
CUBATÃO *POST-OIL*

ecologies in transition

RESEARCH PLAN

November 11th 2022

City of the Future graduation studio

fall semester 2022

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ABSTRACT

All across Latin America, oil outposts and extractive zones recount the continent's colonial past and remind us of the enduring matrix that still governs the social, environmental and technological dimensions of life. Cubatão is one amongst many sites that testifies to this fragmented comprehension of the dimensions of culture, nature and infrastructure. It is one of the many cities developed in view of the Brazilian oil business and resource politics, which led to it being considered the most polluted city in the world in the 1980's. The aim of this research is to inquire on the future of these places in face of upcoming societal transitions, specifically in regard to the substitution of fossil fuels for cleaner energy sources. Through a critical approach of what has been conducted so far in terms of design, planning and policies, the research speculates over new forms of space production that can catalyze community aspirations, building on the underlying and suppressed potential of the territory's actors, human and non-human.

keywords: post-development; extractive zones; ecosophy; speculative design ; design for transition.

RESEARCH PLAN WORDCOUNT: 2325 words





INTRODUCTION

For the second half of the 20th century, Brazil underwent an intense national development¹ project. During this period, there was an emphasis on the resource politics, with the founding of several state companies, most of which were focused on the extraction of minerals, such as iron-ore and nickel. Not much later came the discovery of the oil reserves and Petrobras, the state oil company, began to lay bases across national territory. All across the country, construction sites popped up, either to build the industrial compounds which would process the extracted raw materials or to develop and expand road and railway infrastructure to serve them. However, an often overlooked side to the developmentalist agenda is the deployment of human resources towards these construction sites and to the new industrial/extraction infrastructure. Workers from the Northeast would venture Southwards seeking job opportunities, agglomerating in small camps that in some cases, would later evolve into cities.

1 The developmentalism rhetoric (usually characterized by the developed / under-developed discourse) is something to be discussed throughout the research, in line with the work of Kothari et al., (2019)

Subordinated to the larger metropolis and created initially to serve a body of infrastructure, these interstitial sites were developed through a modernist approach towards urban planning and policies, reinforcing their position as mere byproducts. Examples can be observed all across Brazilian and Latin American territory and they showcase how extraction zones typically do not benefit from the wealth produced by the system they are such fundamental parts of. Moreover, they illustrate a clear disconnection between the social-environmental and technological dimensions that are juxtaposed in productive territories. For most of these cities, the extractive or industrial activity is the dictator of the spatial and social structures, hindering articulations and networks that might already exist. This is what Macarena Gomez-Barris (2017) describes as the extractive zone, where capitalism “reduces, constrains, and converts life into commodities”. Moreover, this relationship of dependence between the economic forces and the place it governs is further aggravated in light of upcoming changes of paradigms in the infrastructure field², such as the globally discussed energy transition.

2 There is an expected retraction of the global petroleum market, but in the case of Brazil there is also an anticipation of a shift of investments from on-shore extraction towards off-shore bases (Fellet, 2022)

CONTEXT

This is not an isolated phenomenon. Cubatão is one amongst many examples that evidenciate a fragmented comprehension of culture³, nature and infrastructure. The city began in the late 1950's as Petrobras inaugurated one of their biggest oil refineries in the city. But it observed an exponential population growth due to the construction of the Rodovia dos Imigrantes, an impressive highway infrastructure with tunnels and elevated stretches over the Serra do Mar. It was a key element of the national developmentalist project and an important part of the main exportation corridor, connecting São Paulo and the hinterland to the coast, where the Port of Santos is located. Enabling further access to the global resource market, Cubatão was a spot of high interest of state companies, in the oil and chemical business. The city's development, since its origin, has been closely intertwined with the economic activity, with a long-standing disregard to its social and environmental unravellings.

3 Nature-culture is one of the divides described by Escobar (2010) from the dualist ontologies of liberal modernity and I will refer back to these concepts throughout the research. However, I will use the terms culture-nature-infrastructure in line with Braidotti's (2021) concept of socio-environmental-technological and Guattari's (1989) notion of ecosophy and the three ecologies.

