arrives at form by the means of faith, the Platonic by the means of reason. We can understand that the Platonic paradigm is a medium through which the process of repetition of geometry takes us to a spiritual state, just as the repetition of the image of Eden does for Biblical paradigm. However, what we are discussing here is that these methods of producing artefacts are not appropriate for operating in unstable and formless territories and no longer correspond to contemporary priorities.

I suggest the hypothesis that Adam could have been Latin American, since in Pangea we cannot define geographically where he comes from. Latin American Adam would never choose to work the land for the benefit of any superior entity; instead, he would prefer to go to the formless, pre-Edenic state of the world—that is, the Jungle. The Jungle, as pre-Edenic, formless nature, could provide a framework for rethinking the relationship nature-artifact within the uncomfortable place between provocation and adaptation, ephemerality and permanence, mutation and invariance. The Jungle, the happening before the Fall, has been a recurrent topic in Latin American Magic Realism, one of the most grounded cultural and artistic movements in that region. According to Magic Realism, the Jungle is a paradigm not only for understanding the natural context of Latin America, but also as a reflexive image of its motley, baroque, hybrid European-Native culture.
In his book, *Los Pasos Perdidos* (The Lost Steps) (1975; 1st ed., 1953), Alejo Carpentier, author of the *Real Marvelous Manifesto*, describes the jungle as the endless unknown in which everything is changing, mutating, or seems alien. According to Carpentier, the jungle doesn’t have edges or limits, it is all shadows, insects are intolerable, and the night is scary.

What it was amazing for me was the endless mimesis of the virgin nature here. Everything looked like another thing, creating a world of appearances that hides reality, contradicting too many truths […] everything was a costume, stratagem, game of appearances, metamorphosis. [The jungle was] the world of the lizard-
cucumber, the chestnut-hedgehog, the chrysalis-centipede, the grub with carrot meat and the electric fish.\textsuperscript{20} (Translated by author).

With the disturbance of the appearances, in that succession of little mirages, a sensation of confusion grew, it was like a total anguishing misplacement.\textsuperscript{21}

This vegetal wall is extended towards the absurd, seeming like a man made work, made with theodolite and plumb.\textsuperscript{22} (Translated by the author).

If you stop few seconds the relief of the shadow became an intolerable boiling of insects.\textsuperscript{23} (Translated by author).

The shadows came in a premature sunset […] the croaking of the enormous frogs invaded the jungle. The scared murk shivered and displaced […] I was scared, stunned, febrile.\textsuperscript{24} (Translated by author).

A similar description of the Jungle was developed by other Latin American writers such as Miguel Angel Asturias’s \textit{Leyendas de Guatemala} (Legends of Guatemala) (1957; 1\textsuperscript{st} ed., 1930) and Horacio Quiroga’s \textit{Cuentos de la Selva} (Jungle Tales) (1918) as well as by Guaraní people who still live in the area and transmit their ancient oral tales generation by generation. Likewise Jungle is described as a formless entity without final form. Along those lines, in images such as \textit{The Jungle} (1943) and \textit{Vegetación Tropical} (Tropical Vegetation) (1948) by Cuban painter Wilfredo Lam or \textit{Cazadores} (Hunters) (2007) by painter Mario Domínguez, the Jungle is represented from inside and fragmented, without any consideration of the perimeter. Neither Utopia nor Paradise, Jungle is becoming–meaning, reality in transformation. Jungle is incommensurable; its processes don’t have scale, since the concept of scale is a human convention, not a quality of nature. For all these reasons, Jungle can’t be represented, since representation implies a preconception of a final form and stage in time, a deferment of the present
and the existence of scale. Furthermore, Jungle is dissident, since any attempt to make the place productive and efficient is destroyed by the forces of nature.

All of these qualities wreak havoc on previous paradigms. This fact is the subject of Werner Herzog’s films *Aguirre, the Wrath of God* (1972) and *Fitzcarraldo* (1982). In the first, a boat is appears in the upper reaches of a 30m tall tree as a result of a previous flood. All the expedition members were suffering fever or hallucinating because they had been bitten by insects. Aguirre looks at the ship as if it were part of his hallucination. In the latter film, Fitzcarraldo, dressed in a white suit, goes to the middle of the jungle with a phonograph playing Caruso. Caruso replaces the birds’ songs, since in the jungle birds don’t sing; instead, they wail in terror because they were abandoned by God.25 In Fitzcarraldo’s world, ship and nature cannot relate to each other, and nature is something terrifying and unpredictable. In contrast, in the “civilized” world, landscape architecture has forced Nature to become predictable. Human artefacts are imagined stronger than those of Nature; they are as white and artificial as Fitzcarraldo’s suit and separated from the unmediated landscape in order to keep them clean and pristine.

The jungle is a terrifying place for the European conquerors, who lost many compatriots within it, but, worse than that, they lost their style there. In the documentary, *Carta desde Sancti Spiritu* (Letter from Holy Spirit) (2011), about the first Spanish settlement in Argentina (30km north of the site), Luis Ramirez writes a letter to his father (1528) and asks for compassion “because being in this land I have lost my style.”26
MODEL

Given the Jungle paradigm, my research proposes to explore a new model of design: formless accident: a happening towards the Fall. The model is working from a reflexive redundancy strategy towards the site. “Formless accident” describes the territory’s physical qualities and the strategy for trans-forming this unstable, formless territory.

Formless doesn’t mean the absence of form. Instead it means without fixed form. Etymologically, “formless” means “from the Latin nebulous, cloudy, misty, foggy; from Latin nebula, the figurative sense of hazy, vague, without contour, figure, shape, appearance or pattern design.”²⁷ All these definitions refer to a formal condition of things characterized by indefinite contour. However, my thesis tries to go beyond these formal qualities of an artefact. In that
meaning, formlessness is neither the ultimate objective nor the final state or quality of an image or form to be achieved. Instead, it is a revelation of a process in continuous transformation over which we don’t have total control over the final configuration.

In *The Life of Forms in Art* (1948; 1st ed., 1934), Henri Focillon states that nature and life create forms. For him, every work of art has a form that cannot be separated from matter, mind, and content because every matter, every idea, every content has a destiny, a formal vocation, and only an artist can be the vehicle of these forms: “Forms receive accent from the mind but not configuration.” From Focillon’s theory, we could say that forms have their own life and they are imprinted in our genetic code. Therefore, formlessness would be a process of disassembling this concept of form in which designers are almost prisoners of them. That is to say, since it seems to be that either we have inherited the forms or the forms use us as a medium, achieving formlessness implies the development of procedures for loosening the control of the final configuration. In other words, formlessness is related to a process of transformation in nature, rather than to formal repertories.

In 1929 Georges Bataille wrote a short paragraph in the magazine “Documents 1. Dictionary” in which he defined the French term *informe* (formless). In that paragraph, he challenges the traditional concepts and linkages of form, utility, and content. In fact, Bataille displaces all those terms, their connections, and their binary oppositions by placing them in a site of irrelevance.

Formless: A dictionary begins in the moment when it no longer gives the meaning of words, but their task. Thus, formless is not an adjective with self meaning, instead it is a term used to bring things down from the state of utility that generally requires that each thing has its own form. That means that this thing it is not useful any more, so, it is squashed anywhere, like a spider or an earthworm. In
fact, it would be necessary for the happiness of academic people that the universe had form. The whole philosophy does not have another goal: it is a matter of giving a frock coat to what it is, actually, a mathematical frock coat. In order to contradict the fact that the universe resembles nothing and it is only formless quantities, it is said that the universe is something like a spider or spit.”

(Translated by author).

Moreover, the value of this paragraph is the fact that Bataille uses formless as provocation, as action, as a performance for challenging the academic world, and the state of the system that insists on explaining anything in the world by assigning fixed forms and mathematical explanations. Bataille also implies that, in the academic world, everything is supposed to have utility, otherwise it is destroyed. Consequently, the academy tends to kill the meaning of things in order to keep utility and fixed form. Finally, Bataille is interested in keeping formlessness as a way of keeping meaning against utility and fixed form. Additionally, in “La Conjuración Sagrada” (Sacred conjuration) (1936), George Bataille posits, “The Earth was a free universe when it still embodied only cataclysms, trees and birds: the fascination of that freedom disappeared when the Earth produced a being that required the need of a law over the universe.”

Bataille’s definition of formless can be tracked from his two theories of animality and sacrifice in an attempt to provide an alternative concept of the sacred. In that context, formlessness would be an operation to achieve continuity with nature, a type of sacred immanence in opposition to profane transcendence proposed by Biblical and Platonic paradigms. In his theory of animality, Bataille states that there is no difference between the animal eating and the one eaten because there is not perception of duration of time. That means that there is a perfect immanence or continuity with nature. What differentiates an animal from a human is the
consciousness of that discontinuity, and thus the need for transcendence through the production of objects to subjugate nature. That necessarily implies profanity. Therefore, for Bataille, the only way to liberate humans from the profane subject-object-nature dynamic, the self-identification of humans with the objects they produce, and the subjugation of nature, is through sacrifices. In his theory of sacrifice, Bataille states that, in primitive cultures, sacrifices were an operation which broke the integrity of objectivity, that is, the thingness of things and thus its individual form—which could be an artefact, an animal, or a person in the place of an object—in order to reach a continuity with nature. That operation necessarily implies dead. With that operation, objects will acquire a state of non-fixity or liquefaction, meaning formlessness. Sacrifice liberates objects from their tendency of form and duration and places them in a perfect returning to intimacy with nature through passion.31

In the book Formless: A User’s guide (1997), Yve-Alain Bois and Rosalind E. Krauss analyze works of art of the twentieth century from the perspective of Georges Bataille’s theory of the formless as provided in the magazine Documents (1929). According to Bois and Krauss’s interpretation, Bataille’s writings suggest the following four strategies to achieve formlessness: horizontality, changing the biological orientation of human beings; base materialism, an abstraction based on the separation between image and material; pulse, as a way of adding the dimension of time in the work of art; and entropy, an irreversible degradation that melt two things in a third one.32 In the conclusion, Krauss proposes an evolution of Bataille’s informe and his theory of animality. Krauss suggests that the work of art would be a borderline between object and subject, that is: abject. Krauss explains abject with the metaphor of the fetus that, living within a mucous-membranous shroud, can’t define the frontier between its own body and that of its mother. For Krauss, fetus and mother are indistinguishable substances.33
The second word in the thesis title is the “accident.” Etymologically, accident means “from the Latin accident, happening; from the verb accidere, ad- towards, to plus cadere- to fall.” In other words, “accident” means a happening towards the fall. “The fall” is the condition of instability, since, etymologically, unstable means “liable to fall, apt to move.” In my research, the accident is related to the rupture in a system that produces any transformation in nature at different scales, either in large infrequent disturbances, or in DNA modification. In *Chance and Necessity* (1971), Jacques Monod, the founder of cellular biology says:

> We call these events accidental; we say that they are random occurrences. And since they constitute the only possible source of modifications in the genetic text, itself the sole repository of the organism’s hereditary structures, it necessarily follows that chance alone is at the source of every innovation, of all creation in the biosphere. Pure chance, absolutely free but blind, at the very root of the stupendous edifice of evolution: this central concept of modern biology is no longer one among other possible or even conceivable hypotheses. It is today the sole conceivable hypothesis, the only one that squares with observed and tested fact.

In the video *Ecology as Ideology* (2010), Slavoj Zizek argues that Nature is about not balance but a series of accidents. Zizek says, “we wouldn’t have oil without the giant cataclysm that buried the dinosaurs in the past.” Hence, Nature is neither static nor about balance. It is true that Nature works with moving, constant processes such as growing, permutation, and fluency. However, what produces transformations in nature is the presence of accidents that displace the becoming’s spiral of time. That is not a surprise since *The Book of Mutations* (1997; 1st ed., 2737 BCE), one of the oldest books that tries to understand the logic(s) of nature, states that nature is in a constant state of mutation in which changes are produced by random events. According to the book, there are three states in nature: no mutation, permutation, and
transmutation. The state of no mutation is the transition in which changes appear. The state of permutation is a cyclical phenomenon in which each movement reveals the following and everything starts again. These are closed phenomena such as the course of the day, the year, the seasons, and the lifetime, and they repeat again and again until a mutation happens. The state of transmutation is a conjunction of divergent forces that penetrate suddenly into the system and produce changes and displacement of the whole system. Those conjunctions originate randomly; in other words, they are accidental. Then, the process of constant change starts again.38

We could think of the process of design in the same way. We can spend a lifetime making diagrams and maps, yet what causes the new thing to appear is an accident, or what the surrealists called a “magic moment.” In fact, that moment has been critical and is a subject of study in the arts and design education, including that of landscape architecture. We could find several examples in which art uses the accident as a strategy for closing the gap between nothing and something, pushing the thing to appear.39 In The Life of Forms in Art, Focillon states that, in the design process, there is an intrinsic metamorphosis and movement in which things transform to another state due to their own vitality. According to Focillon, the process of art is in movement, the transformations succeed one to the other, and the motto of that process is the accident, the “instant of rupture.”40 Similarly, in The Shape of Time. Remarks on the History of Things (2008; 1st ed., 1962), George Kubler points out that, even when there is a propagation of things, there is a process of sequence and progression in the work of art in which the artist is the intermediary. “Without invention there would be only routine.”41 In “Mutaciones e Invariancias” (Mutations and Constancy) (2004), Mauro Machado links the work of art with biology and philosophy working from the idea of the random accident as a unique entity that produces
perturbations, changes, and evolutions in biology and the arts. He calls upon the artists to trust in the “the fecundity of errors.”

