

Conflictual Natures: the role of architectural imagination in building paths for ecological transition in the city of Goias Brasil

Original

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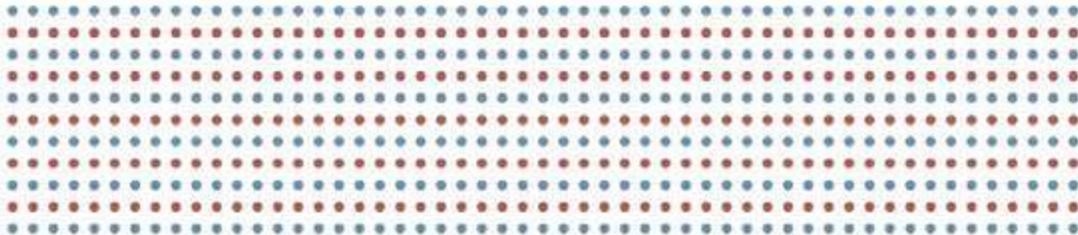
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GAME CHANGER? **PLANNING FOR JUST AND SUSTAINABLE** **URBAN REGIONS**



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Conflictual Natures: the role of architectural imagination in building paths for ecological transition in the city of Goias – Brasil

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Abstract (up to 125 words)

This article addresses the intertwined history of Goias City and Vermelho River to show how social perceptions about nature evolve alongside social dynamics. Different nature perspectives were interpreted as tools shaping the socio-natural phenomenon. The study analysed nature's social construction across history by treating it as a design object and by aligning a new right to nature akin to Lefebvre's right to produce the city as a work of art. Design workshop was used to analyse societal perceptions of the river and it uncovered conflicting views. It explored micro-utopian approaches to foster counter-hegemonic ecological transitions by merging utopian ideals with practicality and challenging conventional nature narratives. This perspective can help establish benchmarks for alternative practices and build a socially active approach to ecological transition strategies.

Keywords: environmental conflicts; micro-utopias; design-thinking.

1. Introduction

The city of Goiás, Brazil, has evolved closely attached to its main river, called Vermelho River. However, this relationship was quite conflicting and changed overtime as nature gained different social meanings. Thus, the aim of the current study is to investigate nature as a social product by revealing its different social performances at different times in Goiás City's history. In order to do so, a design workshop was held in the investigated city, with support of professor Wagner Rezende from UFG, to develop and explore a regressive-progressive analysis of the role played by nature in it. First, a photographic analysis aimed at identifying conflicting trends towards nature and different aspects of social perception about Vermelho River was carried out. This procedure enabled exploring virtualities and blind fields to imagine ecological transition paths in the city. Arguably, this grounds a 'right to nature', in the same terms that for Lefebvre (2000) the right to the city meant the right to produce the city as work of art. Likewise, the 'right to nature' in the city means the possibility of citizens to produce nature as work of art.



Figure 01: The city of Goiás and the Vermelho River

A workshop/seminar event developed by UFG and POLITO was held to discuss the social implications of dynamics between rivers and Goiás City. It focused on addressing conflicts, social impacts, changes in social perception, and how people actually live these dynamics in their daily lives.

The workshop explored critical theories of nature and environmental planning, approaches to Urban Political Ecology, the production of subjectivities, and critical postcolonial approaches to nature. It aimed at investigating the role played by design and architecture in developing immanent possibilities for social-environmental alternatives. In order to do so, it explored design-thinking to visualise hidden aspects of urban nature through cartography, critical representation, diagrammatic interpretation and photographic *dérives*; and to envision new possible futures through utopian imagination and by seeding immanent micro-utopias.

Short lectures and discussions aimed at building a critical view and at developing tools to interpret nature as an object of design were held. Round tables were performed with, and short presentations were introduced to, the local community. Field trips produced photographic *dérives* and interviews, whereas workshops based on the flipped classroom methodology developed utopias and micro-utopias.