PROBLEM STATEMENT

Petroleum extraction is one of the many sides of the multi-faceted resource politics observed in Brazil and in Latin America. Extractive zones are scattered all around the continent and they recount a colonial past while evidentiating the enduring character of the colonial matrix as a structure that governs economical, social and enviromental policies. The adoption of a modernist discourse towards planning under the pretext of neo-liberal reforms, deepened the disconnection between the social-environmental-technological dimensions and deviated Brazil, and its Latin American neighbors, from the construction of a self-affirmative and autonomous narrative. The rhetoric of development as a way to evolve the so-called under-developed countries and to project them higher in the international scene has long-lasting effects that are still in place today.

Thus, as a counterpoint, the overarching objective of this research is to inquire on alternative narratives of space production that challenge the divide between culture-nature-infrastructure. Interstitial sites such as Cubatão, which are initially created to serve a body of infrastructure and that grow reliant on it, portray a complex entanglement of multiple disciplines that integrate networks of many scales. The general problem at stake is what happens to the physical, natural and social resources in these infrastructural landscapes in face of the upcoming societal transitions. Will they become obsolete, leaving behind the heavy social, spatial and environmental impact of extraction and refining activities? How can Architecture act upon these sites, working with the liminalities between ecologies but designing for a future where the fragmentation is overcome? Once deemed the Valley of Death, Cubatão, the chosen site for this research, is one of many places that embodies this question and that hopefully can provide clarity towards Architecture's role in the *post*-developed world.

RESEARCH QUESTION

Taking into consideration the problem described above, the main research question is:

Considering a post-oil context for Brazil, what scenarios can be drawn out for Cubatão's future?

To aid the main question, the supporting sub-questions are:

How have modernist and developmentalist theories shaped and conditioned the existence of cities like Cubatão?

Within this context, what [theoretical] approach can empower Cubatão towards constructing a self-affirmative and emancipatory narrative?

How can design and planning overcome the modern divides between nature-culture-technology, in the case of Cubatão?

THEORETICAL FRAMEWORK

On a general level, the research aims to investigate Architectural production in view of a decolonial or post-colonial practice. Thus, it builds upon the problematic of an Euro-modern discourse in regards to development and planning in order to present paths for surpassing them. Below are brief definitions of the most relevant concepts that tend to this matter.

DEFUTURING

Tony Fry (2020) defines defuturing as a condition resultant from the world's anthropocentric trajectory this far. The author defines it as a process of loss or "the literal negation of world futures for many of us and many of our unknowing non-human others". Fry points out that in the *making* of the world up to this point we have actually contradictory engaged in a process of *taking away*. The concept should be taken as reflective in regards to the past and present but mostly as critical call to action on the future. However, in order to so, one must be willing to first investigate or acknowledge the failure in the anthropocentric and productivist structures - or as the author puts it "how un-sustainment is sustained."