Fall is the last word in the title of the thesis. In biblical terms, \textit{The Fall} refers to the expulsion of humans from the Garden of Eden after eating fruit from the Tree of Knowledge of Good and Evil. When Adam is expelled from the Garden of Eden he is sent to work the land, meaning, he is subjected to technical work. That is the moment when subject is separated from nature. Then, there is a dynamic movement in which humans (subjects) subjugate nature (object) and produce artefacts (objects) that are meant to be the transcendence of humans.

In contrast, in the Jungle, the pre-Edenic nature, there is need not of technical work but only to survive in the becoming. In the pre-Edenic nature, there is no transcendence of humans because they are similar to the rest of nature in a subject-subject dissonant relationship. In this context of pure subjectivity and immanence, in which utility doesn’t make sense, what is the objective and the destiny of artefacts?

Pierre Klosowski, a philosopher and artist who participated in most of the issues of Bataillie’s review \textit{Acèphale} (1936-1939) was particularly interested in the study of the Marquis de Sade. In one of the volumes of \textit{Acèphale} he wrote an article called “El Monstruo” (Monster) in which he quoted Sade’s Testament that could be interesting to think about the objective, and destiny of artefacts:

\begin{quote}
Finally I forbid the dissection of my body under any pretext, and my body must remind in the room in which I died for forty eight hours in a wooden coffin which should be nailed shut only after that… An instruction will be sent to Sr. Lenormand, seller of woods…in order to beg him to come with a cart, take my body and transport it to the forest in my land of Malmaison…where I want my body to be placed, without any ceremony…My pit will be opened in that forest by
\end{quote}
the rancher of Malmaison under Lenormand’s inspection, who will not abandon my body until he deposits it into the pit…Once the pit is closed, acorns will be planted, and when the pit is covered and the forest reconstitutes, the traces of my tomb will disappear from the surface of the land, in the same way as I bragged that my memory will be erased from the spirit of people.43 (Translated by author).

What the Marquis de Sade proposes as a final objective is a fusion of the subject and the artefact with nature in an act of appropriating Nature. Sade doesn’t avoid the autonomy of the artefactual “tomb.” The tomb modifies the site, destroys the forest momentarily, makes a pit in the land, introduces the artefact—that is, the body and the wooden coffin—and gives it to nature in order it to make the last sacrifice. Consequently, there is a dissonant relationship in which artefact and nature modify each other, and, in doing so, the artefact reaches a kind of eternal continuity with nature when becoming trees. In other words, in order to achieve the state of continued becoming and continuity with nature, the artefact must be sacrificed. Thus, it becomes subject again—meaning, nature. As in primitive sacrifices, that is the guarantee for objects to achieve a sacred state in a subject-subject relationship between humans and nature. That process of elimination of objectivity is the opposite of the Biblical or Platonic paradigm, the last of objective of which is transcendence of subject through objects. Specifically, Biblical and Platonic paradigms need to preserve artefacts or images as a guarantee of religiosity—meaning, the truth. Again, if the power of Biblical or Platonic paradigms resides in representation (transmission of the truth through fixed forms and images), the power of Sadism resides in the direct action of giving life and death to things. While Biblical and Platonic paradigms anticipate and represent eternity, Sadism executes it in real time. Biblical and Platonic paradigms work with faith and reason, Sadism works with passion, since immanence cannot be explained by the reason.
PROCEDURES

If art is self effacement to begin with, what Cage achieves is self-abolishment. We said earlier that the painter’s mastery consists in stepping aside and letting things be themselves. Cage stepped aside to such a degree that we really see the end of the world, the end of art. That is the paradox. That this very self-abolishment mirrors its opposite—an omniscient dogma of final things. It does suggest, it does have an aura, of art’s final revelation.44

Platonic and Biblical paradigms have been imprinted in human thought and have impacted education, practice, and research design for a long time. In their willingness to ensure the authority of the designer, both paradigms have developed systems and methods for producing artefacts characterized by their detachment from natural processes, including social processes as part of nature, replacing them with fixed forms. These systems and methods of design generation are based on composition and determination. Composition is specific to the Biblical, as the way of setting known things from the past—Eden—together in a whole in order to arrive at a fixed form that is also previously known—Eden Restored. Determination is specific to the Platonic, arriving at a form placed in the future—Utopia—through a process of successive decisions. That process could be understood as repetition of archetypes—the assumed language through which we understand Nature and arrive at Form—or other kind of contemporary processes to arrive to fixed forms.45 Thus, both Biblical and Platonic paradigms replace nature with their artefacts.

In the book El concepto del espacio arquitectónico desde el Barroco a nuestros días (The concept of architectural space from the Baroque until now) (1979), Giulio Argan develops a theory about these two models of design. According to the author, “Architecture of Composition” accepts the authority of pre-established forms. In compositional terms, design is understood as the art of selecting and combining those forms without interference from the data
of any context because the context is also supposed to be known. In contrast, “Architecture of Determination” doesn’t admit the authority of these pre-established forms. In determination terms, design is meant to be a progressive production that arrives at form while data of the context is being incorporated in the project. Therefore, “Architecture of Determination” exchanges the authority of the system for the authority of methodology. According to Argan, that duality started in the Renaissance with Leonardo and was then developed by Galileo. The author states that in the Renaissance, architects felt they couldn’t continue representing a reality outside of themselves with the forms they had. Instead, that reality would be a process of determination through architectural forms. However, in doing so, they again replace reality with fixed forms being that the objective of that process is to arrive at new formal repertories for a context that is as determined—although not apparent—as it is in composition. In other words, the Biblical paradigm arrives at fixed forms through faith, while the Platonic does it through reason. My argument is that landscape architecture designs based on Biblical and Platonic paradigms are not able to rethink how to produce artefacts in relation to process of nature because in both procedures there is a conceptual separation between subject (designer), and object (artefact), and nature. In this context, designers pursue the achievement of fixed forms, the replacement of natural and social processes by those fixed forms, because the latter are meant to symbolize their triumph over nature/reality; that means, their own transcendence. None of them attempt or otherwise have the objective of transforming reality, just of arriving at fixed forms. Their artefacts are not able to let processes of nature affect them, since the effort is put into avoiding everything that could distort artefacts. Besides, none of them address the becoming. This polar argument, clearly developed by Argan in 1979, is the same we still have concerning contemporary design in the disciplines of landscape architecture and architecture.
In the context of the Jungle paradigm, these systems and methods are not valid since the qualities of the jungle don’t accept any of their objectives. The jungle doesn’t have final form. Jungle is the becoming, jungle is incommensurable, jungle cannot be represented, jungle is useless. Consequently we need to find an alternative to composition and determination.

My thesis proposes that alternative called indeterminacy. Indeterminacy has been developed theoretically by several authors, yet a gap remains between theory and practice. Conceptually, indeterminacy means something that has not been finished, something the limits of which have yet to be defined. In his book *Architecture of Indeterminacy* (2000), Yago Conde defines indeterminacy in design as a “certain state of suspension within the precise meaning of the object, resulting from the reconsideration of the limits in which this is inscribed.” However, when Yago Conde attempts to provide procedures, he over-determines his design. That is the case with his project *Magic Fountain*, where Conde applies John Cage’s *Fontana Mix* score as a source of inspiration. He designs a fountain constituted by several threads of water that spread through the soil according to the geology of the site. However, Conde fails in fixing the form of the fountain, which is contradictory to the concept of indeterminacy and the work of Cage. That is to say, *Fontana Mix* was a score constituted by several pieces of transparent paper with lines, surfaces, and dots. The spirit of that score was that each composer could overlap each of the transparent pieces as he/she pleased, resulting in an infinite number of possible performances. In contrast, Conde fixes the final configuration of the water threads, preventing water from doing what it will. In the article “An Ecological Method for Landscape Architecture” (1967), Ian McHarg called for a kind of design the main objective of which would be to reveal natural processes that are intrinsic in the ecological and cultural evolution of each site over the time. However, when McHarg wrote about the relationship between nature and artefacts, he used
Louis Kahn as an example of ecological method, focusing on the theory of the will of materials. In that regard, there is contradiction in that Kahn’s ultimate objective seems to be to arrive to a fixed form even though natural processes would never achieve such a condition. That contradiction could be illustrated by the Salk Institute, in which everything changes except for the building. Curiously, even McHarg’s concept of ecological design seems to identify fixed forms as an ultimate objective when McHarg describes his method as “the perception of form, an insight to be given a form.”

Consequently, it is necessary to continue developing conceptually and practically the concept of indeterminacy, most of all for unstable territories. Indeterminacy relies neither on the authority of the system nor on the methodology. Instead, it relies on poiesis—that is, making, producing, fabricating, and/or modifying matter with our own body at 1:1 scale and in real time. In David Hays’s words, poiesis is “speculation based on expertise.” Located neither in the future, nor in the past, indeterminacy requires the performer to be placed in the becoming, to be part of natural processes. Its objective is not explaining nature through forms but to be part of nature. No transcendence to pursue, no form to be achieved. Given the Jungle as a pure immanence and process, indeterminacy works through direct speculations grounded in manipulation of matter, time, and intangible information latent in the site. Achieving that is made possible by providing parameters and degrees of freedom that allow the manifestation of natural—and social—processes without pretending to control the final configuration.
Figure 2.8. Analysis and comparison of Biblical, Platonic, and Jungle paradigms procedures. Developed by author.
CHAPTER 3: ASSUMPTIONS, AND LENS

THE RELATIONSHIP BETWEEN NATURE AND ARTEFACTS IN MAGIC REALISM

Magic Realism—one of the most grounded expressions of Latin American art—defines the condition of Latin American people as a human-nature hybrid predicated on subject-subject relationships. The relationship between humans and nature is characterized as a dissonance between the strength of nature and the wildness of the Native. Latin American culture is framed as hybrid and contradictory, since it represents at once the Native and the European, the “barbarian” and the “civilized.” Emerging out of that nexus, the work of art will be also hybrid since it is imbibed on these questions. These theories can be found in the literature of Rodolfo Kush and Alejo Carpentier, and in Latin American Magic Realism broadly.

In “La Seducción de la Barbarie” (The seduction of the barbarism) (2007; 1st ed., 1953), Rodolfo Kush states that Latin American people are beings between nature and human. According to Kush, since Latin American people were cut off from the land during the different processes of colonization they look for their forgotten roots in landscape. And more than that, Kush vegetalizes the human condition, suggesting that we are only an amputated element of land and vegetation:

For Latin American People, mobility means only an apparent freedom from the vegetal since it is a mean for returning deeply to vegetation. […] The distance between vegetation and human being is only a different application of an original energy. Founding a town, writing a book, any act means reconnecting with landscape; perpetuating the vegetation’s immobile and static truth. (Translated by author).
Similarly, Alejo Carpentier, author of the *Real Marvelous Manifesto*, synthesizes human beings and nature, and says that the work of art lies in the capacity of humans as being conscious part of the forces of nature. In the book *Los Pasos Perdidos* (The Lost Steps) (1975; 1st ed., 1953), Carpentier says that the first sound with artistic purpose is the act of a *shaman* (wise man with magical powers) who yells when extracting health from nature and transporting it to the body of a dead man.\(^5\) In *El Reino de este Mundo* (The Kingdom of this World) (2004; 1st ed., 1949), Carpentier addresses the ideas of humans becoming animals through metamorphosis, and of the magic powers of nature taken by humans in order to change reality:

Having the power of transformation in animal, birth, fish or insect, Macklandal visited the *ranchos* in order to watch over his devotees and figure out if they still entrusted his returning. From metamorphosis to metamorphosis, Maklandal was everywhere, recovering his corporal integrity after having transformed into animals. With wings one day, with gills another day, galloping or creeping he was the owner of underground rivers, bank caverns, trees, and he was the island’s kingdom.\(^6\) (Translated by author).

In comparison, novelist Miguel Angel Asturias reverses the order of things, giving nature power over human beings and artifacts. He also dissolves the boundaries between human beings, artifacts, and nature. His characters are elements of nature “who” construct and live in the world and teach human beings how to live. In *Leyendas de Guatemala* (Legends of Guatemala) (1957; 1st ed., 1930), Asturias writes:

The invisible Goodness of Absence’s Pigeons, the founder of another city close to the sea where it was known about the other city called The Serpent with hushes of horizons, did know that a messenger river came to the coasts from the highest mountains, and commanded the fields to bloom in the river’s path, twelve places before the coast so that the river enters into the city dressed with petals, drunk
with fragrances to teach people what they forgot about the Kingdom of Love.”

(Translated by author).