Visitors arriving in Goiás City will find a city immersed in nature. Yet, its history is full of complex nature-artificiality interactions ranging from negation to valorisation. Nature has always been there in the city, although it had different roles and values. The current study took some steps towards deconstructing values attributed to nature in the city, mainly by focusing on Vermelho River to find new potentials for nature's different historical blind fields. It was

done to develop an approach focused on critically dealing with history in order to set new paths for ecological transition visions.

Associations between social and natural ideas were herein explored to approach Goiás City's environment, but not with the aim to investigate nature as abstract ideal, but to analyse how it concretely performs social interactions. This approach was adopted to highlight how radical ideas about nature could point out some blind fields of, and new possibilities for, society's socio-environmental structure and its contradictions.

The herein adopted approach was based on Henri Lefebvre's (2003: 111-120) regressive-progressive method, which, in its turn, is based on two steps that were herein used to, later on, formulate micro-utopias. The first (horizontal) step focused on identifying current contradictions, according to which, a given historical moment can be read as antagonistic social phenomena. This step enabled understanding that reality is a complex field full of 'virtualities' and 'blind-fields'. The second (vertical) step comprised the process to search for the root of such contradictions and complexity back in history by analysing the paradoxical juxtaposition of archaic and modern formations. Finally, the aforementioned blind fields and virtual elements were explored using design-thinking tools to imagine ecological transition paths for both the city and its river.

2. Natural Contradictions

The current section explores living contradictions observed in the relationship between Vermelho River and Goiás City. For that, initially, a series of lectures were held to introduce the main contradictions inherent to the neoliberal context, namely: its instrumental logic, the parasitic exploitation of nature, the commodification and objectification of both nature and subjects, as well as the financialisation, individualism and spectacle observed in current times. The lectures also introduced alternative topics, such as postcolonial approaches, coexistence, ethics of care, mobility of frontiers and co-poiesis of nature.

Later on, a lecture held by the *Paesaggi Sensibile* group (conducted by Viviana Rubbo and Alessandro Guida) introduced a photographic approach to the landscape to help developing territorial narratives. Their office uses photography as a method to explore the way landscapes are perceived and have deep roots to be sought back in time. They aim at "listening" to the territory in order to find the values governing and emerging from landscapes by developing it as an interdisciplinary narrative tool to merge different participants and imaginaries. They aim at decoding, understanding and communicating key aspects to foster territorial policies. This approach was used to develop a photographic *dérive* to identify the 10 main trends towards, and views on, nature in Vermelho River context.

2.1. Concrete contradictions

The 10 conceptual perspectives about the main contradictions observed during the photographic *dérive* carried out in Vermelho River, at Goias City, are presented below.

Conflicting exchanges

The interchange between city and river unfolds amid conflicts that highlight a dynamic relationship full of tension. Although mediation mechanisms ostensibly aim at regulating the flow between these two entities, they often operate recklessly by exacerbating instead of mitigating issues. Unwanted waste streams into the river, whereas sediments encroach upon the cityscape. The river receives polluted water and retaliates through violent floods that cover the urban landscape. Consequently, it is imperative to promote a paradigm shift towards a more conscientious exchange and care based on innovative approaches to harmonise the relationship between the investigated city and its aquatic counterpart.

The problem arises from not acknowledging the city-river interdependence. , These entities are treated as separate and opposing forces, rather than as interconnected entities relying on each other for sustenance purposes. This failure to acknowledge their mutual dependence and the reckless operation of mediation mechanisms further exacerbates conflicts and tensions. It is essential promoting a shift towards a more conscientiousness about the inherent interdependence between city and river to address this issue.