TRANSMODERNITY

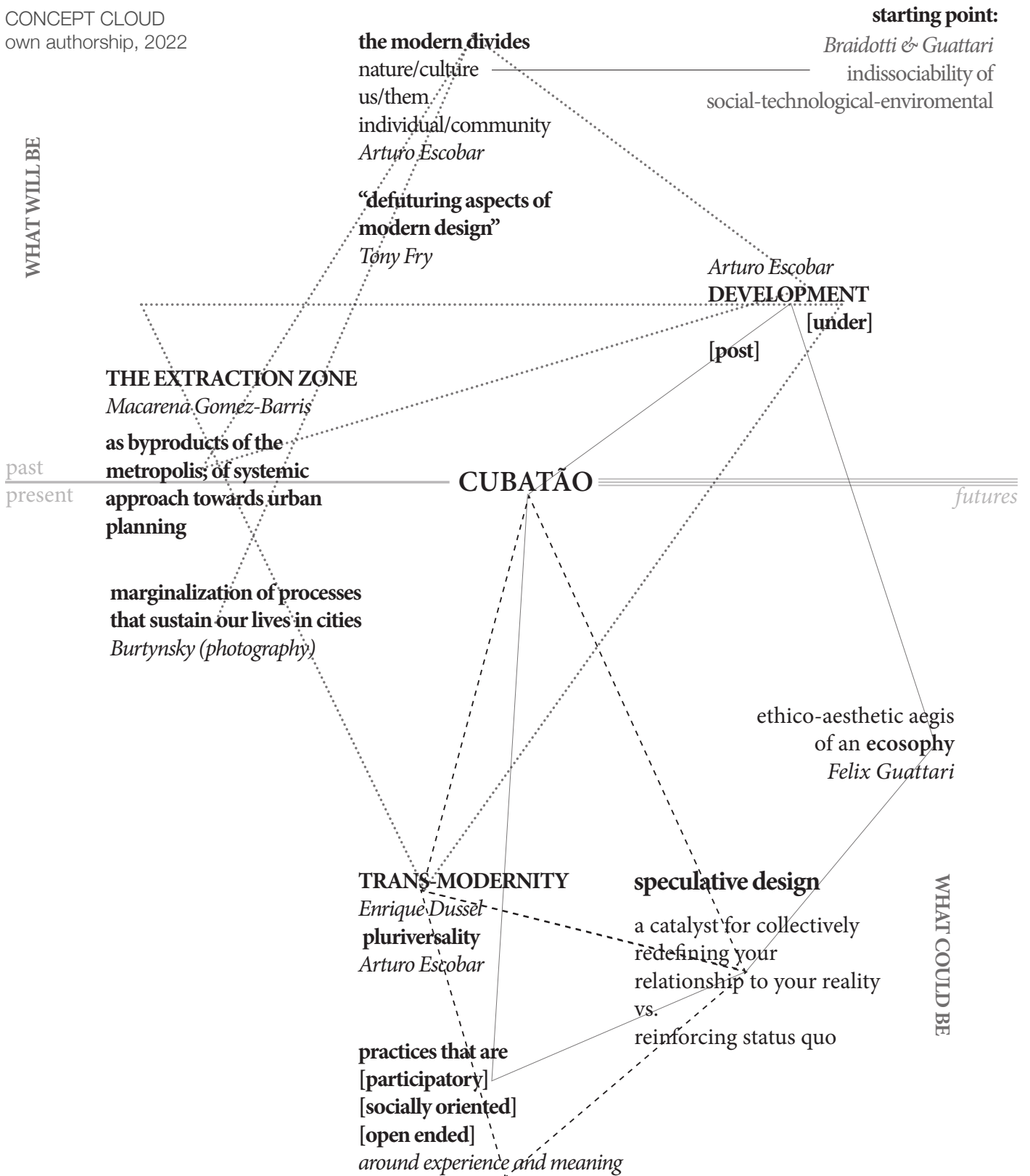
Enrique Dussel (2012) introduces the idea of *transmodernity* to refer to universal cultures that position themselves outside of the European/ North American modernity and post-modernity. According to the author, transmodern culture engages with aspects that move closer to a pluriversal utopia. A fundamental aspect of transmodernity is the idea of a transversal, intercultural dialogue, inviting into scene actors other than experts from the academic and institutional worlds.

PLURIVERSALITY

The pluriverse is a concept taken from the Zapatistas of Chiapas⁴, which Escobar (Kothari et al., 2019) uses as counterpoint to the universalism characteristic to modernity and which postulates "science as the only reliable truth and the harbinger of 'progress'". He points out how the modern colonial structures marginalize and underestimate other forms of knowing situated outside the Western/Eurocentric realm. He argues for pluriversal articulations not as a administration policy, but as an alternative which would allow the synergy of multiple everyday and bottom-up regimes and practices.

The diagram that follows shows the main concepts to be used throughout the research. I find it useful to present it as a cloud because it allows visualization of how the concepts and authors dialogue with each other or how they can be interrelated to contribute to the argumentation. The cloud formation also presumes that they can gravitate and might shift around as the research develops.

4 The Zapatista Army of Liberation, situated in the state of Chiapas, Mexico is a militant group, composed mainly of indigenous people, that stands in opposition to the government and military. They define the pluriverse as "a world where many worlds fit".(Kothari et al.,2019)



METHODOLOGICAL POSITIONING & FRAMEWORK

Thinking of ways to respond to the main research question, I found myself within a semantic dilemma. Considering that the research argument is based on a critical approach towards the rationalist modern planning theories and underpinned by the concept of *pluriversality*, it does not seem fitting to use the word possible when talking about forms of imagining the future. What defines possible and is there only one

answer? This would be already a narrowing starting point to a design vision which is still to be developed. Therefore, I choose to approach the problem through two lines of inquiry, explained below:

What *will* Cubatão become in face of the discussed transitions?