The theory of hybridization presented in these works of literature contributes to the general conceptual framework in which this thesis is immersed, explaining the willingness of this author to explore the possibilities of interim states of things and also to advocate for nurturing the space between nature and artifact.

Figure 3.1. Subject-subject relationship. Frida Khalo, Mundo Real and Danza al Sol, 1942. Images from http://xoloitzcuintle.creatuforo.com (Originals in the unpublished diary “Alas rotas”). Note that figures are hybrid human-animals.
THE PROCESS OF DESIGN IN MAGIC REALISM

This thesis proceeds with the concept of design provided by Magic Realism as a sequence of finding, unexpected alteration, and trans-forming towards the limit of the raw material. This concept of the research and design process could find its theoretical basis in Alejo Carpentier’s theory of the “Real Marvelous.” In the book, El Reino de este Mundo, considered the manifesto of the “Real Marvelous,” Carpentier states that the work of art is a sequence of finding based on a particular illumination and conceptualization of something from reality, followed by an unexpected alteration or transformation of that raw material towards its own limit.

But many people forget by disguising like wizard at very low cost that the marvelous starts unequivocally when it comes from an unexpected alteration of the reality (the miracle), from a privileged elevation of the reality, from an unordinary or singular illumination that strengthened the unnoticed richness of reality, from an amplification of the scales and categories of reality, perceived with particular intensity in virtue of an exaltation of the spirit that conducts the reality to a state of limit.58 (Translated by author).

That is to say, ideas do not just land in the artist’s mind and hands from nowhere; on the contrary, the artist finds and steals materials and processes from reality to produce a new thing through transformation in which the new thing always has the DNA of the raw material and the DNA of the author. This is not a contextualist or naturalistic attitude towards art; instead, this is an exercise of mutual respect for the independence of both, the raw material and the artist.
CHAPTER 4: RESEARCH QUESTIONS

ISOMORPHISM IN ART AND NATURE

The difference between artificial and natural products seems obvious to most people. However, though the definition of artefact as a product made with a purpose, artificial and natural take on a close similarity. Jacques Monod dedicated a complete chapter of his book *Chance and Necessity* (1971) to fixing objective parameters for distinguishing the difference between natural and human artefacts, and he concludes by suggesting that, in several cases, this is impossible due to the paradox of isomorphism. Monod posits that, in some cases, two products, one ostensibly natural and the other artificial, could be undistinguishable, even when they have completely different genetic origins. Monod works with a radical example of a Martian scientist who has to discern differences between a honeycomb and a housing group, a horse and a car, and other pairings. Ultimately, the Martian is unable to recognize whether each is a natural or an artificial product. In “Mutaciones e invariancias,” Mauro Machado defines isomorphism in mathematics as an overlap of two complex structures in which one is projected into the other in such a way that each of them has a part of the other. Machado also says that the discovery of things in between two known things is always a development of knowledge:

A mathematician rejoices when discovering an isomorphism in between two known structures. For him/her it means an “illumination” and it is always a source of astonishment. In general, the discovering of an isomorphism is a new knowledge and the perceptions of the isomorphism are the ones which generate meanings in human brain. (Translated by author).

I support the idea that artistic and natural processes are completely related and linked. The difference between natural and human artefacts is a human convention; that is, it is a cultural
parameter and depends on human perception, but it is not an objective quality of artefacts. Saying that, I am placing humans at the same level of the rest of nature. Therefore, the processes of nature and design are so close that we could say that nature is about art just as art is about nature.

TRANSFORMATION

**hybrid (n.):** “c.1600, from the Latin, *hybrida*, variant of *ibrida* "mongrel," specifically, "offspring of a tame sow and a wild boar," of unknown origin but probably from Greek and somehow related to hubris. A rare word before c.1850. The adjective is attested from 1716.”

**metamorphosis:** “1530s, "change of form or shape, especially by witchcraft," from the Latin, metamorphosis, "a transforming," from *metamorphoun* "to transform," from *meta-"change" + morphe "form.""

**transmutation:** “late 14c., from O.Fr. transmutation (12c.), from the Latin, *transmutationem* (nom. *transmutatio*) "a change, shift," noun of action from the Latin, *transmutare* "change from one condition to another," from *trans-* "thoroughly" + *mutare* "to change". A word from alchemy.”

**mutable (adj.):** “late 14c., "liable to change," from the Latin, *mutabilis* "changeable," from *mutare* "to change," from PIE root *mei-"to change, go, move" (cf. Skt. *methati* "changes, alternates, joins, meets;" Avestan mitho "perverted, false;" L. *meare* "to go, pass," *migrare* "to move from one place to another;" O.C.S. mite "alternately;" Czech *mijim* "to go by, pass by," Pol. *mijać* "avoid;" Goth. *maidjan* "to change;" Hitt. *mutai- "be changed into"”)."
**transform:** “mid-14c., from the Latin, *transformare* "change the shape or form of,"
from *trans-* "across" + *formare* "to form."\(^65\)

My research seeks to figure out which of the above mentioned operations could best contribute to a new model for design. I am not sure that we can produce hybridization between nature and artefacts since that could only be made at cellular level, such as in GMOs. We could in any case extract qualities from nature, for example permeability of skin or adaptability as a general concept, but true hybridization does not seem possible. Metamorphosis in the strict meaning of the word seems inadequate to the model, since it implies the fulfillment of a plan, a previous knowledge of the result that is just the opposite of what the research seeks. According to Mauro Machado:

> The term Mutate means something that has changed in its composition or structure, sometimes it is used move as a synonym. It is something that has been changed for becoming other thing, something from which we cannot trace a relationship of continuity with the starting point. We could associate mutation with metamorphosis; however the first term is a more radical transformation. In metamorphosis we can find the existence of a plan, a project to be fulfilled or verified with circular regularity and for this reason we can predict its final estate since it was implicit from the beginning.\(^66\) (Translated by author).

In contrast, transmutation and transformation both seem to be possible operations for design, and transformation could even be a part of a process of transmutation, since when going from the form to the formless, we also could change the behavior of nature and artifact in a given context due to the presence of the accident.

The process of transformation from one thing to another presupposes the quantitative and qualitative knowledge of the raw material—in this case, nature.
Several authors have studied processes in nature through the geometry of natural forms and patterns. However, they have recognized the limitations of the discipline. For instance, in *Nature’s Patterns. A Tapestry in Three Parts. Shape* (2009), Philip Ball explores the regularity of forms in nature, such as repetition, geometric order in animals, textures, and nest shapes, telling us how their patterns are created as division of space guided by physical phenomena. In the book *On Growth and Form* (1952; 1st ed., 1917), D’Arcy Wentworth Thompson researches and develops graphic models about the patterns of growth and form generated by a biological transformation. He addresses the way species evolve in form and structure, providing very interesting information about physical laws, mechanics and geometry. However, in the last chapter, “The theory of transformation,” he recognizes the limitations of his theory by saying that mathematics is still far from an understanding of nature because the methods of the former are oversimplified relative to the processes and forces that appear in the development of living things. Mathematical models lack the capacity to represent various differences or particularities in nature that do not fix into math models—not surprisingly the most interesting ones. According to Thompson, humans only understand the forms of living things and their transformations within poor and rudimentary mathematical models. After completing 1,000 pages of drawings about transformation in living things, Thompson wrote:

If no chain hangs in a perfect catenary and no raindrop is a perfect sphere, this is for the reason that forces and resistances other than the main one are inevitably at work.

One more, and this is the greatest gain of all, we pass quickly and easily from the mathematical concept of form in its static aspect to form in its dynamical relations: we rise from the conception of form to an understanding of forces which gave rise to it; and in the representation of form and in the comparison of kindred forms, we see in the one case a diagram of forces in equilibrium, and in
the other case we discern the magnitude and the direction of the forces which have sufficed to convert the one form into the other. Here, since a change of material form is only effected by the movement of matter, we have once again the support of the schoolman’s and the philosopher’s axiom: *ignorato motu, ignoratur natura.*

Many other studies about natural form have been taken place from Thompson (1917) until now. In “Forma e inconformidad” (Form and inconformity) (2012), Mauro Machado develops a brief but useful genealogy of mathematical models that attempt to provide an understanding of natural patterns through geometry. According to Machado, the Theory of Fractals by Mandelbrot and the Theory of the Seven Catastrophes by René Thom provided a better understanding of complex geometries in nature that were taken apart by Euclidean explanations. However Machado implies that, due to its detachment from physicality, even complex geometry is not sufficient for understanding processes in nature.

Among Philip Ball’s writings, the most significant for this thesis could be *Nature’s Patterns: A Tapestry in Three Parts: Flow* (2009) and *Nature’s Patterns: A Tapestry in Three Parts: Branches* (2009). In the first one of those, Ball studies fluid processes in nature and the arrangements and materials generated through this permanent physical state of motion. In the second volume, he explores dendritic patterns produced by processes of growing and flowing in different biotic and abiotic situations. Ball’s work is strongly useful related to design projects in a place where water and soil are in constant flux. In addition, in *Design in Nature: How the Constructal Law Governs Evolution in Biology, Physics, Technology and Social Organization* (2012), Adrian Bejan and J. Peder Zane explore the possibilities of what they call “the constructal law”—meaning, a kind of conceptual technique to predict the natural phenomena that generate patterns. In particular, I consider their chapters “The Birth of Flow” and “The Birth of
Design” useful for my own research since they describe experiments that could inform predictions about movements in the Charigüé island. Also, the ASCE Manuals and Reports on Engineering Practice No. 110: Sedimentation Engineering: Process, Measurement, Modeling, and Practice (2007), edited by Marcelo García; the book Open Channel Hydraulics (2001) by Terry W. Sturm; and Rivers Morphodynamics, course given by Prof. Gary Parker at the University of Illinois at Urbana-Champaign, provide valuable information and tools to explore specific phenomena of the Paraná River.

Several texts and studies about processes of transformation in art could be productive for exploring the possibilities of constructing a natural-artificial strategy. For example, Ovid’s Metamorphoses (ca. 1-8 AD) is about the history of everything that can become other things. Gods, humans, animals, and natural elements disguise themselves, shift their shape, or become other things. Ovid takes Greek myths, sometimes uses them as they are, and otherwise distorts them as his characters do. So, the idea of distortion and displacement in the work of art as a process of transformation here takes special significance. Ovid’s book is extremely inspiring for thinking about how nature and art can mutate into other things by the means of design. We can find examples of this strategy of distortion and displacement in the work of Ladislao Kelity, who paints seeming radiographies of animals, plants, and people melting and migrating one to the other.

Another interesting book that could suggest or guide design procedures is Michael Maier’s Atalanta Fugiens, hoc est, Emblemata Nova de Secretis Naturae Chymica (1964; 1st ed., 1618). That book is organized in chapters by emblems consisting of a drawing, a text (with a motto, an epigram, and a discourse), and a musical score. Maier uses alchemical formulas derived from the qualitative study of natural materials for making a work of art. He uses the
myth of Atalanta and Hippomenes to talk about transformation towards illumination. In the myth of Atalanta, Hippomenes deposits gold apples in Atalanta's path so that she stops her escape and falls. My intuition is that Maier reproduces—fifty times—Atalanta's escape in order to show the transmutation from innocence to desire, as a metaphor for the larger context of transmutation of things from one to another. Maybe that is why a book about three conditions—Atalanta, Hippomenes, and golden apples—juxtaposes text, music, and drawing in order to reach transmutation. I think this book is very useful not only because it provides ideas about alchemy, which is essentially how to change qualities of things, but also for the idea of multimedia as a way of producing transformations that take place in the instant in which we pass from one medium to another. We can find examples of that strategy in the work made in courses I teach in Argentina, in which students work in a sequential process that goes from literature to painting and collages, then to a model, and finally to plans. We can also analyze other works, such as Julie Mehretu’s paintings based on deconstruction and the overlapping of parts of previous drawings to make fictional landscapes.

The above-mentioned works of literature provide a starting point for thinking about design process. However, they are not sufficient to understand how artefacts and nature relate to each other in a process of mutual, continual transformation because all them have the objective of pursuing new formal repertories, which is not the objective of the thesis.

**BECOMING**

As noted in the introduction, “the Fall” is the condition of instability, since the etymology of *unstable* means “liable to fall, apt to move.” In addition, “the Fall” invokes the expulsion of
humans from the Garden of Eden after having eaten fruit from the Tree of Knowledge of Good and Evil. Alas, as noted before, this thesis addresses pre-Edenic Nature—that is, the Jungle, the eternal becoming—and it means the sacrifice of the thingness of the artefacts to return to nature—that is, immanence. In addition, “the Fall” is related the myth of Atalanta, in which she suffers a transmutation during her escape and falls when taking the gold apple that Hippomenes puts in her path. Therefore, “the Fall” indicates a sense of time, a sense of continuing transformation towards a future continuity with nature, and an intuition that the future will be a failure, destruction, or something uncontrollable because the Jungle is unpredictable.