Figure 2: Conflicting exchanges

Care and abandonment

There is evidence of people actively engaged in planting activities everywhere along the river banks, and it depicts people's deep connection to the environment. Ornamental plants adorning backyards, windows and verandas indicate locals' willingness to nurture and to take care of their surroundings. Ornamental plants add aesthetic appeal, as well as emphasise community members' collective willingness to take care and improve the appearance of their shared spaces. Despite these positive initiatives, several riverbank sections are left abandoned and neglected, and it emphasises their stark contrast to areas flourishing with greenery.

However, it represents a significant opportunity for transformation, rather than being seen as a setback. Communities can unlock their potential to provide a more inclusive and sustainable future by acknowledging and addressing these neglected areas. This is a unique opportunity to ground care in a local existing ethics. These abandoned spaces can be revitalised and repurposed for the benefit of all by harnessing the collective efforts of individuals and investing it in their communities' well-being. This approach not only fosters the sense of belonging and connection among residents, but it also promotes environmental stewardship and resilience. Ultimately, embracing this *ethos* of care and solidarity has the potential to turn riverbanks into vibrant community-life hubs, where everyone plays an essential role in shaping a brighter future.



Figure 3: Care and abandonment

Fruit Surplus

In addition to their connection with ornamental plants along riverbanks, people also maintain traditional relationships with rural practices. Beyond the mere presence of ornamental greenery, backyards produce a surplus of several fruits, and it is a testament to the community's agricultural heritage. Traditionally, locals freely share excess production by placing fruit boxes in front windows and by fostering a 'sharing of abundance' culture. However, despite these generous gestures, the sight of fruits rotting on the ground is all too common, and often locals insist with visitors to bring some of the fruits with them. These behaviours highlight the paradox between surplus production and waste, desire of sharing and lack of consumption.

Nevertheless, a great opportunity to promote an economy rooted in both solidarity and sharing lies amidst this apparent challenge. Communities can harness resources' abundance to create a more equitable and sustainable economy by acknowledging and addressing inefficiencies observed in the current system. This process encompasses implementing strategies to effectively use production surplus through community-wide sharing initiatives or food security programs and networks. Moreover, integrating agroforestry practices along riverbanks is a sustainable way to revitalise the landscape, enhance biodiversity and improve soil health. Communities can unlock the full potential of their resources to foster resilience and cohesion in this process by embracing the *ethos* of solidarity and mutual support.



Figure 4: Fruit Surplus

Bonding Frontiers

Symbolic lines divide anthropic and natural spaces. They simultaneously establish domains and connection points. Thus, the lines separating the river from the urban fabric are more than mere geographic contours. They are permeable borders between the natural and the built environment, between waters' fluidity and human structures' solidity.

These delimitations, which are intertwined like the lines of a poem, reveal the duality inherent to coexistence, where the winding river water meets the rigidity of urban lines. This dichotomy is not just geographic, it is a metaphor for the constant clash between nature and human creation. However, instead of rigid divisions, these lines subtly intertwine and remind us that, even in the sharpest borders, there is an eternal dance between the wild and the domesticated, between the free flowing of waters and the ordering of urban constructions.



Figure 5: Bonding Frontiers

River gateways

The quiet backyards in the neighbourhoods along the riverbanks flourish with an array of gates leading directly to the edges of water. These passages are foundational gateways that work both as guardians and mediators by controlling the dialogue between city and river. Each door is a symbolic element embodying both residents' desire for security and the desire for connection between urban life and the river's natural flow. They are mainly symbolic, and in some only the portal remains, in others there is the gate but the fence is missing. Nonetheless its symbolic protection and demarcation remains.

There lies an inherent tension between access control and yearning for connection. Thus, although these gateways frame and structure exchanges, they also embrace nature by echoing the eternal dance between the need of security and the desire for freedom. Moreover, these gateways are also frames selecting views of the calm river water current to revive the city's dynamic pulse. Although these gateways work as barriers, they are also a symbolic longing for the river's fluidity and serenity. A mosaic of gates and windows unfolds as passersby cross these spaces. Thus, these gates have the potential to recreate a harmonious experience between homes and the river.