&

What *could* Cubatão become in face of the discussed transitions?

The first case concerns the maintenance of the status quo. Understanding Cubatão as a byproduct of a larger structure, what does such structure envision for its future? This analysis will be targeted through the following methods:

- » a brief historical review of the Brazilian resource politics and the developmentalist planning agenda that generated cities like Cubatão;
- » analysis of how Petrobras anticipates and communicates the energy transition (and if it does so);
- » qualitative research on site, including interviews and visual documenting;
- » production of a *colonial* cartography illustrating the power entanglements on site;
- » case studies of other sites that have undergone transformations in the context of infrastructural transitions.

The second line of inquiry envisions a future where Cubatão is no longer defined or constrained by its relationship to a larger structure (metropolis, extractive/productive system) and that overcomes the modern divides (as previously described). This poses the question of how Architecture can work and contribute towards the construction of this emancipated future. Supported by the concepts of *post-development*, *pluriversality* and *transmodernity*, I expect to elaborate on alternative forms of space production that would bridge the environmental, social and technological dimensions (based on Guattari's discussion of the Three Ecologies). Moreover, how can design acknowledge the coexistence of multiple worlds and work with that condition. The methods to be utilized are:

- » literature and theory review;
- » qualitative research on site, interviews and visual documenting;
- » elaboration of a *pluriversal cartography* mapping out the aspirations, potentials and needs of human and non-human actors found on site;
- » case studies focusing on experiences of spatial transformation through alternative methods of space production.

The expected outcomes are:

- A) a critical reflection that advises and discusses the role of design in regard to the relationship between humans, nature and infrastructure;
- B) a [speculative]⁵ design proposal that considers the research's findings.

A NOTE ON THE STAKEHOLDER GROUP

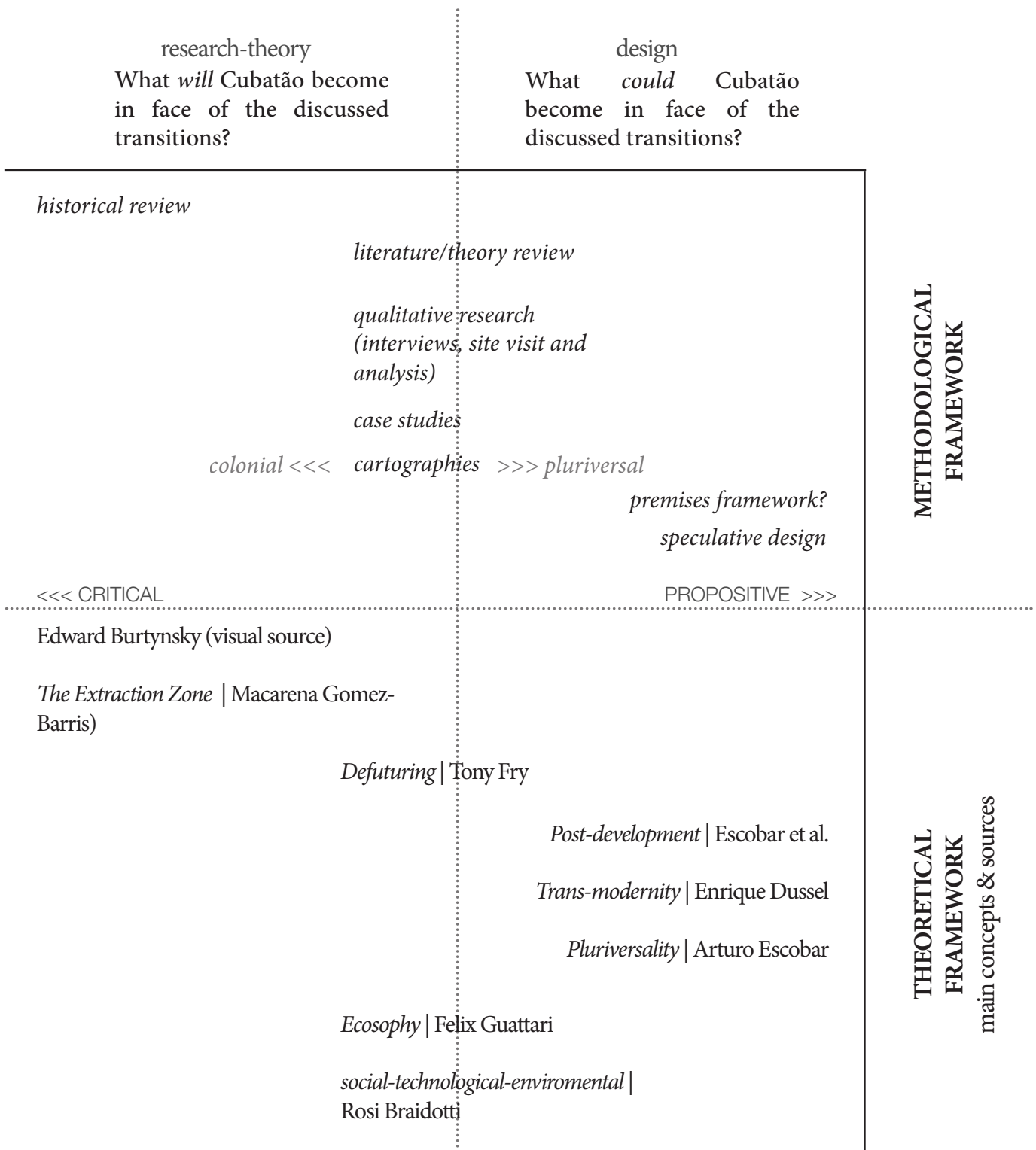
A crucial part of the research is the engagement with the site and local actors. However, it is sometimes tricky to find an entry point into the territory. For this reason, I plan on working with a self-organized group known as "Cava é Cova" which is fighting a process of environmental aggression resultant from the excavation of an underwater pit conducted

