Living and Building in Nature. In search of an Ethical and Ecological Architectural Education in La Araucanía Region, Chile

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Abstract. To establish a new school of architecture today, in Araucanía (a region in Chile that embodies a global heritage for its conserved original nature and cultures), proposes the challenge of re-contextualizing the architectural practice and teaching. This article seeks to account for the particular process of re-contextualization, from the pedagogical experience in "Introduction to Architecture" of the Universidad Catolica de Temuco. The Experience was articulated around two questions: 1) How can we approach an architecture that is more sensitive to nature? 2) What can we learn from the vision that the local cultures have about man, space, and nature? To approach these questions, we have proposed an experiential methodology focused on promoting a multimodal and holistic education through living and working in nature, and a transcultural dialogue with the local cultures through building together. The method proposes the direct experience of the natural and spatial factors, from which, a sensitive and subtle measure of space emerges, materialized in physical signs on the site. In this way, students learn to design from awareness, appreciation, and care of the natural context. This article summarizes the field experiences of the class and its learning outcomes, according to the perspective of its participants. It proposes the possibility of a new approach for the Architecture-Nature relationship, and the search for new learning methodologies, which emphasizes the training of professionals with a deep ecological and ethical sensitivity, relevant to an ecologically and culturally sensitive Territory. This article seeks to be an invitation to a more ethical, humane, and sustainable education.

1. Introduction

It’s indisputable that the current trend in climate change has had, and continues to have, a tremendous impact in our way of approaching every aspect of our day to day routine. We’ve been invited, each passing year with more urgency, to address several challenges regarding our current way of life, and to rethink it in terms of an everlasting environmental shift that may or may not be irreversible: “Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.” [1]

Alternatives to overcome this situation are still being considered by local and global institutions and governments, but at this point it’s clear some major changes need to be enacted if we want to curb the dangerous deterioration of our planet: “The world is still facing continuous and growing
environmental challenges. To address them, fundamental changes in production and consumption systems will be necessary, which are the main cause of environmental problems” [2].

“Major changes,” however, doesn’t properly express the urgent need for a paradigm shift that can change human relationship with our planet. Policies and practices need to come from an overwhelming conviction that preserving our living space is a necessity, not an option. As such, this question directly impacts architecture, as it is a human practice designed to impact and change the world, ideally, in positive terms. However, as it is becoming clearer and clarified every day, there is no way of changing our production, our consumption, or our architecture, without changing our fundamental cultural cosmovision.

At this juncture, universities and education have an immense responsibility to our common future and that of its builders, the students.

In this paper we seek to reflect on the challenges put forward by our current climate and cultural scenario from the specific point of view of architectural pedagogy, specifically, from the perspective of founding a new school of architecture in a developing country, such as Chile, and in a particularly vulnerable region, such as La Araucanía. We will posit that the main problem of founding a new school of architecture in the current context is the need of having to re-contextualize the practice of architecture, and therefore, the way we teach it.

Our guiding question have been the following: How can we approach an architecture that does not colonize these sacred native territories? And how can we rethink the human-nature relation through our buildings?

To address these questions, we have developed an exploratory teaching methodology and learning experience based on architectural exercises focused on promoting a multimodal and holistic education and working directly in and with Nature. These practices have been gradually introduced during 2018 and 2019 in our teaching interactions with first-year students of the Universidad Católica de Temuco through the Introduction to Architecture class.

What follows is an overview of the methodological approaches, that we have been exploring at ARCA (Action Research Center of Araucanía), some tools, challenges, results, and future projections in the field of architecture teaching.

2. Living and Building in Nature - Awakening an Environmental Sensitivity
The main question from which our pedagogical research emerges is: how can we approach an architecture that is more sensitive to Nature? It might seem a rather obvious first query, but it is certainly a necessary one, for any new possibility depends on transformation of our sensitivity first, and then of our culture and our build environment. Following David A. Kolb, we believe that “learning is the process whereby knowledge is created through the transformation of experience”[3], which means that in order to “awaken” a new understanding and vision, transformative personal and collective experience should be a main focus of our pedagogical practice.