In “Becoming/Being” (2005), Paolo Soleri states that reality has two components: becoming and being. Becoming would be the dimension of reality that contains time and space and in which the matter and energy are in constant change and metamorphosis: “Becoming, the now, is spaceful. Being, the past, is spaceless. Becoming is space in constant metamorphosis. Being is stored-up becoming, i.e., the past is the spaceless storage of being.” Soleri also says that “space-time is space-change and, as a consequence, the mass-energy is a variation of space in metamorphosis.” From that point of view, the becoming would generate an overlapping of layers in which things propagate in a constant modification of their qualitative and quantitative composition. From another perspective, that of George Kubler, things are in constant becoming, and they use humans as a medium for their transformation: “things generate other things in their own image by human intermediaries captivated by the possibilities of sequence and progression.” According to Kubler, the nature of change in arts is a sequence over the time in which inventions are relative in space and time, since they are pieces of a network of other inventions that are connected to each other. Therefore, forms are in constant movement and change and have different durations and periods of length.
could exemplify the idea of becoming in making an artefact is the work of Enric Miralles. In the book *Enric Miralles, 1972-2000* (2011), Josep M. Rovira analyzes the contribution of Miralles’s architecture, focusing on the idea of the becoming as a process in which things propagate from one another and the projects are constructed from the unfinished things and questions that previous projects left open: “The duration of a project is transferred from one to the other with invisible relationships and secret reasons that keep on existing.”81 (Translation by author).

Another example for showing the idea of the becoming in artifacts could be the *La casa de los nombres* (House of the names) in Ritoque, Chile, made by the School of Valparaiso, Chile. In that case, the building is constructed in a dune that is in movement. The building was made with the idea of ephemerality, by choosing materials and construction methods that allowed the building to break apart while the dunes move. Therefore, the building didn’t have foundations, the flooring was laid without concrete, and the skin was made with plastic. In addition, the shape of the building mimicked the undulation of the dune in order to reduce the friction with wind. A third example could be a series of paintings by Mauro Machado. In the series *La naturaleza de la existencia física* (Nature of physical existence) (1994), and in *Cristina* (1996), Machado explores the potentialities of the process of steel and cooper oxidation over time; in *Autoorganización. Lejos del equilibrio* (Self-regulation. Far from balance) (1996) and in *Regulación Alostérica* (Allosteric Regulation) (1996), he explores the metastasis of coffee and tea fungus respectively, in such a way that he loses control of the paintings’ final configurations.

Finally two movies could provide interesting insights about becoming: Peter Greenaway’s *Zoo: a Zed & Two Noughts* (1985) and Shin'ya Tsukamoto’s *Tetsuo, the Iron Man* (1989). In the first of those, two men lie on a structure in a clear space of a forest, turn on an automatic camera and a music player, inject themselves with some liquid, and die. A million
snails come, destroy the artefacts, and overtake everything, including the humans. As they were already dead, the men were artefacts that became nature when snails ate them. In contrast, in *Tetsuo*, the character introduces a piece of iron into his leg, and then he becomes a monster due to the metastasis of iron into his body. In other words, the artefact introduced into a natural system becomes alive, and the human becomes artefact. Both artifact and nature lose something of their original condition to become a third entity: a monster.
CHAPTER 5: PROCEDURES FOR ACHIEVING FORMLESSNESS

From the beginning, my thesis has relied on the power of design to develop new repertories in the way we produce artefacts and manipulate territories in contemporary times. We can support the validity of aesthetics and the arts as tools not only for transforming the discipline but also for producing changes in society. In *The Shape of Time* Kubler wrote:

Aesthetic inventions are focused on individual awareness: they have no explanatory purpose; they only expand the range of human perception by enlarging the channels of human perception.\(^{84}\)

In addition, he points out the idea that art more than utilitarian inventions can anticipate and make cultural watersheds:

The fabric of society manifested no rupture, and the texture of useful inventions continued step by step in closely linked order, but the system of artistic invention was abruptly transformed, as if a large number of men had suddenly become aware that the inherited repertory of forms no longer corresponds to the actual meaning of existence.\(^{85}\)

Keeping that in mind, and working within the Paradigm and the Model, my thesis develops a series of procedures for achieving formlessness through design in three engaged actions: expedition with an interdisciplinary team, learning by teaching, and learning by making.\(^{86}\)

In summer 2012, I taught a vertical studio-seminar called “Spatial Demonstration of Culture and Nature. Formless Accidents” in the School of Architecture of Rosario, Argentina. During the course, students made an expedition to the site with an interdisciplinary team and identified patterns for understanding underlying processes. Each studied a particular quality of a
specific phenomenon in a selected place within the site. Once they understood that process, they had to think about how to interact with it. Then they had to establish different gradients of control so that the artefact lets nature affect it and vice versa. Therefore, the objective was to lose (or, at least, loosen) control over the final configuration of the artefact. The artefacts did not necessarily respond to a program for humans. No program, scale, or size was provided. The dimension of each artefact was defined by each unique project in relation to the scale of the phenomena and the strategy of the proposal. For example, some artefacts worked at the scale of a bird, others at the scale of a meander, others at the scale of a lacuna before or after flooding in a specific season. The projects can be organized in a kind of taxonomy that consists of:

- Artefacts as catalysts of biotic processes
- Artefacts as catalysts of abiotic processes
- Instruments for measuring processes and patterns
- Alternative infrastructures for production
- Alternative materials and techniques for construction
- Kinetic artefacts

Figure 5.1. Expedition with multidisciplinary team. May 2012. Photograph by Sol Depetris.
Figure 5.2. Identifying patterns to understand underlying processes. Developed by author from original images. Photographs and collages by author, Juan Baima, Mario Alcocer, and students.
The results of the projects demonstrated that, even when students could engage with the model and paradigm, it was difficult for them to disassemble their resilience to come back to the previous paradigms. That is because the hegemony of previous paradigms has implications not only for the results of the products, but also for the kind of intellectuals they produce. That is to say, previous paradigms impose the authority of a system and methods such that ultimately they produce students with serious difficulties in the self-management of knowledge.

As instructor, one of the most important problems I discerned was a tendency to represent instead of to demonstrate. In fact, the curriculum of the School of Architecture at Rosario is based on tools through which to reach fixed forms. Calculations and materiality are replaced by representation instead of demonstration of process. As an illustration of that, students never experience direct observation, construction, or 1:1 scale models—except for Matéricos Periféricos Group. For that reason, students don’t have empirical knowledge about natural process, process of construction, or behavior of materials. Instead, there is a huge dependence on the images that international competitions impose, software induces, and companies sell. Furthermore, the hegemony of the final image and form implies the hegemony of the result over the process, making it difficult to put more experimental approaches on the table.

Moreover, the School of Architecture at Rosario has traditionally understood landscape as decoration around artefacts, or artefacts as objects in landscape. This fact complicated the ability to understand a more complex relationship between them, not to mention the mechanics of a course that attempted to mix architecture and landscape architecture. In “Landscape within Architecture (within Landscape)” (2004), David Hays introduces a series of pedagogical experiences made through cross-disciplinary collaboration between architecture and landscape architecture. He argues that, in contemporary times, landscape appears in the scope of
architecture because instability, change, and other processes proper to natural forces have been valued in the discipline as an alternative to the modern tradition. Hays posits that, “For buildings to become more than objects, architects must recalibrate their field of perception spatially, temporally, and conceptually, moving beyond the limits of the building to the contexts in which their work will be situated and to which it will ultimately contribute.”87

Lastly, concerning the summer course at the School of Architecture, the pedagogy itself failed. That is, the format of the seminar, the tools employed, and the procedures provided to students were still not well developed. It was evident that understanding underlying processes through the means of identifying patterns couldn’t go beyond of patterns themselves, as if we were working with the old way of collecting and giving names, and then translating natural patterns into formal artefacts. That is also a legacy of the earlier paradigms, which has a contemporary version in “patternig.” Therefore, it was difficult to displace that direct, formal translation from nature to artefacts in order to detect the accidents, the failures, and the extraordinary processes that make the particularity of each site and then to make them manifest through accidental approaches. In addition, I had not developed a system of notation, though doing so could have been extremely useful for the seminar, since notations could focus on variables, time, duration, and changes instead of on shape. Instead, we worked with orthogonal projections, perspectives, and plans, all tools used conventionally to represent fixed forms, and then we tried to distort them instead of developing a new system for something that is moving, dying, or leaving. Another problem was scale. Even when students could think about the scale of a particular phenomenon, once the size of projects went beyond the possibilities of human construction—time, material, transportation, energy available, and technology—they automatically produced a detachment from process of nature and construction. Thus, even when the seminar
could address some discussions about ownership, form, geometry, programming, productivity, progress, shelter, and/or space-time, it was difficult to make a contribution to the thesis in terms of indeterminacy and becoming. Besides, although the seminar impacted our city as a contribution towards changing perspectives towards nature and the specific place, the products can be considered in the middle of the path.

In July 05, 2012, 8:30 PM I e-mailed David Hays:

Subject: strong and weak - report before the disappointment.

We are in the final week...I am not happy enough... It is obvious, but it seems to be that the more the artefacts try to transform the island the stronger they need to be, and the more sensible the artefacts are—that is, the island could produce transformations on them—the weaker they should be. We could roughly apply sense of time to the artefacts, and the pulse of the site sometimes informed the artefacts. Some artefacts show, amplify, or measure a phenomenon, almost as instruments; others try to produce a transformation in the site, or transform themselves with the pressures of nature—moving or breaking apart or loosing parts. However, our artefacts still don't have pulse, they are not alive, they cannot grow, swim, fly or die...

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Figure 5.4. Exhibition of Studio Seminar “Spatial Demonstration of Culture and Nature. Formless Accidents.” School of Architecture, Planning and Design. Rosario National University. July, 2012. Photograph by author.
Taking that into account, the experience demonstrated that we cannot change paradigms and models if we do not change the underlying procedures. Hence, I proceeded to work on the next step: learning by making. In that way, I developed new procedures for achieving formlessness in three steps: generic training exercises, site invention, and performative scale. Those procedures go from process to process and are organized as a series of short exercises for making artefacts at full scale, in different sizes, and in real time. They are meant to be a progression from generic to site specific. The objective of that progression is to provide students with preliminary training to get away from previous paradigms, and then to work with manipulation of the qualities of a site in a process of finding-stealing-transforming-becoming. The third type of exercises are meant to explore the middle scale of the island through human-body performance, and the materials and human resources available within the site, applying procedures learned in the two previous exercises. The three steps are supposed to be a framework for students to explore their own concepts—within the Paradigm and Model—based on the “focus” I would provide.

**Indeterminacy**

- Comprising forces that cannot be fully analyzed.
- Allowing the manifestation of unexpected or accidental processes and patterns.
- Loosing the control of the ending.

**Vitality (Pulse)**
Speculations grounded on manipulation of time duration and rhythms of reactions and processes.

**Tangibility (Base materialism)**
Speculations grounded on manipulation of material qualities and their capacity of transformation

**Revelation (Disclosure)**
Speculations grounded on manipulation of the latency of intangible information.

*Figure 5.5. Conceptual development of Procedures for achieving Formlessness.* Developed by author.
GENERIC TRAINING EXERCISES

The objective of the following series of exercises/experiments is to understand indeterminacy in design. By making artefacts at 1:1 scale and in real time, students will develop useful new tools and attitudes towards the process of design:

• How to lose control over the final configuration of artefacts without being totally outside the product
• How to allow the manifestation of unexpected or accidental processes and patterns in nature
• How to comprise forces that cannot be fully analyzed previously

REVERSION: *Focus on Interface*

*Figure 5.6. Reversion.* Developed by author and tree.
Turn your thoughts toward nature in a reverse way. Allow nature to manifest itself instead of trying to represent it. Provide nature with the proper instruments for it to show you its characteristics. The product is what nature does, not what you do; you are only an interface. In this case, I provided a tree with pens, tying them to its branches. The tree revealed the movements of wind as conditioned by its own structure.

PULSE: *Focus on dissonance (♪)*

The relationship between nature and humans is subject-subject in dissonance, not subject-object, as we traditionally understand. Your products will have the DNA of both: yours and that of nature. In order to achieve that, think about how you would dialog with and relate to nature, what things you have in common, and then create an artefact able to find the dissonance between you and nature. Dissonance is not overlapping; it is at a higher level than that. In this case I created an artefact to find the dissonance between nature and humans through pulse.

HORIZONTALIZATION: Focus on parameters

Figure 5.8. Horizontal. Developed by author.

Do not represent anything, just work directly with data. Do not make plans or sections of the form, just create a system of notations for transmitting processes and actions to be performed. Do not pretend to have control over the final product, just create parameters for the manifestation of the performer. In this case I produced an undetermined score. Vertical lines are relative time, height is relative pitch, the sinuous line is a continuous sound, stroke is intensity of texture, and
circles are discontinuous sounds. Size of circle is duration of sound. The song will be different depending on the interpretation of the performer within the parameters I’ve created.