Figure 6: River Gateways

Fluid Backyard

Houses near Vermelho River reveal an intricate dance between the need of proximity to water and caution towards nature's unpredictable pace. The carefully tended backyards at the back of the lots play a crucial role in spatial dynamics, since they outline the border between the private sphere of homes and the tortuous paths leading to the river. Solid walls emerge as guardians against natural dangers by separating everyday life from likely agitated waters. However, although these defensive barriers provide security, they often imply loss of direct contact with the riverside environment. The delicate balance between desire for protection and preserving the intimate contact with nature is revealed in this complex spatial arrangement, where architecture acts as mediator between human comfort and the unpredictability of natural settings.

Although backyards present fluid boundaries encroaching one another and extending towards the river, they lack structure. They are non-integrated landscape units. Some spaces are abandoned, whereas others are carefully tended. They form another urban ambience that is neither entirely nature-based nor completely structured. Furthermore, the boundaries between public and private properties are not clear. Locals blame the municipal administration for neglecting the river, and they see themselves as lacking agency to take care of these spaces. In this limbo, the riverbanks work as a non-activated field of potentialities.



Figure 7: Fluid Backyards

Connecting Devices

Locals have scattered DIY benches on the riverbank and created places for contemplation purposes. These seats are not only resting spaces and work as small devices capable of creating places for people to take a break, while they feel the murmurs of the river and the city's pulsating energy. Thus, the water and the streets converge to provide meeting arenas where people punctually explore the potential of calm spaces and viewpoints towards nature. This factor shows both lack of structured initiatives to explore the landscape potential of the area and the local population's willingness to adopt a hands-on approach to improve their surroundings.



Figure 8: Connecting Devices

Ordinary Invaders

Brachiaria is an exotic grass genus used to feed cattle. Species belonging to this genus provide tall and large bushes, as well as feature a common state landscape element. They outcompete native species, reduce biodiversity and create a monotonous landscape. These *brachiaria* spaces indicate places people do not approach and do not interact with. Thus, most spaces in riverbanks do not have native plants or orchards. Both natural and community ecosystems disappear in these places. Thus, *brachiaria* grass grows like a green desert in places lacking care, accessibility and backyards, in places people do not take ownership of, do not plant anything, do not take care of nor cultivate in. Nevertheless, the living river still lies there, in the middle of that place, behind that sharp, stinging curtain.



Figure 9: Ordinary Invaders

River Words

Words stand like silent sentinels arranged on plaques that trace a peculiar narrative along the tortuous paths leading to the river. Each plaque is a link in a series of discourses as an attempt to tame the fluidity of ideas that continuously seek a broader meaning. These words, like 'tributaries', intertwine to form a fabric that reflects the diversity of calls to experience, protect and take care of the river. However, these texts reflect the continuous flow of thoughts unfolding before us. As we follow the signs, we are encouraged to contemplate not only the destination, but the journey itself, and it enables shaping the course of our reflections and sculpting different lenses to look at the environment. This journey of language invites us to delve into the waters of meaning, where words reveal the constant process to keep on looking to common places.

Bruno Latour's (2004) call for scientists to be democratic representatives of non-human entities finds echo in these local practices. The community crafted these signs to communicate both human and non-human concerns by acknowledging the river's agency and intrinsic values. Scientific knowledge is translated into small slogans and the river gets a voice through the action of external subjects. Although these signs aim at education, they also promote the deeper aesthetics of interdependence and coexistence, as well as other ways to approach the local environment.



Figure 10: River Words
River Voices

“The river is used for swimming purposes, but it is not like it used to be. Nowadays, it is very dirty and disasters happen when the floods come.”

“The river is used for bathing purposes, as well as for catching and eating fish. It is also used to supply tap water to the city.”

“The river is everything. It is used for bathing and refreshing purposes. The river is nature.”

“A few years ago, there was an artistic demonstration that was considered inappropriate by the natives; after that, the river lost the incentives that encouraged more people to use it.”