For a long time now, architectural education has underestimated the importance of internal experience over external appearance: “pedagogical approaches and curricula tend to focus on architecture as an external phenomenon and underestimate the importance of internal and individual mental reality,” [4]. The most common practice of teaching architectural design is focused on the composition of formal objects, often referencing some art piece, or collage, or sculpture, or any external reference that can trigger the creative process to compose visually attractive formal volumes. Many of these exercises work with merely an abstract notion of the place through blueprints, maps, and some graphics of information; and that is in the best cases.

We think this common approach is insufficient, if we want to develop a new architecture that is deeply related to nature. We need to develop ways to become more aware of the interrelations between the spaces we propose and the experience of the environment it is part of, and aware of the effect space have on us - how we feel, and live inside buildings, and what is it like to be looking through them, or being outside of them. Recovering experience as a pedagogical practice, therefore, means re-linking the human being with architecture by literally positioning him or her in direct contact with that
which it seeks to connect to, i.e. the landscape and in more general terms, Nature (as defined in the Cambridge dictionary).

From this standpoint, we developed a series of in-situ exercises designed to allow students to connect and design from within the space and not detached from it. Rather than thinking of space in abstract terms, students are asked to be actually and physically present, using their entire bodies, to sense the living space inside them and around them. The main idea here is for students to develop a spatial consciousness that allows them to be open to their interrelation with nature, respectful to life around them, and flexible; to let go of their preconceived ideas, in order to base their design thinking on the actual natural presences and relations that they can discover in their ongoing observations.

![Figure 1. In-situ exercise](image)

2.1. Methodology

When we refer to environmental awareness, we are talking about developing consciousness of how we are affected and affect the environment around us, putting special attention on sensing the presence of each element: the land and its configuration, water in all its forms, the presence of the air and wind, light and temperature. Bringing back our attention to ourselves and our surroundings, our senses, lights, sounds, smells and tastes, the textures, and how these things within us, affect us, we can become more aware of our moment-by-moment interaction with the environment. “Fine art is always the product in experience, of an interaction of human beings with their environment. Architecture is a notable instance of the reciprocity of the results of this interaction” [5].

Some of the exercises we practice are in some ways similar to the ones we might apply in mindfulness practices, but instead of concentrating our attention into ourselves, we practice opening our attention to the environmental space around us and we observe its effects on us.

For one of the first in-situ exercises, we asked every student to mindfully walk, sense and listen in silence, until they were touched by a phenomenon, or place where they found the deepest connection to the natural environment. Once each participant found their own personal space of relation with nature, we asked them to stay there for as long as possible, and to come back to this place during the following weeks, only to sense, smell, listen, and to try to take the anxiety of projecting out of their minds. There was no objective other than to just be there and relate to the place. We tried to keep, this, apparently “unproductive” experience, as long as we could, because we think it is the most important part of the process; it is the process of connection.

In the following exercises we added one element - like a stick that they would pick up from the surroundings - and see how it relates with the environment depending on its location, orientation, and position, the colour, the texture, the space. How could we make it even more part of the place; less invasive, and more respectful? With this idea of revealing the place, the students built a minimal element / structure, which received the body, in a very specific disposition, in order to be able to relate with the natural phenomenon that each student connected with in that location.
In other exercises, we asked them to delimitate the phenomenological space of their experience in order to give shape to a space where this experience can clearly happen to anyone. When they thought that they have it figured it out, they called other people and asked them to conduct the phenomenological experience in the designated place. They knew their work was ready, when anyone that passed by, and entered their space, was touched right away with what they have discovered. By doing this, they learned not just to build, but to design with a purpose, and to refine their craft from the direct experience with materials and space, and through the feedback of others. In the real-scale building, experience of every detail matters. Every texture, every colour, line or angle can modify the final sensation of the experience. Therefore, it was imperative that the students were able to reflect on these aspects of their work beforehand.