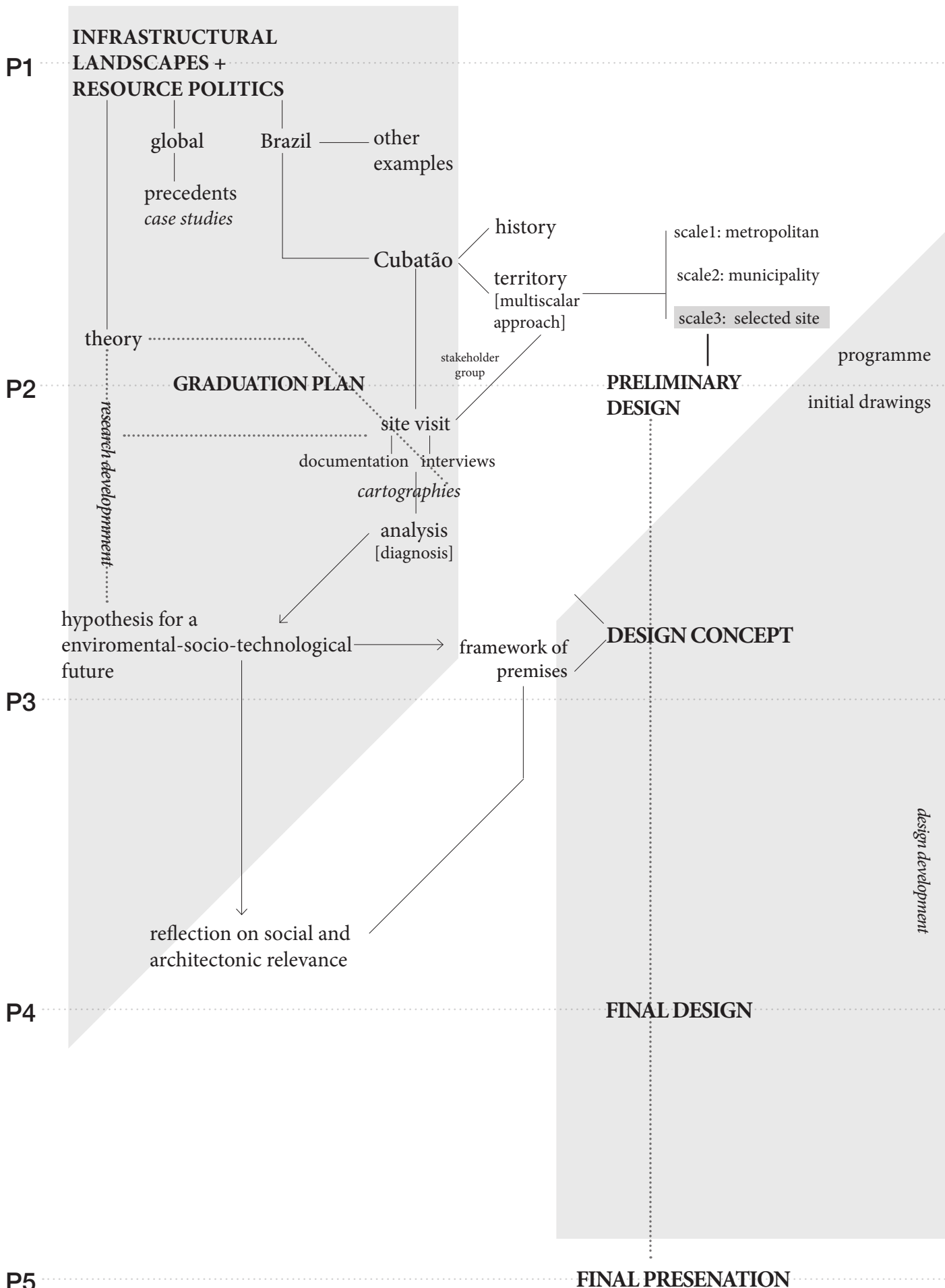
5 As defined by Anthony Dunne and Fiona Raby (2013): 'design speculations can act as a catalyst for collectively redefining your relationship to your reality by encouraging - for instance - through what-if scenarios - the imagination of alternative ways of being. Such critical design can go a long way, in their view, against design that reinforces the status quo' (Escobar, 2018)