“We only use the river for bathing purposes. But it also plays an important role in supplying and maintaining the city.”

“It is used for everything, such as giving water to and bathing animals. A few minutes ago, my daughter was asking to get in the water.”



Figure 11: Local Inhabitants giving voice for the river

2.2. Abstracting contradictions

On the one hand, the main current social contradiction lies on the almost hegemonic common sense about the need of developing sustainable alternatives, in contrast to a social performance that is leading us to a catastrophic Anthropocene. This contradiction is deeply rooted in our modern epistemology, which performs through the domination and instrumental use of nature, humans and non-humans, while having a hard time dialoguing with what is outside its own logic.

On the other hand, ecosystems are supposed to be synonyms of nature. However, the two parts of that word are already full of social and cultural assumptions. According to Juan Martinez Alier (1988), the Greek root “Oikos” means space of life, and it encompasses both the community and its territory. It is also shared by the economy, which accounts for managing this space of life. Therefore, the concept of ecology is intricate with political economy.

Moreover, systems are theoretical instruments. Adam Curtis’ documentary ‘All Watched Over by Machines of Loving Grace’ charmingly captures how systems’ theory prevail in contemporary culture, mainly through a specific branch of ecological thinking. According to Kasper (2000), the General Theory of Systems became a scientific movement in the 20th century in order to approach complex problems not as a sum of small problems, but in an integral approach focused on acknowledging the complex interactions of a set of elements (organised complexity). Nonetheless, according to Lefebvre, social reality is not ‘a pre-existing system’:

... it follows that the ‘real’ cannot be enclosed. It is not a situation where there is no possible outcome, nor is the only outcome global collapse; for the contradiction themselves develop though unevenly. And finally, theoretical concepts may escape the system, even though they are born in it and have emerged from (...) space dominated by the strategy of homogenization and of the programmed everyday. But they still have to free themselves from that system (Lefebvre, 1976, pp. 90-91).

Furthermore, Alberto Toscano (2006, pp. 136-156) introduced dynamic system theories to discuss concepts of subjectivity. According to him, systems can be conceived without a previous hierarchical order, in a complex interaction between the internal and the external, and with no stable and distinct objects. Jameson (2002, pp. 75-78), in his turn, has stated that these positions within a ‘total system’ can trace their roots to Weber’s ‘iron cage’, which rules out the possibility of dissent, and reintegrates any form of struggle as a functional part of the system.

In addition, Lefebvre (1967, 375-377) advocates that poiesis creates a new reality by operating in residual fields left untouched by current epistemologies. According to him, every epistemology has ‘virtualities’ and ‘blind-fields’ (Lefebvre, 2003b, pp. 23-44), and it means that every epistemology has specific potentials that are explored and specific fractions that remain hidden. These fractions are unarticulated into potential deeds; therefore, they are the limits of any form of reasoning. Based on his approach, poiesis creates reality by disclosing the obscure, blind and hidden part of reality. Therefore, the limits seen by a given epistemology are the source to create (possible) new realities.

Lefebvre (1967) called the possibility of having ideas creating reality poiesis. According to him, poiesis is the production of concrete experiences through ideal representations, in opposition to praxis, which focuses on real practical experiences, and to mimesis, which focuses on ideal representations in the mind. Thus, the concept of poiesis refers to how ideas can change reality; it aims at understanding the foundations, the groundwork and the decisions made within the process of creating truth/reality (Lefebvre, 1967, p. 64-65). The aforementioned author states that the creation of new possibilities is the factor driving changes in reality. This process operates just like that of a seed, which cannot simply be explained by its current reality, namely: being a seed, but by the prominent nature of its virtual reality, in other words: the possibility of becoming a tree.