One of the principles of this methodology is to always go from the collective to the personal, and from the personal back to the collective. Very often we start by defining a flexible perimeter by holding sticks in our hands creating a big circle. Then, we take a stroll around the terrains, looking for a space, where we have the strongest relation between the natural elements surrounding us, and least intervention necessary. Thus, the shape the building takes, adapts to the trees, bushes, animal corridors, winds, rocks, sounds and views.

After we find a collective space each student looks for their own spot to work as previously described. When they think they have arrived at something, they have to start working in association with a partner around them and join causes to give an experiential clarity to their formal encounters. Once that part is completed, they join with another couple, and eventually, they all join as a whole in the design of one single architectonic space, developed as a group.

As a complement to the studio practice, we have developed a way of measuring a presence of landscape in a particular location. We take these measurements upon arriving to new far-away locations.

Figure 2. Methodology and practice

Many of the experiences empirically showed us that we can actually use architecture as an instrument to bring our attention back to the presence of nature, and create instances of admiration, respect and beauty.

Methodologies are created and change depending on the place we work in, the materials we have, the number, energy of the group, and the sensitivity of the students. Methodologies also need to be sensitive to all factors involved, and to remain flexible and connected with what is. What remains is the principal idea - that of learning by doing. The doing, which is born of a relation with the place, the respect for the pre-existences, the idea of minimal impact, and the confidence in collaboration, and the physical and sensible knowledge, (and not just the logical one).
Needless to say, these experiences are not intended to solve our environmental problems, or to totally replace the traditional methodology of teaching architecture, nor to give a definitive answer to the needs for change that are urgent in our professional field. These experiences are attempts to try and tackle the questions that we find unavoidable for a responsible development of our discipline in our times. In order to put in practice this methodology, we developed the following two pedagogical exercises we called “shared experiences”.

2.2. The Forces of Nature
The first “shared experience” took place over several trips to a nearby beach, located in Ñigueh, Tolten. We traveled there to experience the power of wind in a group of 20 students. The objective was for the students to feel the magnitude of the natural forces, in this case, the wind, and the difficulties of working with them. The goal was for them to build a primitive refuge with large pieces of cloth; stable enough so we could keep a fire going on in it and sit with our class, surrounding it. All of the attempts made during the first visit failed against the magnitude of the wind force. From this first experience arose the revelation from the students that we could not fight against the wind but had to work alongside it.

After the first trip, students spent some weeks experimenting in the studio with fans and little scale models, as well as studying some basics of aerodynamics, acoustics, structures, and ways of founding in the sand and structuring colihues in order to withstand the force of a 180 km/hr wind.

Eventually, they developed a theory on how to solve the problem, tested it with the models under the fans, and put it into practice on the beach, which ended up with a successfully built pavilion that accomplished the set goal. Beyond the structural accomplishment, students that had failed their last semester declared that the entire process was “healing” for them, because through the trial and error
approach, they managed to rekindle their interest in architecture through experiencing its direct relation to Nature, which in turn, resulted in a significant boost in confidence in their abilities as well as their group dynamic.

We also work with Light, letting the student discover the properties of the particular light of this latitude and weather. They build a dark pavilion with recycled materials and they start making openings in the structure, to study the effects of light in form and space.

![Figure 4. Experience with light](image)

2.3. Living in Nature
The second shared experience was held on a trip to a range of nearby mountains located in Cañón del Blanco, Malalcahuello, with a consistently larger group of students, 80 in total, this time led by two teachers. The first learning experience in line with awakening and environmental sensitivity happened as soon as we arrived, when all the birds flew away from us because of the noise we were making. We instantly realized how much we can acoustically pollute a space simply by being in it.

Being respectful, silent and able to listen to the environment around us, in turn, became clear objectives of our second on-site experience. Students were asked to work in silence as much as possible and try to be as quiet as they could in order to not disrupt the environment around them. We did many exercises of walking in silence, sitting with our eyes closed for several minutes, walking without making noise, feeling the soundscape, from the closest to the farthest sounds, counting and identifying different sounds, following the shade of the mountains in the floor as it was moving, waiting to see the sunrise from the mountain’s profile and then running to the shade and seeing it again, several times; an experience some students quaintly summarized as “time travelling”.