by the steelwork company Vale. I see it as an interesting group because it is composed of community entities, environmentalists, fishermen, researchers, students and activists⁶, which can bring a multidisciplinary perspective to this problem, something that is valuable to this research and to the studio. The site where this conflict unfolds also presents interesting opportunities to investigate the intersection of environmental degradation, infrastructure and social policies, with the interaction of human and non-human actors.

6 Movimento contra a Cova SubAquatca, popularly known as "Cava é Cova" (<https://contracava.confiant.com.br/quem-somos/>)

The methods to be employed in each of these two lines of inquiry are described in the diagram below as well as the main concepts and





ARGUMENT ON RELEVANCE

The next major energetic transition is already in course. Europe expects to have completely switched to clean energy by 2050. Globally, there are camps, sites and cities dedicated to oil extraction, most of which serve this decelerating market. What happens to these places and to these people once this transition gains force? All around the world we will encounter the problem of obsolete infrastructure, obsolete urban compounds and ruptured relationships between man and infrastructure.

With this research, I expect to shed light on these places, which are born as collaterals to the 'pursuit of progress' and that most likely will be thrown to the sidelines amidst the upcoming transitions. Interstitial sites such as Cubatão will be left behind with the social, spatial and environmental degradation resulting from the extractive activities. In the context of Brazil, and more generally Latin America, these places are also linked to a developmentalist rhetoric that was once a driver of public planning and policies. The ideology might have changed, but these sites still bear witness of that time and I question myself if they are able (and if they wish to) adapt to what is coming next. Additionally, we need to shift towards the reuse of built space/infrastructure in name of the circularity and the carbon footprint.

While literature on the thematic of petroleumscapes mostly dwell over the past and present time frames, I expect to contribute to the discussion by starting to question the future of these places. Hein (2021) extensively discusses the importance of the "physical and representative flows of petroleum" in certain cultures and localities and I think it is essential to analyse these in light of a transition scenario. I also see an opportunity to contribute by expanding the exiguous literature focused on the Latin American and Brazilian context.