MISTAKING: *Focus on errors*

![Figure 5.9. Mistaking. Developed by author.](image)

We are going to exchange the famous phrase “God is in the details” for “*Nature is in the errors.*” The process of crafting allows you to take advantage of unintentional errors, disturbances, defects, or imperfections. Those are the manifestations of nature in your work. Do not erase them; instead, learn from them, and do not go back. Just take each stage as the base point for the next one. In this case, drawings appear on the table as a mistake while painting another thing on a sheet of paper. They revealed a line and the distortion that water could make in a gesture. Those drawings became the bases for the next work.
DISSOLUTION: *Focus on immanence*

![Figure 5.10. Dissolution. Developed by author.](image)

This is the opportunity to detach yourself from your willingness to transcend. Make a strong gesture, an artifact, and then give it to natural forces in order to make a sacrifice. Your work should be able to be broken up, or dispersed, or suffer putrefaction, and finally be appropriated by nature. In this case, I used watercolor, water, and a sheet of paper. I traced a line, and water dissolved it, making stains that reacted with the absorption of paper.

FADING: *Focus on weathering*

![Figure 5.11. Fading. Developed by author.](image)
Weather always affects artefacts, although humans have created several techniques for erasing and avoiding it instead of taking advantage of it. Your artefacts will always lose brightness, vividness of color, fixity. They are going to move with temperature and wind. They will gradually get old and suffer decay through their contact with the environment. Think about an experiment to amplify the effect of weathering in at least one quality of your artefact. In this case I worked with blood. Blood undergoes color shifts and changes in consistency when in contact with oxygen outside the body.

**CHANCE: Focus on finding**

![Figure 5.12. Chance. Developed by author.](image)

Chance is defined as the absence of predictability, or control over the result, and the probability of anything happening. In this case I entirely covered a sheet of paper with pigment and then blotted it several times with different sheets of paper with the same capacity of absorption. While disappearing, the pigment made different patterns in each piece of paper. I kept blotting until the ink was gone.
ECOTONE: Focus on nuance

Nature doesn’t have boundaries; instead it works with ecotones, in which nuances of species share a transitional space-time between two different ecosystems. Ecotones are a potential reservoir of heterogeneity in nature. That makes them an opportunity to think about how nature and artefacts interact in different gradients of quantity and quality. In this case, I traced a line with watercolor on dry sheets of papers with different absorption qualities and different thicknesses. Then, I laid moist sheets of paper onto the dried papers. Each line suffered a textural transformation, revealing the nuances of ink that were compressed in a line.
SITE INVENTIONS

A second series of exercises/experiments focuses on the ability to create the conditions for nature to manifest processes that are latent in the specific site. By making those artefacts at 1:1 scale and in real time, students develop new tools for learning:

• How to extract information (qualities and processes) from the site

• How to manipulate time, matter, and intangible information of a specific site based on:
  
  • Vitality (Pulse): Speculations grounded in manipulation of time duration and rhythms of reactions and processes.
  
  • Tangibility (Base Materialism): Speculations grounded in manipulation of material qualities and their capacity of transformation.
  
  • Revelation (Disclosure): Speculations grounded in manipulation of the latency of intangible information.

Artefacts will be a sequence of finding, extracting, and transforming through manipulation of the raw material, with combinations of two or three of the variables provided above. It is important to take into account that they are inventions, not representations of natural shapes of phenomena as they are in nature. Instead, they are artefacts made by manipulations of site phenomena. On the other hand, the products are not final products. Instead, they are a kind of photograph of an instant of something that is in continuous motion. They are site specific, although not contextual. That is to say, they are neither about taking care or killing the site, nor about melting site and artefact together, nor about pretending the artefacts to be nature or simulate nature. Instead, they are about feeling the fear of the site, and while playing form inside the mouth of the beast, stealing its qualities to make a third thing. They are always constructions.
EXCAVATION: *Focus on Latency* ($\mathcal{L}$)

Excavation: to unearth methodically in an attempt to discover buried information.\(^{89}\)

Latency: potential but not obvious or explicit.\(^{90}\)

Figure 5.14. *Excavation*. Composition, and score by author. Performer: Ariel Migliorelli. Fargus. Listen to the attached audio file ($\mathcal{L}$).

In this case, I stole the sounds of the river under the riverbed. In this artefact, I became the medium between river, music, and performer. The musical score consists of: vertical lines as relative time, position of elements as relative pitch, size of elements as relative intensity, and numbers as quantity of repetition within a discrete period of time. The song will be different depending on the interpretation of the performer within the parameters I’ve created.

OVERTHROW: *Focus on Duration*

Overthrow: The act of dissolving by force. Deposition; defeat; destruction; ruin. To overthrow a tyrant.\(^{91}\) The way rivers dissolve artefacts after a large period of flood.

Duration: the length of time that something lasts or continues.\(^{92}\)
In this case, I used materials similar to those of a river: pigment, water, and an absorbent surface. Then, I traced a strong gesture, a line. I repeated the same gesture on sheets of paper with the same capacity for absorption. I immersed all them in water for different lengths of time. Finally, I waited until the sheets of paper dried.

ACCUMULATION AND PROPAGATION: *Focus on Intensity*

Accumulation: the act or process of collecting together or becoming collected.  
Propagation: To multiply by any process of natural reproduction, as organisms; breed. The motion of sediments.

Intensity: great energy, strength, concentration, vehemence, etc., as of activity, thought, or feeling.

In this case, I accumulated charcoal on an absorbent paper. For additional instances, I kept the same quantities and qualities of materials and absorption of paper. For each sheet of paper, I threw water horizontally with different degrees of force, then waited until the paper dried.
PERCOLATION: *focus on Density*

Percolation: to permeate; penetrate gradually. To cause (a liquid) to pass through a fine mesh, a porous substance, or a fine mesh.\(^9^6\) The way river water is introduced into wetland systems. Density: a measure of the compactness of a substance, expressed as its mass per unit volume.\(^9^7\)
In this case, I introduced a fluid into solid matter—specifically, air into gelatine as it set. I waited until gelatine solidified further and then ate it. I repeated the experiment with other materials of different densities.

FLUCTUATION: *focus on Re-engraving (♪)*

Fluctuation: continual change from one point or condition to another. Variation of a body due to environmental factors that are not inherited. Wavelike motion of river surface; undulation. Re-engrave: to get and re-inscribe existent information engraved onto a surface by eroding, carving, etching with acid, or other process.

![Figure 5.18. Fluctuation. Composition, score, and arrangement by author. Saxophone: Ana Hochhalter. Listen to the attached audio file (♪).](image)

I this case, I took the lines of a river surface related to the riverbed and I re-engraved them by drawing on a sheet of paper. I made a musical score with those lines. Vertical lines are relative time, position of lines is relative pitch, continuous or discontinuous lines correspond to
continuity of sounds, and stroke of lines is relative intensity. I gave the score to a performer instructed to play each line at once, then I overlapped all of the performances in one piece. The song will be different depending on the interpretation of the performer within the parameters I have created.

OVERSTEPPING: Focus on Force

Overstepping: to go beyond; exceed. To pull or snatch or wrench away with force, especially so violently as to leaved ragged or irregular edges. To overstep one’s authority.\textsuperscript{100} The way sediments overstep the bank of the river after an intense large flood.

Force: a dynamic influence that changes a body from a state of rest to one of motion or changes its rate of motion. The magnitude of the force is equal to the product of the mass of the body and its acceleration. A static influence that produces an elastic strain in a body or system or bears weight.\textsuperscript{101}

\textbf{Figure 5.19. Overstepping.} Developed by author.
In this case, I traced a line with watercolor onto a sheet of paper, and then I forced the borders with another paper until the pigment was gone or absorbed completely by the sheet of paper. I repeated the same procedure, changing the intensity of the force.

DEARTH. Focus on Extinction

Dearth: an inadequate amount, esp. of food; scarcity. Process of soil drought provoked by successive dry seasons.

Extinction: suppression; abolition; annihilation: the extinction of an army. A coming to an end or dying out: the extinction of a species. The reduction or loss of a conditioned response as a result of the absence or withdrawal of reinforcement.

Figure 5.20. Dearth. Developed by author.

As in chance, I covered an entire sheet of paper with ink, and then I blotted it several times with different sheets of paper with the same capacity of absorption. I continued blotting until the ink was dry or gone.
ABSORPTION: *Focus on Porosity*

Absorption: assimilation; incorporation: the absorption of small farms into one big one. Uptake of substances by a tissue, as of nutrients through the wall of the intestine. A taking in or reception by molecular or chemical action, as of gases or liquids.\(^{104}\)

Porosity: The state or quality of being porous. The ratio, of the volume of the pores or interstices of a substance, as a rock or rock stratum, to the total volume of the mass.\(^{105}\) The porosity of a river bed.

![Figure 5.21. Absorption. Developed by author.](image)

In this case I submerged different sheets of paper with different absorption qualities and different thickness, keeping them equally under water. Then, I traced a line with watercolor. Each paper reacted differently according to its own capacity of absorption.
COAGULATION. *Focus on State of Matter.*

Coagulation: To change from a fluid into a thickened mass.\textsuperscript{106} Process of desiccation of earth when different concentrations of nutrients take place.

Matter: the substance or substances of which any physical object consists or is composed: the matter of which the earth is made. Physical or corporeal substance in general, whether solid, liquid, or gaseous, especially as distinguished from incorporeal substance, as spirit or mind, or from qualities, actions, and the like.\textsuperscript{107}

Figure 5.22. *Coagulation.* Developed by author.

In this case I prepared my body for seven days before my menstrual period by eating only carbohydrates. Carbohydrates increased the concentration of sugar in my blood. I put my blood on a sheet of paper and waited until it coagulated. I took the time and photos periodically. The month after that, I did do the same, but avoiding carbohydrates. I took the time and photos again.

FLUX: *Focus on Life.*

Flux: The rate of flow of particles, energy, or a fluid. Heraclitus: the state of constant change in which all things exist.\textsuperscript{108} The way water seeks the points of least resistance in soil through which to stream.
Life: the sum of the distinguishing phenomena of organisms, especially metabolism, growth, reproduction, and adaptation to environment. The animate existence or period of animate existence of an individual.¹⁰⁹

**Figure 5.23. Flux.** Developed by author.

In this case, I covered a semi-impermeable surface with ink, then I blotted it with several sheet of watercolor paper until I felt the ink was almost dried. Then I leaned and pressed another sheet of paper on the painted surface for 2 seconds and took it off. I waited until the ink dried.

**BEATING AND MIGRATION:** *Focus on Anatomize* (♪)

Beat: to throb rhythmically; pulsate.
Migration: A movement or change of position of atoms within a molecule. Diffusion. The way waves of water surface and dunes of river bed interact, move, and expand from one position to another.

Anatomize: To cut apart (an animal or plant) to show or examine and display the position, structure, and relation of the parts. Display the anatomy of something. Dissect.

In this case, I made two artefacts. For the Beating, I took one photograph of a river surface per minute over the course of 8 hours. Then, I compiled them in a video of 12 pictures per second. This video reveals the rhythm of the river. For Migration, I took 4 consecutive photos every 10
minutes during the same period of time. Then, I compiled them in a video of 8 pictures per second. This video reveals the migration of river waves in the surface.

SLIP AND ADHERENCE: *Focus on Transport* (♪)

Slip: to move, flow, pass, or go smoothly or easily; glide; slide.\(^\text{112}\)

Adherence: the quality of adhering; steady devotion, support, allegiance, or attachment.\(^\text{113}\)

Transport: The behavior of sediments and plants when transported by the forces of turbidity currents.

![Figure 5.25. Slip and adherence. Composition, and score by author. Performer: Ariel Migliorelli, Fargus. Listen to the attached audio file (♪).](image)

In this case I recorded the sounds of camalote plants (a type of coarse grass found in tropical South America) when travelling on the river, slipping and crashing together. I made a musical score with them. Vertical lines are relative time, high is relative pitch, the sinuous line is a
continuing sound, stroke is intensity of texture, red points are discontinue sounds. The song will be different depending on the interpretation of the performer within the parameters I’ve created.

PERFORMATIVE SCALE

The objective of the following exercises is to explore the possibilities of defining the Middle Scale of the Jungle from a subject-subject relationship between humans and nature. Scale is a human convention, not a quality of Nature, and it still is one of the most controversial topics in disciplines such as Landscape Ecology.

Since the 1980s, landscape ecology has developed a series of methods for determining scale (space and time) under the paradigm of hierarchy. That paradigm states that each phenomenon takes place at its own specific scale, although it is constrained by the higher layers of hierarchy—or broader scales—and explained by the finer scales that provide explanations. The definition of the scale of a particular phenomenon is usually defined by the identification of physical patterns. It is a convention that, studying such physical patterns, we could infer the underlying process and factors and then transfer them to other contexts and scales. The main issue with which scientists struggle—besides the size of territory to be studied, the way they select data, and the interpretation of data—is the fact that the hierarchy paradigm is an over simplification of the complexity of landscape dynamics. For instance, the interaction between territories, disturbances and organisms, and how they modify one another is still a matter of study. In fact, there is a branch of landscape ecology that defines scale (space and time) of territories according to an organism’s perception. That is called perceptual range, and it is defined by the distance up to which an organism perceives—through their allometry, visual acuity, and
other abilities—key features in landscape, such as suitability. That is to say, landscape scale could be defined not only by its physical features but also by the perception of organisms that interact and transform patterns in landscapes. Furthermore, if we are addressing a subject-subject relationship between humans and the rest of nature, we need to put them in a place of mutual perception. First of all, scale is about perception and evolves a perceptual relationship with the landscape that activates tactile and intellectual sensory. In The Landscape Approach (1998), Bernard Lassus approaches the scale of landscape from human perception. He points out that there are two scales in landscape: tactile and visual. Tactile scale would be defined as the distance up to which we can touch and smell, and it is imprinted in our immediate sensory knowledge. In contrast, visual scale is defined as a more integrative vision derived from an overall view through our eyes.