Students were also asked to conduct their daily activities without architecture around them, encouraging them to develop a spatial consciousness from which architecture might emerge as a direct consequence of their needs and ways of doing things. This was particularly apparent in regard to the generation of trash and waste management, as well the overall impact we humans have when inhabiting a space, all aspects students noted when asked to reflect about their experience.
2.4. Learning from Mapuche People

Given the pluri-ethnic condition of our region, our University promotes the practice of intercultural dialogue, as a way of walking towards a coexistence based on respect and appreciation of the original peoples.

Behind the question: What can we learn from the vision that the local cultures have about man, space, and nature? We developed an experimental class around the collective process of building a traditional *ruka*. We worked with the Mapuche Machi, and teacher Jorge Quilaqueo. During the first half of the year, we made three trips to the lof of Machi, where we established a learning relationship, by directly working and living together.

We learned how to harvest the materials for building the *ruka*, and the craft to “*rukafé*” or traditional house building. We learned from their deep ecological understanding behind every little detail of their architecture, about the relation of their buildings to the sacredness of the natural environment and the cosmos. They see man as an indivisible and powerless part of a living whole, interconnected with the rivers, the sun, the mountains, the winds, and they understand that our mission as humans is to help maintain the balance of the ecosystem. As the Organization of American States
declared in 2012: “Indigenous peoples and the environment constitute more than a dialectical, interdependent and inseparable relationship. The existence of one without the other cannot be conceived (…) the indigenous peoples who have survived over the years continue to be governed by compatible traditions and customs and in harmony with what we call environment”.

The experiences we have shared with the Machi and the Mapuche communities have been very rich and enlightening for all of us, and we think we can develop those experiences better in a future article.

3. Conclusions
We are at a crucial stage in the life of our planet. It is clear that the future demands many urgent changes in our way of living, designing and building. The way we make our cities and our homes, determines and is determined by the way we understand and relate to the environment. Our current situation demands a drastic change in the relationship between our built environment and the natural environment, as well as a change in our understanding the relation between man, society and nature. As the biologist Rupert Sheldrake stated: “We urgently need to find methods of restoring our conscious sense of connection with living nature. Recognizing the life of nature requires a revolution in our way of life”

Although today we understand better than before that “Human beings are part of an environmental reality, of the ecosystems with which they interact… human beings and societies are closely linked to the environment that surrounds them” [2] this still incipient consciousness has not yet clearly found its materialization in architecture. On the contrary, current architecture tends to be absorbed, to isolate us, and to adhere to us as human beings. Since it is not conceived from a participatory consciousness, it cannot give rise to a participatory consciousness and since it does not give rise to participatory living, it cannot lead to true ecological awareness.

We can fill ourselves with artifacts, and “sustainable” technologies, but there will be no real change, until we are able to conceive buildings and cities from a true “ecological consciousness”. While we are very far from this, it is in this direction that we must move forward, towards a participatory relationship with the rest of the biosphere, something that must be educated not in abstract terms, but as a participatory experiential practice enacted by those that will, in the future, be responsible for safekeeping the world we live in.

In the words of Morris Berman: “if we are going to survive as a species, some kind of holistic or participatory awareness will have to arise with its corresponding socio-political formation” [6].

This is a key principle of our vision as school of architecture and, as such, of our pedagogical practices. So far, students, professors and participants alike all coincide these methodological experiments are leading towards critical reflection and provide architecture with experiential meaning coherent with our current human concerns. We are aware these exercises, in on themselves, are still a far cry from the changes needed to change the world in a meaningful way; however, they provide us with factual evidence about the needs and sensitivities of current generation of architecture students and their concerns about the world. In the end, we’re confident these first steps into a direction from which we know very little, but feel we have to walk towards together, are on the right track towards a more ethical and ecological education for our future.

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