Furthermore, I believe it is important for the exercise of architecture to question common-sense practices and engage with less familiar forms of designing. Moreover, I believe Architecture should (and has the means to) challenge the modern divides that are taken for granted, between nature-culture, us-them and individual-community. Using speculative design as a tool, I expect to, to a certain degree, detach myself from conventional processes that have up to this point, produced known and expected results and as the research critique's points out, not so sustainable for the long run. In his book *Designs for the Pluriverse*, Escobar (2018) says:

"To nourish design's potential for the transitions, however, requires a significant reorientation of design from the functionalist, rationalistic, and industrial traditions from which it emerged, and within which it still functions with ease, toward a type of rationality and set of practices attuned to the relational dimension of life."

CONCLUDING REMARKS

I don't know what the answers to the research questions will be. It might be that the research steers me towards believing that we should accept that cities like Cubatão will simply depopulate and be left as ruins of a time that has passed. But I still think the questions are relevant, not only to understand what will become of these places but so that we can rethink the role of the practice of Architecture in the nature-culture-technology relationship.

ANNOTATED BIBLIOGRAPHY

Bhatia N. & Casper M. (2013). *The petropolis of tomorrow*. Actar Publishers & Architecture at Rice.

Bhatia and Casper present a book divided into research and design exploration. Although there is a focus on the off-shore oil platforms, the research analyzes the relationship between infrastructural geometries for oil extraction and urbanization in South America. What is particularly relevant to the present research is the investigation on the outposts resultant from the oil business.

Fry, T. (2020). *Defuturing* (2nd ed.). Bloomsbury Publishing. Retrieved from <https://www.perlego.com/book/1690875/defuturing-pdf> (Original work published 2020)

What I find interesting about this source is that it follows a similar line of thought as I intend on using for the research. Tony Fry first describes how design disciplines have actively contributed to the process of *defuturing*. He then moves on to discussing how design can participate in the constitution of futures - which comprises both the remaking of a future that has been taken away as well as the establishment of a new *design reasoning*. He discusses a new design philosophy but making use of concrete examples to do so.

Gómez-Barris M. (2017). *The extractive zone : social ecologies and decolonial perspectives* (Ser. Dissident acts). Duke University Press. <https://doi.org/10.1515/9780822372561>

This source is particularly relevant to the present research as it is a scholar that writes about resource politics from Latin America. Gomez-Barris unveils the relationship between colonialism, extractivism and the spatial transformations that accrue from these processes. Although her work will specialize in the gender and indigenous perspective, her introductory discussion regarding extractivism in the Southern American context is an interesting initial point for this research.

Hein, C. (Ed.). (2021). *Oil Spaces: Exploring the Global Petroleumscape* (1st ed.). Routledge. <https://doi.org/10.4324/9780367816049>

There is a chapter in this book, written by Drielly Peyerl, that analyzes the establishment of the Brazilian petroleumscape. The author constructs a historical review that informs the reader of the political project behind the oil extraction activity, as well of its impacts on the national landscape. Lastly, the author draws attention to the future trends for oil exploration in the country, indicating a movement of focusing on off-shore exploration. With that, the question of what happens to all the land-based infrastructure arises, and this is where the present research comes in.

Kothari, A., Salleh, A., Escobar, A., Demaria, F., & Acosta, A. (2019). *Pluriverse a post-development dictionary*. Tulika Books.

This book is a compilation of both theories and practices. Making use of important concepts such as *pluriversality* and *communality*, the authors discuss the design discipline in times of transition, specifically in the post-development era. They question the discourse of development and the rhetoric of progress while unpacking on their social and territorial impacts. I believe it will be a very interesting source as it bridges the historical process, theory and design. I see that the examples of practices they present, as well as a conceptual framework for design can aid me in making the transition from the research-theory phase to the design phase.

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FIGURE & IMAGE LIST

Image 1. Black and white image of Cubatão. From “24 empresas são condenadas por poluir Cubatão” by G. Girardi, 2017 September 30th, *Estadao*. <https://img.estadao.com.br/fotos/crop/1200x1200/resources/jpg/1/9/1506733579591.jpg>. Copyright year by name of copyright holder.

Image 2. Aerial view of the Imigrantes-Anchieta highway system. From “Sistema Anchieta-Imigrantes deve receber até 440 mil veículos durante o feriado de Tiradentes” by Mobilidade Sampa, 2022 April 19th. *Mobilidade Sampa*. <https://mobilidadesampa.com.br/2022/04/sistema-anchieta-imigrantes-veiculos-feriado-tiradentes/>. Copyright Ecovias.