3. Present past future

The current section explores the roots of the observed contradictions. Diving into the history of the relationship between the city and the river enables identifying different moments and approaches to nature. Arguably, this regressive movement focused on understanding the roots of these contradictions may be a source of ‘blind fields’ to be explored as ‘virtualities’ for future transition strategies to be implemented in the city. Present, past, future; contradictions observed between river and city were “excavated” in 5 paradigmatic periods (see Figure 12) to meet the scope of the exploration process developed during the workshop.

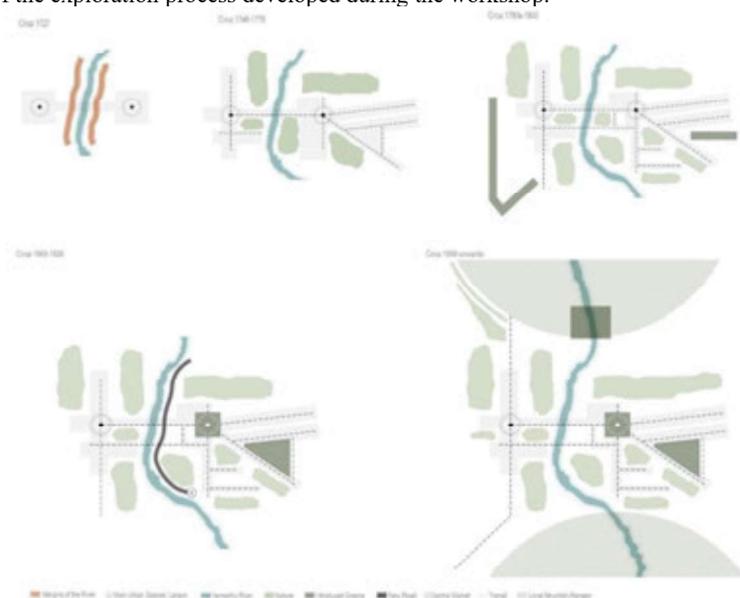


Figure 12: Evolution of the River and City relations

(1) Goiás City was founded as an ‘arraial’ (village), back in 1727, for gold mining in the margins of Vermelho River, but the State had little presence. During the first two decades, the river was a dangerous place, since the gold mining process was based on slaves’ toiling and degrading the environment, increasing the spread of several diseases. In this context, the city developed with its back to the river, and its main urban spaces (also known as ‘largos’) were away from it, on high and dry plans.

(2) The city became the capital of ‘Capitania de Goiás’ in 1748, as gold mining developed. A Jail and Chamber House was built in the city in 1766, and a baroque plan was developed after 1778. On the one hand, nature in this colonial context was seen as wild and as a threat. On the other hand, it was welcome in backyards as heavenly gardens replicating gifts from God in a very catholic society.

(3) The gold production declined after the 1780’s and, in 1822, Brazil became an independent state with the ambition to become a modern empire under the British empire’s influence. The 19th century experienced changes in the subjective approach to nature. A series of governmental measures and laws aimed at changing citizens’ relationship with nature, functioning as a means for the modernization of society. For instance, hunting was prohibited to implement modern labour practices, whereas green areas in the city were introduced to forge romantic delightful experiences.

(4) After the city lost its gold mining economic source, it turned into a rural economy based on livestock farming. The city froze and became stagnant, without almost any changes, for one century. Nonetheless, an important transformation changed the city’s relationship with the river. In 1869, a new road was built to provide access to the new Central Market (finally built in 1926); it created a new entrance to the city and cut the old backyards facing the river. Although inverting the face of the river to the city, the road remained mostly empty, only holding backyard doors and few new modern institutions.

(5) An Environmental Film Festival was launched in the city, in 1999. Since 2001, the city and the local mountain range became Unesco Heritage; the river became the ecological symbol connecting them. Furthermore, the current environmental crisis has changed urban nature values and subjectivities. Local communities often engage in practices and new attitudes towards nature. These new forms of valuing and conservation practices have turned the river into the central point in the city, and it encouraged the construction of new stores and restaurants.

