A vision of environmental equity permeating the academy.
Re-design the architecture teaching model in Costa Rica.

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Abstract— In a context of constant technological, social, and environmental changes, the academy has faced a new, more flexible educational and theoretical paradigm, focusing through design on the vulnerabilities and inequities of the closest contexts. Our School of Architecture has implemented a methodology based on the quintuple helix that qualitatively correlates the SDGs, our lines of research and extension, the participation of communities, industry, and local governments committed to climate neutrality as part of the Costa Rican Agenda 2030. Based on empathic, collaborative, and iterative processes, projects have been managed from communities that had no real influence on climate problems. Spaces have been created designed from democratic and participatory processes to promote urban-ecological awareness, for the co-design and co-management of urban and regional renovation, innovation, and regeneration projects like self-sufficient neighborhoods, social housing, urban forests, pedestrianization, and alternative mobility, proximity production of food and resources, gender perspective, native communities.

After these experiences, it was proposed to study how the application of concepts of environmental equity and climate justice in the field of design has impacted the results of urban and architectural projects developed in the last five periods and from this to prototype an academic model that reinforce this approach. Until today, the results indicate that we have opportunities to improve the model, but we were able to conclude that we have been consistent with the lines of research and extension proposed. So we intend to continue with actions that consider the practice of design as a tool that supports the autonomy of communities in the management of their natural resources as a means of livelihood, and the natural right to preserve them under a sustainable social and environmental perspective.

Keywords—city, urban commons, climate justice, teaching model

I. Introduction

Starting from the notion of the responsibility that the academy has in the way of facing the imminent crisis of climate change, together with the social transformations that it brings with it, and the constant technological advances, it is necessary to understand that the main engine of change is in the planning human activity. It is imperative to assume a new committed educational paradigm, which, through design, attacks vulnerabilities and inequities, enhancing opportunities for transformation of the closest contexts. To establish regenerative and inclusive habitats, it is necessary to generate tools together with the communities.

In 2017, our School of Architecture begins the implementation of the quintuple helix model and the co-design principles promoted by LabGov, qualitatively correlating the SDGs and our lines of research and third mission. This is to promote Social Development and Environmental Sustainability through architecture and its impact on the territory. Gradually, this methodology has been applied in various programs such as Regenerative Development, Women building territory, Banking for the production and development of the territory, Laboratory of non-traditional materials, and Heredia: City of Flowers. At this stage, even without being systematic, the academic programs host study courses for the career, university community work, and final graduation projects; involving several professors in the development of the programs together with public entities and civil society.

For the identification of needs and problems, as well as for the articulation of actions in the communities, we contact and create alliances with different public and private entities with objectives related to the objectives of our programs, such as the Alliance of Costa Rican Women, Municipality of Curridabat, University for International Cooperation, Regenerative Costa Rica, Banco de Mejoras, Municipality of Alajuela, A01 (A Company/A Foundation), Institute of Rural Development (INDER), Ejército de Salvación, Solidarity Architecture, and Colectivo La Mitad más Uno. This allows us to contact and actively participate with communities, industry, and local governments committed to climate neutrality as part of the 2030 Costa Rican Agenda.

II. Concepts Application

Starting from this theoretical framework, the strategic alliances, and the support of those involved, we feel that we have acted as facilitators of projects that, based on empathy, collaboration, and iterative processes, will be developed in communities that hardly have a real influence on climate issues decision-making.

We have created spaces that, through democratic and participatory processes, promote urban-ecological awareness and function as pilot projects for the co-design and co-management of more processes of urban and regional renewal, innovation, and regeneration. In this way, the projects can have a relatively small impact but are replicable in other contexts or scalable to other themes. Among many we have worked with:

1. self-sufficient neighborhoods
2. social housing
3. urban forests
4. pedestrianization, and alternative mobility
5. proximity production of food and resources
6. gender perspective in urban studies
7. from & for native communities
8. landscape regeneration
9. post-covid design
10. urban regeneration governance
11. innovation cities
12. historic city center regeneration

III. Observed Impact

To make the proposal really permeate the entire academy, and not be separate projects, we began a series of workshops with professors to study how to integrate the concepts of environmental equity and climate justice in the architecture field. More specifically, what impact would it have on the academic curriculum and how to renew the subject matter of the study courses.

After the first four months of courses, we began to map which projects had managed to follow the co-design methodology and what the results had been in terms of project projection outside the academy. After this, the projects began to connect, they are followed up over time by various groups of students, and they are increasingly detailed according to the content of the courses.

Figure 1. Professors workshops, courtesy of Universidad Latina de Costa Rica.

This is the "Barrio San José" Park and Human Development Center in Curridabat, a project that integrates outdoor education and urban acupuncture.
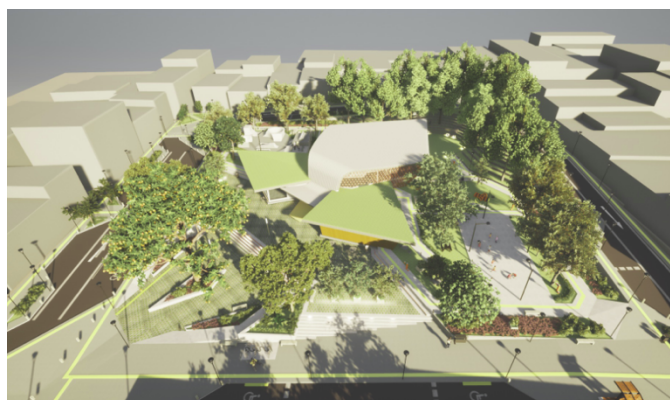

Figure 2. "Barrio San José" Park and Human Development Center in Curridabat, courtesy of xxx.