Identity is here like a kind of perfume, that is to say something that is not only lavender or violet but an entirely new entity. By choosing this metaphor, I intend to show that we must start from the heterogeneity of places and invent a new scale, which will be the regional scale (but can regions in fact be discussed in terms of perfumes?): the specific and concrete one that brings out the value of each of its components.

Scale of landscape has also been defined through musical instruments, given that music is not only a manifestation or product made of physical and imaginary materials stolen from landscape but that is also provides a unit of measurement of landscapes. For instance, there is a typical Argentinian drum called Bombo legüero made of wood and sheep's skin. Legüero comes from "legua" that is, three miles long measurement. This instrument was used not only for performing music but also to measure the Pampas and send messages through these territories similar to the prairie. Three miles long is supposed
to be the longest distance over which people can still hear the sound of the drum in the pampas as well as a reasonable distance to move by walking. The Bombo legüero has a deep and dark sound that is naturally related to earth. So, almost all the zambas and chacareras are typical music of the pampas, and their stories are about nature, land, and agriculture. We can make similar associations between mountain landscapes and wind instruments, such as Siku. The Argentinian Litoral—that is, the Paraná Delta—has been particularly a place of Chamamé music played mainly with acordeón. The acordeón produces sounds with the flux of wind similar to river turbulences or streams.

In this case, we are going to define scale through the interaction of human bodily performance, the capacity of man-made constructions, and site phenomena. We are going to work with the procedures we developed before in generic exercises and site inventions, without interference of representation. In other words, we are going to work from process to process. The middle scale of the site will be defined as a function of the size of the artefact that 200 students can make in the island with their own bodily performance, crafting, with materials available in the site or easy to transport there, without machines, without electricity, and in a period of five days. In order to have a general idea of the size, I am thinking of the way birds make their nests. They do not much more than the size of their body. In addition, based on empirical data of previous constructions with students we could say that we cannot go much farther than 0.5 m² per person in five days of work. Besides, it seems to be that when we go beyond a certain scale, we suffer a detachment from territory and work through machines and remote imaginary. Therefore, a middle scale based on human performance and natural phenomena is the limit of dissonance in which humans and nature manifest processes that are latent in the site.
Working at the middle scale, humans never control the final product; they just make a gesture, and nature decides on the ending.

TACTILE PERFORMATIVE SCALE

Human performance will reveal and activate processes that are latent in the site: turbulence, accumulation, and erosion of sediments. This revelation and activation also provokes the overthrow of the human action that becomes nature when it completes the performance.

In figure 5.26, we see the pulse of the river in the steady section in 2010. The artefact is the whole process that starts at a finding point, and we cannot predict the ending. In the graph, the color white represents flooding, which conditions the whole process. Yellow stands for the performance of humans, green is the performance of abiotic processes, and blue is the seedbed. When the conditions are favorable, dormant seeds activate and create a new environment. The red gap is the life of the artefact, and the artefact is the whole process until it becomes nature. Human gesture is a dissonance between the forces of water, as in a stream, turbulences, and the mechanical resistance of organic adobe that requires a performance to be fabricated. Then the raw material that came from nature becomes nature again.
SONOROUS PERFORMATIVE SCALE.

This exercise takes place on a little island alongside the main channel of the river. The island is divided into three parts by a new stream when seasonal flooding occurs. Students have to decide on their specific location within the new stream based on their own voices: telling whispers, telling a story, or yelling. The scale is defined as a combination of the maximum distance between people in which each can still listen to the voice of another according to the volume chosen. Once they decide on their places, each student must bury a post in the sand. The posts "record" the acoustic event. Then, nature completes the performance by accumulation and propagation of sediments. I have already made some experiments with students based on people’s voices. We went to the site, and students had to decide if they wanted to tell a story, tell a secret, or shout. Then we added a quantity of people for each kind of sound. Finally we decided the size and the location of artefacts for each scale.
This exercise is situated on a lake, where the movement of water is mainly vertical. Students have to fabricate a network to trap “camalote” and poetry. Students move over the land bringing colored synthetic trips and a word found through excavation. The network "records" the poetic event. Then, the network traps camalote plants, sediments accumulate, dormant seeds wake up, and nature continues the performance.

Figure 5.28. Poetic Performative Scale. Developed by author. Satellite image from Google Earth. Image of Camalote plant from http://swbiodiversity.org. Images of performance at Ciudad Abierta, Chile in 2009 with students from the School of Architecture, Planning and Design of Rosario University and School of Architecture of Catholic University of Valparaiso by Julián Barrale.
CHAPTER 6: FURTHER IMPLICATIONS

DESIGN OF INDETERMINACY

This chapter discusses the implications of Design of Indeterminacy as a third alternative to the present Design of Composition and Design of Determination for design in landscape architecture.

Paintings and scores are artefacts made by speculations at 1:1 scale and in real time. They address the concept of dissonance—subject-subject relationship between humans and the rest of nature—and work with indeterminacy—relative parameters instead of fixed forms. In the procedures, we can find that working with relative parameters—as opposed to controlling the final configuration—provokes the revelation of latent process, such as performer interpretation in scores or reactions and evolution of natural processes over the time in paintings. For instance, we can see indeterminacy in Performative Scale exercises, in which the performance of humans provokes the revelation of processes that are latent in nature (e.g., accumulation of sediments) but where humans don’t control the result.

Of course, the products of my model could be misinterpreted through Biblical/Platonic thought, translating the shape and rhythms of the score into static plans and sections. For that reason, it is important to acknowledge that paintings and scores are keyed to something (an event) in continuous transformation. That is, they are artefacts, but they are also the processes themselves. This could be a pedagogical key step in the transitions from one experiment to another, specifically from Site Inventions to Performative Scale—that is, when we change from one size to another. However, we can see that, in Performative Scale, I do not take the shapes of the paintings or scores. Instead, I move from turbulence to provoke turbulence, or from
excavation to produce excavation. That should be something to take care at the moment of application. In fact, Site Inventions are site-specific constructions and inventions at the same time. They are generated from speculations grounded on the site; however, they are not nature in its original state or representations of nature. They are a dissonance between humans and nature in which both preserve their independence. Otherwise they would be only experiments.

Finally, Design of Indeterminacy could make a contribution to design generation in "human-human" relationships. One of the first times I thought about indeterminacy and formlessness was five years ago when I was making a plaza. The construction company put a pile of bricks in place and procrastinated in beginning their work. One day, a neighbor came to my office and told me, "people are stealing the bricks." I went there, and I realized that children had played with the bricks to make their own plaza, then they failed to pile them up again as they had found. I went the day after and the plaza had another configuration again made by children. I got amazed, and I thought that could be a way for designers to make a plaza, contributing just enough to reveal what children and bricks wanted to be. The government agency for which I worked rejected that idea, and then we had to fix it. Designers want to fix everything and then show pictures of their constructions without people. In that meaning, I think, Design of Indeterminacy has something to say as a contribution to existing participatory methodologies.
The similarity between the products of my model and those of nature, arts, and science could be explained as convergent evolution. So, this place in the middle or in the failure between control-not control, measurable-not measurable, art-science, is a device that moves my work. And I could say that the work of art and science is all about that condition or space in the middle. If we study my artefacts as laboratory models, we can realize that they are providing information about natural processes, such as the interaction of matter and energy over the time. In fact, the raw materials of paintings are similar to those of a river: a surface with more or less permeability and porosity (river bed), a mineral based ink (soil) and water (changing velocity, duration, and
intensity). In these artefacts we can observe the reactions among them in 1:1 scale. The results are actually less radical in their border definitions than regular bathymetry, yet richer in the spectrum of processes they achieve and time changing. In fact, in Tactile Performative Scale, we can see the stream shadow behind the catenarian shape walls and the increasing velocity of water that goes through the gap between those. Then, that stream carries more sediments at high velocity, and it is surrounded by the shadows at slow velocity. Taking into account higher rates of sediment transport at faster stream, it is likely to produce turbulence and, consequently, a modification of the territory as it is shown in figure 5.26. So far, we could explain most of the paintings and constructions of my model from a scientific point of view. However, there are some things that cannot be explained: when to take the painting out of water, how to decide on the velocity of images in the video of flux, how to listen the sound of the river while excavating. Finally, how do we regulate the frequency of dissonance between the pulse of river and humans—meaning, at what point do we give up control? I think these questions need further investigation.

Figure 6.1 illustrates a phenomenon that took place in both my painting *Overthrow* and overthrows along coastal California due to miscalculation in the size and position of breaking wave walls (see figure 6.1). When we miscalculate structures, we let nature performs as it will. My paintings are similar to nature winning against a miscalculated inlet. Could that mean that we could arrive at my paintings by consciously or unconsciously misinterpreting science? Is that nature itself?
Poësis is etymologically derived from the ancient Greek term ποιέω, which means "to make." This word, the root of our modern "poetry," was first a verb, an action that transforms and continues the world. Neither technical production nor creation in the romantic sense, poëtic work reconciles thought with matter and time, and person with the world.

The last two analogies underline Heidegger's example of a threshold occasion: a moment of ecstasy when something moves away from its standing as one thing to become another.118

The products of my model can be understood as poetry—that is, the capacity to reveal the germ of something big and universal from a local instance, such as when we invoke Autumn through the perfume of a single flower. However, poetry comes from poësis, meaning
“making,” and design as poetry is related to what David Hays calls “speculations grounded in expertise.”119

Because the procedures described above were originated manually and as a kind of experimental and intuitive invention from natural processes, they allow students to understand the constitution and potentialities of matter and to acquire the ability to transform it for other purposes that were not evident in the matter itself (such as the fluidity of water, the density of a stone). Furthermore, as suggested in the quotation above, poïesis/poetry seems to take place in my artefacts as a transformation of, and a reconciliation among, nature, maker, and artefact. Said differently, poïesis/poetry is something from nature that becomes another thing through the ability of humans to adopt qualities and transform them into something new: painting, score, or construction. And that puts onto the table the question of how such an ability appears in humans as intuition. In Hays’s terms, it could be an achievement of expertise. Besides, we could think in Platonic terms as well. That is, if we go beyond the direct interpretation of Plato’s formulation of repetition of archetypes to achieve Form, we could suggest that he instead meant to say: the achievement of expertise by experience of process–making. Moreover, what we could have imprinted in our body is not necessarily the reduction of reality in unchanging form but the complexity of nature that we cannot understand with our minds. In that case, our bodies seems to be closer to nature than are our brains, and experimental and artistic approaches would be closer to nature than to science.

Figure 6.2, left, shows an overstepping due to a miscalculated inlet about 6 miles north of Cape Hatteras, North Carolina. The inlet had to be opened by March 1962 because of a gigantic Atlantic storm. After that, a tidal delta was formed in less than two months. About five months
after being opened, the inlet was artificially closed by the U.S. Army Corps of Engineers. Figure 6.2, right, shows my painting *Overstepping*.

**SYMMETRY**

![Image of Symmetry](image-url)

*Figure 6.3. Symmetry.* Image at the left from Department of the Army, US Army Corps of Engineers. *Shore Protection Manual*. Vol. I. 01-652. Washington, DC 20314; http://archive.org/stream/shoreprotectionm01unit#page/n1/mode/2up, figure 4-63. Old Drum Inlet, about 6 miles north of Cape Hatteras, North Carolina. The inlet was opened by the March 1962 Atlantic storm. Tidal delta had formed in less than 2 months. About 10 months after being opened, the inlet was artificially closed by the U.S. Army Corps of Engineers. Image at right: *Accumulation and Propagation* by author.

Another interpretation is that the products of my model and those of nature are symmetrical. This could break the assumption in the hierarchy paradigm in landscape ecology that every process has its own scale. As noted previously, Mandelbrot produced a break with the conventional models of mathematics and physics by exploring phenomena that were discarded from science for being considered weird, exceptional, or pathological. Mandelbrot demonstrated that, on the contrary, nature tends to have complex behaviors and processes and, thus, patterns. In consequence, previous mathematical models were pathological or exceptions of nature. For example, the term *scaling fractals* refers to self-similar structures that displace from one scale to
another with certain rules—in some cases more invariant, in some cases more random. Some processes in nature are symmetrical as a result of the phenomenon described by Mandelbrot’s fractals—meaning, things that have proportional relationships at different scales. That could be the case of rivers and seas and, thus, it could prove the hypothesis that the site doesn’t have inherent scale and that my paintings are demonstrating processes that take place at different scales. In addition, in Mandelbrot’s formulation of scaling fractals, he recognizes a limit in which we can no longer explain random variables from mathematics: “To be able to speak of scaling random variables, the term scaling must be defined without geometry. The reason is that the only geometric shape associated with a random variable is a point, which cannot be subdivided.”120 Therefore, paintings could work as a method for scaling natural processes from experimental intuition.