Different perspectives have emerged from this brief excavation of the city’s relationship with nature, and it highlighted unique ways through which this relationship was perceived and connected the natural to the human world. This process led to perspectives, according to which, nature can be seen as a social innovation technique, as well as emphasised the dynamic interplay between society and the environment. Therefore, nature transcends its traditional portrayal as a separate entity and displays its phenomenon shaped by socio-natural interactions. This perspective invites us to re-imagine our approach to nature by not merely seeing it as a passive backdrop, but as an active participant in our socio-cultural fabric. By embracing this paradigm shift, we unlock the potential to conceive nature as an object of design and to foster innovative solutions that include human needs and the metamorphic rhythms of the natural world.

4. Micro-utopian perspectives and the Right to Nature

In ‘Spaces of Hope’, David Harvey (2001) advocates for the concept of dialectical utopias to avoid the simple ‘imagination’ of alternative worlds. These utopias should be conceived as counter-utopias, as devices negatively related to reality. This is fundamental to enable imagining future alternatives rooted in the concrete world. Similarly, Henri Lefebvre (2000), in his book “The Right to the City”, proposed an experimental utopia developed in an intellectual

operation he called ‘transduction’: the production of a possible theoretical object as reference, as strategy designed to change society.

In a similar, but distinct, line, Sande (2013) defends the creation of ‘micro-utopias’ or ‘acting as if one is already free’ (Sande 2013). Ringel (2012) adopted the ‘anthropological-anarchist approach’ to state that micro-utopias should be dedicated to creatively produce free spatialities. It is done to avoid the neoliberal evacuation of the future by developing a ‘creative presentism’, which, in its turn, creates new grounds for hope. Webb and Lynch (2010) analysed how the post-punk scene built new experiences of reality that were momentarily actualised in ‘pirate spaces’ of globalisation and, then, into ‘lifeworld’.

According to Bourriaud (2002a, p. 31), the traditional critical theory can no longer substantiate artistic strategies, since the total negation and society transformation strategy is no longer available. He defends everyday tactics that work within and against the system, promoting new forms of conviviality and encounters. According to him, contemporary art already works through the invention of idiosyncratic ‘vanishing lines’. What ‘artists are trying to do now is to create micro-utopias, neighbourhood utopias, like talking to your neighbour’ (Bourriaud, 2002b). These micro-utopias are a new form of ‘possible’ micro-politics. Similarly, John Wood (2007) proposes designing micro-utopias in a less rational, critical and negative way by dismissing the ideas of monolithic utopia and Western mechanistic individualism to benefit the multifaceted proliferation of imaginative ‘miracles’ and ‘dreams’ in the ethics of flow.

Micro-utopias can be used as a strategy to articulate counter-hegemonic approaches in order to envision political green transitions. This methodology requires exploring utopia through a dialectical lens by engaging in discourse that acknowledges both concrete and creative elements. Thus, a concept of Right to Nature can emerge from this framework and advocate for citizens' entitlement to shape nature as their own work of art. This assertion underscores the transformative power inherent to human interventions within natural systems and frames such actions as acts of design. Thus, those who intervene in the nature of nature are not merely passive observers, but active participants in the ongoing process to design nature.

The designing nature endeavour operates at multiple levels and each level contributes to a given approach towards reshaping our relationship with the environment. At a visual level, it involves visualising the often-overlooked facets of urban nature. Techniques, such as cartography, critical representation, diagrammatic interpretation and photographic *dérives*, reveal the hidden layers of the natural world, which is embedded in urban landscapes. Concurrently, designing nature involves imaginative exercises through which one can envision alternative and sustainable futures. Utopian imagination enables exploring possibilities beyond the constraints of present times, as well as envisioning harmonious coexistence between humanity and the environment.