The projects become highly complex and require knowing how to work in teams of several courses at the same time and acquiring skills not previously required within the academy, such as negotiation and defending the proposal in front of the technicians of the institutions and experts.

Figure 3. Presentation of Urban Design course project, by prof. Ramirez and his group of students, to the internal commission and the authorities of the Ministry of Housing and Human Settlements (MIVAH) and the Council of Real Estate Developers (CODI).

Here we have the project "Social Housing as a Common Good for resilient cities" that was sent to participate in the Seoul Biennale of Architecture and Urbanism 2021. It is a proposal of

Figure 4. Social Housing as a common Good for resilient cities Project. Courtesy of Universidad Latina de Costa Rica.

an urban regeneration plan that integrates the mapping of urban commons and applies the use of the transect and mega-blocks, reflecting new urban values: compactness, participation, 24 hours, pedestrian-friendly, mixed-use, and self-sufficient consumption and production of energy, information, and food.

Finally, this Graduation Project for a city of innovation model for Costa Rica, located in San Isidro General, Perez Zeledón. This proposal focuses on districts for the creative economy and begins with a detailed study of the possibilities of cross-development.
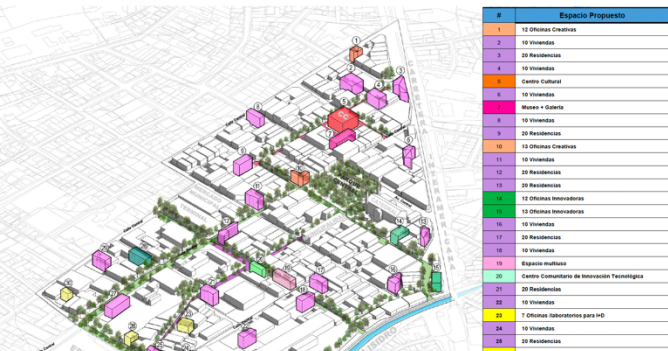

Figure 5. City of innovation model, final graduation project. Courtesy of Ken Fallas.

We have been identifying and compiling all the research and the third mission projects from the classroom, which have been promoted in the last 5 years. Research-oriented to these issues has been strengthened in graduation projects, and social extension is already part of many of the projects that are developed in the theoretical and practical courses of the architecture career, in addition to university social work.

Some of them, which I am sharing here, have started as social extension projects such as:

The Non-Conventional Materials Laboratory, which is a delocalized project. This is about materials technology with a regenerative and local approach. The Community Association of the neighborhood, Municipality of San José, and businesses were involved.

Figure 6. Non-conventional Materials Lab. Courtesy of Universidad Latina de Costa Rica.

In the third Composition Workshop students worked in the Quitirrisí Indigenous Reserve & Rural Community. This was applied research in design to develop urban furniture with the use of mud bricks. This involved: the Community Association

Figure 7. Mud urban furniture research and development project. Courtesy of Universidad Latina de Costa Rica.

of the neighborhood with professors and students in the first year of their Career.

Finally, in the same location, this is the Youth, Culture and Research Center for the Quitirrisí Indigenous Reserve. This was a town planning and landscape design that was developed by an applicant of architectural graduation projects and his supervisor with the Community Association.

Figure 8. Youth, Culture and Research Center for the Quitirrisí Indigenous Reserve. Courtesy of xxx.

IV. PROTOTYPING AN ACADEMIC MODEL

The academic experiences to date have opportunities for improvement, but it is concluded that they are consistent with the lines of research and extension proposed, so it is intended to continue with actions that consider the practice of design as a tool that supports the dependency of communities on their natural resources as non-tradable means of livelihood and their right to own and manage them from a sustainable perspective.
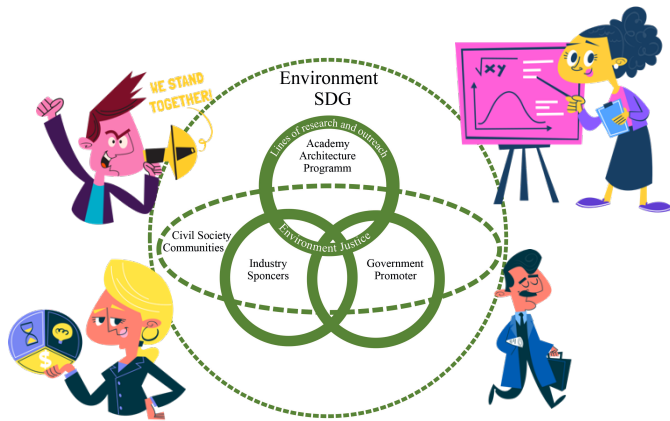
The next task of this prototype will focus on:

- systematizing academic processes that more consciously link the different courses, extension programs, and research by teachers and students with communities, local governments, and industry, providing solutions for needs, within a collaborative work process,

- defining mesh courses that can work under the themes of the programs continuously, reviewing the scope, and validating their results with the communities.

- documenting the impact obtained on students through surveys. In addition to alliances, begin to create cooperation networks and seek funds.

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