Research Project

Exploring Alternative Cosmologies and the Ethics of Nature in Architecture

A Case Study of a Hakka Family Tulou in Meixian, China

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This project seeks to explore nature's various values and their impact on architectural culture and practices, particularly against the backdrop of ongoing social and environmental crises. It represents a rare endeavor to bridge the realms of Philosophy of Nature with Architecture. At its core, the project aims to shed light on neglected Tulou, traditional Hakka dwellings recognized as UNESCO heritage, that now stand abandoned by successive generations. On a personal level, this project represents a journey to reconnect with my Hakka heritage, forging a deeper link between my architectural practice and my identity.

Summary

This project outlines two key steps. Firstly, to construct a comprehensive framework for understanding ecological and vernacular architecture through the lens of environmental ethics. To achieve this, I will first delve into the typologies of values outlined in the latest report of the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), the world scientific authority for biodiversity. It advocates for incorporating diverse nature values into decision-making in order to combat the unprecedented biodiversity erosion effectively. The report presents a compelling panel of human-nature relationships, categorizing values as Anthropocentric (human-centered), Bio/Ecocentric (ecosystem-centered), and Pluri/Cosmocentric (universe-centered). My project aims to explore these diverse typologies of nature values within the realm of architecture, seeking answers to fundamental questions such as: What values underpin the design of contemporary ecological buildings, ranging from low-tech to high-tech references? What alternative values exist, and how do they manifest in architectural forms? Lastly, how can we define and implement an architecture that embodies an ecocentric or cosmocentric vision?

In a second step, to anchor my hypothesis regarding alternative cosmologies, I will conduct a case study focusing on a Hakka Tulou built by my great-great-grandfather in Meixian District, China. I discovered the history of this building, which was recently refurbished using traditional methods, in 2023. Tulou are traditional Hakka (nomad Chinese community) earthen houses, 46 of which in the Fujian region have

been inscribed as a world heritage site by the UNESCO. Although architects recognize their architectural values (spatial organization, building techniques, relations to environment), there has been only limited research in architecture that links the buildings to their community, and none to my knowledge, on those in the Meixian district (an important Hakka settlement and the ancestral home of many Hakka descendants). The cosmology inherent in the Hakka culture encompasses a holistic approach to resource utilization, a strong sense of community, and harmonious relations with the environment. I aim to establish connections between this cosmology and architectural parameters, as well as traditional building techniques.
Through these steps, my research seeks to contribute to a deeper understanding of the ethical dimensions of architecture and to explore innovative approaches to sustainable design informed by diverse cultural and environmental perspectives. This project's outcomes, besides bringing a new framework for architecture theory and being useful for the transmission of Hakka heritage, will also guide policymakers and practitioners towards more sustainable and ethical architectural practices.

Context and background

The current environmental crisis is essentially a design crisis, stemming from how humans have utilized resources and shaped the built environment in industrialized societies. The latest report from IPBES (the global scientific authority on biodiversity) underscores the urgent need to diversify our relationship with nature, drawing inspiration from indigenous populations known for their harmonious coexistence with the environment. This shift towards embracing "biocentric," "ecocentric," or "cosmocentric" values is essential for developing more effective nature conservation policies. Architects must reassess and redefine their practices in light of this evolving understanding, drawing upon knowledge from natural science, environmental ethics, and indigenous architectural heritage.

As an architect and researcher, my objective is to challenge the conventional relationship between architecture and nature, advocating for more ethical architectural practices. I have cultivated a unique expertise in biodiversity, spanning both theoretical exploration and applied research within architectural firms and academic institutions. In 2017, I conducted a research thesis examining the relationship between living insects and architecture, aiming to shed light on the dichotomy between the built environment and nature. Traditional architectural paradigms viewed buildings as shields against nature's threats, while modernist and contemporary architecture tended towards an inert, sterile aesthetic. However, the emergence of ecological architecture highlights the interconnection between buildings and larger ecosystems, necessitating a reevaluation of our approach to

nature within architectural design. This research project was my first initiative to question mainstream architectural practice and connect it to different cosmologies.

The context of my PhD (2019-2023), titled "Biodiverse Walls: Architecture Supporting Biodiversity", was already transdisciplinary. I was affiliated with two laboratories, one in Architecture, one in Ecology, as well as to an architecture firm. I designed, constructed, and analyzed multiple biodiverse wall prototypes, bridging theoretical concepts with practical implementation. I first wrote a novel transdisciplinary review on ecological architecture and biodiverse walls that linked history of ecological architecture, urban ecology, current low and high-tech practices, technical and regulation documents, material science, and soil science. I then developed new types of green walls dedicated to host biodiversity in dense cities. In contrast to traditional green walls, the biodiverse walls contain a continuous inner layer of living soil to create an autonomous ecosystem and reduce maintenance. They are also made of building materials like stone and bricks with a greater longevity. I studied and assessed their ecological performance over several years. On the side of this, I conducted two other experiments, one on the bioreceptivity of materials (their ability to host plants) that was published in a scientific journal, and another on the retention and compaction of the vertical layer of soil. This interdisciplinary endeavor involved collaboration across various fields, including architecture, urban ecology, soil science, and agronomy. Through my work on biodiversity and bioreceptivity in architecture, I trained myself and developed an expertise across multiple disciplines, laying the foundation for future exploration of alternative ecological architectures. Based on this experience, I realized the urgent need for an ethical framework for these new architectural systems which led me to the current project I am proposing.

On a personal note, I've recently discovered the history of my Hakka Chinese ancestors. Born in France to a Mauritian mother with Chinese heritage, my cultural background has always influenced my architectural work. Although my family never visited China, trips to relatives in Mauritius kept our Chinese traditions alive. In 2022, I learned my great-great-grandfather built a Tulou in Meixian in 1937, named "Oy Lou" (Dream Home), a significant piece of our heritage, expropriated by the Chinese government in 1949. Its history post-expropriation remains largely unknown until its refurbishment in 2021 using traditional Hakka techniques, sparking my interest in combining personal history with ecological architecture. This house represents a traditional housing typology in the region, serving as a foundation for my exploration of vernacular dwellings in Meixian. With this background, I am motivated to develop a critical framework for ecological architecture, blending professional experience and cultural roots to enrich the discourse on sustainable architectural practices.