FLOW/PULSE


According to Thompson, Bejan, Ball, Kluber, and other scientists and theorists, everything that is meant to be alive grows, moves, and reproduces with flux behavior. In other
words, it seems to be that air, water, bodies, light, and sound seek the path of least resistance by the environment. That condition deserves more investigation related to incision, diffusion, and other physical phenomena. However, it seems to be that, when a system stops flowing, it no longer has pulse, consequently it is dead. That breaks the conception that there is a division between biotic and abiotic processes in nature, and it opens the possibility of thinking about the work of art as being alive.

Figure 6.4 shows dendritic patterns that take place as a consequence of flow: the Paraná Delta, a cast of a human lung, my painting Flux, and a score by Iannis Xenakis. What is alive and what is not alive?

LATENCY

Can the paradigm, model, and procedures described and explored in this thesis be generalized in unstable territories other than that of the Paraná River? Since, by definition, the paradigm of Jungle cannot be imposed, we need to look for territories where Jungle is culturally and geographically latent, and could therefore become manifest.

Figure 6.5 is a speculative map showing places where the Jungle paradigm seems geographically and culturally latent, based on factors outlined in the thesis. Those are places from which the genes of formlessness, indeterminacy, dissonance, becoming, and dissidence come. According to my research, those concepts have their origins in Magic Realism, African voodoo and African musical rhythms, Buddhism, Shinto, Dada, Surrealism, and the artistic Avant Garde, as well as in the theories of catastrophes, fractals, and self-regulating systems. For instance, African voodoo and music have the genes of improvisation, formlessness, and indeterminacy in art.
Figure 6.5. Latency. Developed by author. Base map: from http://isocshereandthere.wikispaces.com.

Introduced into the Americas through slavery, African culture has influenced all of the syncretic expressions of religion, animism, dissonance, and dissidence in the American continents: for example, Yoruba in Cuba or others mixtures of voodoo with Native pantheism and European Christianity in Brazil and Haiti. In fact, African culture has originated the most
important genders of music, such as, Jazz in the United States and Tango in Argentina and Uruguay. African and Latin American cultures have influenced European culture as well. For instance, Dada and Surrealism could not have emerged without them. In addition, the Avant Garde was influenced by Buddhism. John Cage, who lived in Japan and became a Buddhist, showed that influence in the indeterminacy of his work. As a confirmation of that, according to traditional Buddhism (India), the highest level of illumination, called Arupadhatu, is the world of the formless. For Zen Buddhism (Japan), the highest level of illumination is also formless. Latin American native culture could be also associated with Shinto since they share Pantheism and animism. Besides, as Misa Inoue has noted, Magic Realism, specifically the literary works of Gabriel García Marquez, is very popular in Japan. There are also many relationships between Magic Realism and Surrealism. For example, Cailllois, who was part of the Surrealist group in France, lived in Argentina from 1939 until the end of the Second World War. It seems that Cailllois was in touch with some Latin American writers who also lived in Paris, such as Borges, Cortázar, and Carpentier. Carpentier and Cailllois contributed to Bataille’s magazine Acéphale. Besides, Breton lived in Mexico for a long time. It is said that, when he arrived in Mexico, he declared that Latin America was the Land of Surrealism because he saw a celebration of the Day of the Dead in a cemetery in which there were people eating skulls made with colored sugar and the name of the dead person imprinted on them. In addition, Duchamp lived alternately between Paris and Buenos Aires in the period of 1918 to 1920, the period during which he was making The Large Glass (1915-1923). Furthermore, Latin American Magic Realism and Surrealism shared ideas of activism. In fact, most of the Surrealists became communist activists during the Second World War, while most of activists in Latin America shared ideas from Surrealism. Figure 6.5 also shows places of political and cultural resistance, native populations that still
exist, and places in danger of large, infrequent flooding, all places in which the Jungle paradigm could emerge. Regarding the Jungle itself, the most important books and films about it were set or filmed in Latin America or Africa. For example *Fitzcarraldo* and *Aguirre the Wrath of God*, by Warner Herzog, are placed in Iquitos, Perú; *Heart of Darkness*, by Joseph Conrad, is placed in Congo, Africa.

We could say that all places where my model is latent are also the ones that have been colonized by Bibles. That doesn’t mean that the genes of Biblical though were in the colonized population. Instead, it means that Bibles were imposed in order to take the resources from the colonized. In fact, many native peoples have reacted against Christianization when they could, sometimes by resistance, sometimes by conjuration. What is important, however, is that these places have generated the most important expressions in art even under (or perhaps because of) the pressure of colonization. That is because they have developed the ability to adapt and survive under unstable territories and living conditions, while hegemonic powers waste their time trying to stabilize and fix the conditions of living, resulting in conflicts between concept of times and goals for humanity.

Lastly, as a speculative map, Figure 6.5 could be seen as a contribution towards building a new genealogy for design in landscape architecture.
CHAPTER 7: DISCUSSION

From: Valderrama, Ana Maria
Sent: Wednesday, March 28, 2012 11:46 AM
To: Hays, David Lyle
Subject: about Latin American aesthetic

“Latin American art is dual; it is in between Mitre’s formal elegancy and Martín Fierro’s ugly heroism. Latin American art has two faces and gathers and maintain an abysm similar to the darn opposition between God and Demon. Latin America is the place of things absolutely made. In order to protect this condition, Latin American people hide themselves behind old myths of repression; revitalizing a moral and stoicism that nowadays don’t have any meaning since they had been completely abandoned by Occident. Latin American art emerges from an original fear that reproves the formless because its lack of form. Latin American art provokes an irritation because of those conditions. Latin American artist work with an aesthetic of a conceptual baroque that is subtlety knitted in order to close any possibility of vision and understanding. So, Latin American art lies, this is the law. The essence of this activity of lying resides on an act of conjuration of the original terror (he talks about native people terror). We no longer know why, what and from whom we are protecting ourselves. We no longer know what we write, fight, teach, live for.” KUSH Rodolfo, Anotaciones para una Estética de lo Americano (Notes for a Latin American aesthetic). In Rodolfo Kush Obras Completas (Vol IV). (Rosario: Fundación Ross. 2007), 779-780. The original book was written in 1956.

From: "Valderrama, Ana Maria"
Date: Sun, 24 Jun 2012 10:08:53 -0500
To: David Hays
Subject: time

Time is so slow here...

From: Hays, David Lyle
Slow time is good…

I had a meeting with Mauro Machado yesterday, today with the geographer, tomorrow with the biologist (my brain will brake apart).
I am getting into ecology stuffs and also in the theory of the catastrophe and notation systems (I think it will be more appropriate to develop a notation system instead of drawing the form of the models)...Let's see what I can do...
"Rivers and wetlands are pulsatile systems that constant imbalanced behavior, the temporal variability is a complex function depending on input and output of energy and materials in different locations of the hollow and the population combinatorial opportunities to adjust their distribution and quantity. Then "balance" could only be perceived as a fluctuation of the system in a historic sequence during a very long time."

A couple of weeks ago, I started an e-mail message to you that included the following:
In response to your question, "So, if the Bible was written by poets (humans), I agree with that, and it is not the word of God, where the poets' words come from?" Answer: Perhaps from themselves?
What might you say now about the following text, which you sent last May?
"Rivers and wetlands are pulsatile systems that constant imbalanced behavior, the temporal variability is a complex function depending on input and output of energy and materials in different locations of the hollow and the population combinatorial opportunities to adjust their distribution and quantity. Then "balance" could only be perceived as a fluctuation of the system in a historic sequence during a very long time."

On that subject, what is the source of that text?

From: <Valderrama>, Ana Maria
Date: Saturday, September 8, 2012 7:16 PM
To: David Hays
Subject: RE: P.S.

Related to the first, I don't know. I don't apply to any religion, but, I sometimes have the feeling that I don't do anything, I just only transfer information from one side to other (It is obvious that into my body something happens with the original information). I don't think there is a response of that.

Second, this is a scientific paper, unfortunately written in Spanish: Neiff, Juan José (Center of Applied Ecology of Litoral), "The regime of pulse in large rivers and wetlands." Apparently most scientists in Argentina refer to this pulsatile quality of wetlands, I don't know if this is a new theory, a trend or a common place, but I liked the idea. This professor developed software for studying time recurrent phenomena. The site is http://www.neiff.com.ar, I've tried to use it a little bit...

From: Hays, David Lyle
Sent: Saturday, September 08, 2012 7:22 PM
To: Valderrama, Ana Maria
Subject: Re: P.S.
"Pulse" seems like a compelling idea to pursue.

From: <Valderrama>, Ana Maria
Date: Saturday, September 8, 2012 7:32 PM
To: David Hays
Subject: RE: P.S.

yes, I think so
Ah I forgot the last part: in wetlands of South America.
They say that our wetlands don't work by cycles but by pulses and the measurement of maximum and minimum water level is not appropriate to understand the diversity of processes that appear here. Most of all the idea of cycle could be applied only in a very long period of time. Fluxes of energy and matter occur as pulses with phases of flooding and drying. The pattern they find is sinusoidal caused by temporal differences in velocity and duration of water and matter fluxes. They also say that our wetlands cannot be considered as ecotones but as ecosystems themselves.

From: <Valderrama>, Ana Maria
Date: Saturday, September 8, 2012 7:33 PM
To: David Hays
Subject: RE: P.S.

Ok, I will think on that... Although artefacts are so static! They don't have blood to pulse!

From: Hays, David Lyle
Sent: Saturday, September 08, 2012 7:38 PM
To: Valderrama, Ana Maria
Subject: Re: P.S.

Sounds very Genesis/Eden-like, but in South American terms.
Yes, there is a tendency of looking at our things as "different" to others. It is a cultural need. You know, survive...

Representation: just to clarify my attitude towards representation of nature. Again, as I say in the script re-presentation is always a third thing. The problem appears when we tend to reproduce images (Eden, platonic shapes) or when we think that what we make is nature itself.

I remember Orhan Pamuk in his book *My name is red* he says that Persian painters thought they were not painting but training until they get blind, because when they got blind God could paint through their hands. They would never paint perspectives as their western contemporaries because, at first it was a lack of respect to God, since they pretended to be natural and natural is only God and nobody knows how God sees the world; second, because things had values beyond distance, scale and human eyes or parameters, spirituality was more important. So, for them a temple could never be painted smaller than a king for example, even when he was closer to the observer than the temple. Persian painters used to hurt their eyes to achieve the honor of being instruments of God.

I am not interested in thinking my work as a representation of nature, just only steal her things to make another things within a subject-subject relationship. It is not against nature or in favor of nature, it is not true or lie, good or bad. It is what we can do within that subject-subject relationship, that is, dissonance.
Regulations: from my experience I am little boring and skeptical about regulations. Any tiny regulation becomes a monster when economical powers find the fissures or the way of negotiating with governments. So, if we are going to talk about regulations we need to talk about politics and how to reveal information.

Project: I could make a project as a next step. I was particularly evasive about that just because a project is always disappointing for me. But, in this case questions of scale, aesthetic, strength and weakness of artefacts, amplification of site processes, as we discussed last meeting will surely appear.

From: Valderrama, Ana Maria  
Sent: Tuesday, September 11, 2012 6:32 AM  
To: Hays, David Lyle  
Subject: delayed response about sustainability

The second meeting you asked me about how to think sustainability and that maybe I could say that we only can think about that at a big scale... I've been thinking why I always try to avoid the topic...and... I think in South America we don't need to think about sustainability, we don't have enough money to make huge disasters. Garbage is not enough here. We think about it in terms of social issues. We just only have to protect our territories from economical powers and ensure our ownership and our self-determination on them.

So, I think that for talking about sustainability in this area we need to talk about international politics, and I am not sure it could be a good idea to talk about politics in my thesis. On the other hand, I am not sure that our discipline could do something with that.

From: Valderrama, Ana Maria  
Sent: Wednesday, September 12, 2012 8:00 AM  
To: Hays, David Lyle  
Subject: brazilliance
When you say “Brazilliance,” are you referring to the way Brazilian people understand their relationship with nature, what do you exactly mean?

From: Valderrama, Ana Maria
Sent: Monday, September 17, 2012 9:42 PM
To: Hays, David Lyle
Subject: IMPORTANT. machine

I've been thinking on two things (the thesis is becoming a little metaphysical):
1. Dissonance as sound: have you ever listened a seashell? I always thing that they have the memory of the sea, but on the other hand I always suspect that this is just only our perception of how the sea sounds, so it is our memory, not seashell's memory. Maybe I could do something with that.
2. Dissonance as drawing of the pulse: I've been thinking on a machine that could draw the pulse of the river and it could have some sensible pieces that could react when people get closer to it. So, when we are closer or touch the pieces the drawing changes, resulting a different pattern of frequency-drawing.
3. Overlapping both things could be complicated although the machine could make sounds in addition to drawings...

From: Hays, David Lyle
Sent: Friday, September 21, 2012 10:25 PM
To: Valderrama, Ana Maria
Subject: Re: IMPORTANT. machine

1. Seashell. Maybe…but it sounds a bit too poetic, tender, metaphorical right now. 2. seems much more interesting. If the machine draws the pulse of the river, can it also draw the pulse of a person or people, and can dissonance (a new pulse) emerge from that? And I have an idea stuck in my head that maybe Caruso was the right thing to play because the only way to achieve synthesis in that context is through contrast; in that context, dissonance IS that synthesis (i.e., 3).
yes, I am in the second now...And I was thinking in that of Caruso too, and at the same time in Fellini's artificial sea in The Cassanova. Maybe I am fighting against my European blood, but I can't take it off!

Oh wow—I haven't thought of that artificial sea in a long time. Did you ever see the river and lake in the musical film, The King and I (in the "Thai" staging of Uncle Tom's Cabin)?

So far, I've been looking at my thesis as a childish imagination of things without visible practical purpose. But, as in Fellini's movies or books or music you never know the power that such of expression could have to change at least the way someone thinks a little thing.
I felt today when I tried to ask a girl from Taiwan if Nature had gender...She couldn't even understand the word Nature as we understand it. After 10 minutes trying to explain her what I wanted to know by quoting Lao Tse, I-Ching and everything I could remember the Chi, Yin and Yan, etc. she looked at me as I was a stupid (I was). She couldn't define what nature is for them in English language, she told me that even people don't have gender as we understand it and that even she couldn't understand Lao Tse.

So...I felt so ignorant
And at the same time I realized how hard should be for them to study here. I would have given up.

From: Hays, David Lyle
Sent: Thursday, October 18, 2012 7:59 PM
To: Valderrama, Ana Maria
Subject: Re: completely ignorant

That essay that I wrote about Lassus was printed in English and a Chinese translation. One of my students from China (an excellent speaker of English) read both and said the latter had nothing to do with the former. But so why are you doing sustainable architecture in your own language??

From: Valderrama, Ana Maria
Sent: Thursday, October 18, 2012 9:03 PM
To: Hays, David Lyle
Subject: RE: completely ignorant

JA! I think we are synchronizing...I've been thinking on that all the day. In fact I talked with Evan today about that.
Just only guessing...
1. Maybe because I am not joking when I say that Jungle kills you, when I say there is no garbage enough to contaminate nature, and when I say we have the Native and the European at
the same time. On one hand, we don't think we are separated from nature, but if you have to choose between the snake or a person, you kill the snake without feeling gilt, you know what I mean? And we mix this feeling with European willingness to artificialize everything. So, when I say "I want to know how artefacts can be affected by natural processes and vice versa" it seems like that I am trying to be conciliatory (something impossible in Latin America because the snake is waiting for you). And conciliatory looks like sustainability...In that meaning, I think, my project could be sustainable.

2. Another theory is that my project is about common sense. And for me sustainability is common sense. People have failed so many times trying to put the Eden there that it seems to be a relief that someone from the university says things like that. But, these kinds of things are usually told by ecologists and biologists because architects still have the Eden and the philosopher stone in their minds. In addition, ecologists here are a little bit less radical respect to nature, because there is an agreement that it is also important to preserve the right, the ownership and the decisions over our own natural resources (again the snake is waiting), and social issues are included into sustainability for sure. So, when ecologists talk about sustainability it is something a little bit more artificial than what we are accustom here. On the other hand, when an architect talks about nature seriously everybody imagine he/she is talking about sustainability (something serious) because, in general, when they do talk about nature it is because they are manicuring a garden.

3. Third theory is that I've been always a kind of weird hybrid character at the university. I've been in the middle between architects and ecologists, artists and scientists, activists and government. Few people can understand that, so they say: sustainability, just because it sounds good.

Those are my ideas now, but I can have more the rest of the week.

From: Valderrama, Ana Maria
Sent: Thursday, October 18, 2012 10:33 PM
To: Hays, David Lyle
Subject: important: last guessing, I think it could be close

From a very bad English Speaker
I am really convinced that nature and art are so closed as I say in my presentation. I am not acting when I say that. So, it is possible that people who are really involved with ecology or nature and are opened minded can see in my work something closed to nature and to their work as I see them very closed to mine.

For example I love ecology class because I think real scientists are really artists. We are working within the Paradigm of Scale Hierarchy and with Models such us Markov or Neutral Models. Most of them work with random simulations, probability, and fractal translation. When you run the programs in different computers, and with different range of time, the results are completely different. When the professor shows results she says: "I feel comfortable with this result." What is that if not art? What is the difference between those models and my models made with ink and water?

We basically do the same job.

So, sustainability could be that approach between science and art.

There are people who tend to think that art is something banal because they think arts as the opposite to science (that is supposed to be The True). And I could be confusing for those people since I talk about paradigms and models, which is a vocabulary of science, but I show paintings and when I talk about art I show nature.

I don't say that I am not making sustainable architecture in any way, but for making it I should think in other variables such as, the amount of energy spent to make the artifacts, and the amount of energy that they return to nature. The amount of matter that I take, and how they transform in something beneficial for the place. But all that stuff's should be integrated with aesthetics, otherwise they don't make any sense since Jungle doesn't need our artefacts at all, and we don't need to make artefacts to have a jungle.

From: Valderrama, Ana Maria
Sent: Friday, November 09, 2012 9:00 AM
To: Hays, David Lyle
Subject: textures

I am not completely sure, and maybe I am stacked by my own labyrinths, but I think I would not like to talk about my paintings in terms of formal categories such as, textures or volumes or
surfaces or points or folds. There are lots of researches about them, for example: "exploring the possibilities of folding". I always have the feeling that these kinds of research are little bit reductive of design processes and possibilities. My mother has a joke about that: “researching the possibilities of a walking stick (that is already made).” That is, how to use it for pointing an elephant that is coming towards you, scratching your back, and finally pointing a monster that is already 1m from your body...

I prefer another joke from my mother. How does an elephant go up to a tree? He plants a seed, sits up to it and waits until the tree grows up. And, how does the elephant go down to the tree? He hangs himself from a leaf and waits until fall. This joke talks about process.

I don't know, maybe I am wrong, or I am doing that in the same way as sustainable architecture...

From: Valderrama, Ana Maria
Sent: Monday, December 10, 2012 9:20 PM
To: Hays, David Lyle
Subject: impact

Another thing is I think that education has lots of potential if we think that I am teaching the paradigm of the jungle, the methods, and all the implications of that to 200 students each year. I think that even working in a very democratic and horizontal way with students, the curriculums and assignments are not innocent in any part of the world and you always see that you left at least a minimum seed in students heart, mind or body.
CHAPTER 8: DISSEMINATION

1. Interview, “Sustainable architecture in Charigüé Island.” Published on the official webpage of UNR, Section I+D (research and dissemination)

2. Research proposal, "Displacements and concatenations: a didactic for teaching-learning design processes in the first year of architecture program." Approved by the National Minister of Education. Argentina. The research explores the possibilities of this concept of design as a process of finding-alteration-transformation taken from Magic Realism. This is a pedagogical research project framed within Ausubel and Vukovsky's constructivist theory of education (self-management of knowledge) and Paulo Freyre's “Education for Freedom.” The research tests the development and performance of students within this didactic. The internal logic is evaluated with different quantitative and qualitative technics as well as the products by comparison with other teaching strategies in the school. That could be a way to replicate and control the model under existing pedagogical theories/models.

3. As a result of the impact of my seminar in Argentina, I will participate with my paintings and my student’s projects in an exposition in Buenos Aires to take place next year. The exhibition is organized by the Centro Cultural Parque de España, and Paraná Rangá, a multidisciplinary team that made an important expedition along the Paraná River from Buenos Aires to Paraguay in a ship similar to that of Fitzcarraldo.

4. The seminar will be repeated next year, and I will have the opportunity to evaluate and compare the experience and results with those of the previous seminar, taking into account the contributions of my thesis research.
5. Publication. Matéricos Periféricos Magazine. FAPyD – UNR.

6. Exhibition of paintings in 90 Birthday of School of Architecture of Rosario.
NOTES


6 Richard Wilhelm, trans., *I-Ching. El libro de las mutaciones* (Barcelona: Edhasa, 1997). The book is believed to have been first composed by FuXi, one of the earliest rulers of China (2800 BCE – 2737 BCE).

7 Friedman, op. cit., 7.


10 Ibid., 13.

11 Ibid.

12 Pere Joan, "Remontando el futuro del río," in *Paraná Ra’Anga. Un viaje filosófico*, ed. Graciela Silvestri (Rosario: Otras Ediciones, 2012). Paraná Ra’Anga was a scientific-cultural expedition through Paraná River in which 30 artists and scientists from Argentina, Paraguay, Spain, and Holland participated from March 7 to March 29, 2011. It was supported by Red de Centros Culturales de la Agencia Española de Cooperación Internacional para el Desarrollo (Aecid), Centro Cultural Parque de España de Rosario (CCPE), and Centros Culturales de España en Buenos Aires, Córdoba, and Asunción del Paraguay.


14 Ibid., 2049-2051.


19 Ibid., 5-7.


21 Ibid., 160.

22 Ibid., 158.

23 Ibid., 164.

24 Ibid., 161.


26 Minister of Culture of Santa Fe, Argentina. Carta desde Sancti Spiritu (2001). This is a documentary film about the first Spanish settlement in Argentina. The story talks about the site, which was founded by Sebastián Gaboto in 1527 and was later destroyed by native people.


33 Ibid., 237.


35 Ibid.


38 Wilhelm, op cit.

39 Among the most radical were the Dada and Surrealist techniques.

40 Focillon, op. cit., 63.


44 Friedman, op. cit., 28.

45 Etymologically, composition means: c.1400, from Old French *composite*, from Latin *compositus* "placed together," pp. of *componere* "to put together, to collect a whole from several parts," from *com* - "together" (see com-) + *ponere* "to place"; and determination means, "to come to an end," also "to settle, decide" (late 14c.), from Old French *determiner* (12c.) or directly from Latin *determinare* "to enclose, bound, set limits to," from *de*- "off" (see de-) + *terminare* "to mark the end or boundary," from *terminus* "end, limit." Sense of "coming to a firm decision" is from mid-15c. Online Etymology Dictionary; http://www.etymonline.com.


Actually, Julio Roca decided to liberate the country from “the barbarian,” which became an excuse for killing native people and stealing their lands. This was called the Desert Champaign. On the other hand, in his book *El Facundo*, Sarmiento suggested that Argentinian people needed to construct a nation based on “civilization,” meaning the European cultural and educational model. In addition, he talked deceptively about native people. However, Argentinian people have been always in the middle of both, the barbarian and the civilized, and in the middle of everything. That is exemplified in politics, for example the *Peronismo* movement.


Kush refers to Spanish and Portuguese colonization during the fifteenth century and to British colonization, during the nineteenth century, which meant the Conquest of the Desert at the very beginning of Argentina as a Nation.


Monod, op. cit., 3-22.

Machado, op. cit., 15.


Ibid.

Ibid.

Ibid.

Ibid.


69 Ibid., 1024.

70 Ibid., 1027.


75 Ovid, op. cit..

76 Maier, op. cit. Jong, op. cit.


78 Ibid., 4.

79 Kubler, op cit., 56.

80 Ibid.,76-111.


84 Kubler, op cit., 59.

85 Ibid.,63.
Expedition with multidisciplinary team. The interdisciplinary team was constituted by: civil engineer and painter Mario Domínguez, also director of the Museum of Charigüé Island; geologist Héctor Fraga; veterinarian Eduardo Spiaggi, also integrant of the multidisciplinary group “Ecologist Workshop;” surveyor Emilio Postma; and architect Soledad Ferrería, also director of the “Floating Workshop” dedicated to the studies of the island.

“Learning by Teaching”: This seminar included five professors, two teaching assistants, and 200 students from the third and sixth year of the School of Architecture, Planning, and Design at University of Rosario, Argentina. Professors engaged with the course were: Gustavo Cataldi, Jessica Aguilera, Juan Manuel Serralunga, Javier Povrzenic, and Mario Alcocer. Teaching assistants: Juan Carlos Baima and Maximiliano Moretti. Artist and physicist Mauro Machado and architect Claudio Vekstein attended the final review of the seminar.

“Learning by Making”: The set of procedures was developed during August 2012 with Mauro Machado as a teacher and during the whole Fall Semester 2012 with the committee members under the direct supervision of Prof. David Hays in the course MLA 599B.


Ana Valderrama, unpublished e-mail, July 05, 2012.


Misa Inoue, unpublished remark made during thesis review at the University of Illinois at Urbana Champaign, October 2012.
BIBLIOGRAPHY


APPENDIX: LIST OF SUPPLEMENTAL AUDIO
AND MULTIMEDIA FILES

Pulse.m4v
Excavation.mp3
Fluctuation.mp3
Beating.m4v
Migration.m4v
Slip and Adherence.mp3