Finally, the seeding process involves cultivating immanent micro-utopias — small-scale initiatives that embody principles, such as sustainability and ecological transition, within urban contexts. The work to design nature becomes a multifaceted endeavour aimed at fostering meaningful transformations to both society and the environment by integrating visualisation, imagination and seeding. Three different conceptual perspectives were used as lenses through which one can engage in these latent possibilities to confront the immanent potentials, or virtual elements inherent to the place: commons, dark ecologies and postcolonial perspectives.

The lens of commons emphasises the collective ownership and stewardship of resources by challenging traditional concepts of private property and by promoting communal responsibility. Dark ecologies, on the other hand, delve into the complex entanglements between human and non-human actors within ecosystems, as well as acknowledge the often obscured or overlooked ecological interaction aspects, such as disturbances and disruptions. Finally, postcolonial perspectives provide critical insights to the legacies of colonialism and to the ongoing dynamics of power and oppression within different spaces and communities. Micro-utopian proposals emerged from this framework to transcend utopia as a mere apolitical and abstract ideal.

This process resulted in the overall acknowledgement that the urban stretch of the investigated river is structured as a rosary, with rooms and lines. Instead of having this configuration challenged, it was explored to enrich and nurture the existing potentials. The main proposal comprised a series of rooms, each one of them with different features and solutions that were intertwined by connection lines: streets, pathways, among others. Thus, the master plan strived to engage in the tangible realities of both the place and the context by addressing social, environmental and political concerns. It was done through practical and interactive procedures grounded in local specificity and communal agency.



Figure 13: General Concept

4.1 Micro-utopia 01: Backyard Commons



Figure 14: Map locating micro-utopia 01.

The process of restructuring backyards along Vermelho River transcends barriers by simply rearranging barbed wire and small pathways, by embodying a poetic transformation from the intimate to the common. The once-dominant exotic undergrowth in public spaces disappears and is replaced by areas taken care of with affection, where vegetation intertwines with both houses and the river. These open backyards are not mere physical extensions of dwellings; they are spaces capable of fostering sensory and emotional connections by inviting us to engage in silent contemplation and in interactions with neighbours.

The backyards of houses lining up along Vermelho River are teeming with orchards presenting abundant fruits on the ground. Dwellers insist that visitors should take the surplus fruits in a practice known as "pegue e leve" ("pick-up and go"), according to which, generosity works as a form of assistance and prevents fruits from just rotting on the ground. It has become a local tradition to leave surplus fruits in boxes for anyone to take. This proposal aims at enhancing this practice. The proposed fruit-sharing boxes symbolise a gift from nature to be shared among people, and it strengthens community bonds and enables the collective construction of a harmonious environment.

Common Edges (Figure 15) emerge as spaces behind houses along the river, as well as promote a deep redefinition in residents' relationships with their backyards, the river and their neighbours. As "common goods" managed by local groups and communities, these edges work as coexistence and exchange settings. Living by the river becomes a collective celebration of harmony between people and the environment. Common Edges are the backyards' transition from simple private extensions to sites of encounter by fostering shared experiences.

The pathway amalgamated with the existing ecosystem, the built environment, the river and the trees seamlessly connects these elements for users and the community. Households have designated spaces to share their traditions with visitors through simple provisions that, in their turn, can be referred to as 'commoning' the spaces. They have tables set to place boxes filled with fruits to be taken by visitors. This new connection device brings visitors together with the local community and the river. Moreover, seating areas are provided for visitors so they can observe the affection of sharing local traditions with them.



Figure 15: Shaping Common Edges with the local tradition spirit of 'pegue e leve'.

4.2. Micro-utopia 02: Interweaving River and City



Figure 16: Map locating micro-utopia 02.

This micro-utopia aligns with the concept of weaving by interweaving the urban landscape along the river. Its core goal is to draw people closer to the river by providing opportunities for contemplation and unique experiences to help establish a direct link between the urban area and river. The sinuous pathways aim at both connecting and creating microenvironments suitable for several activities. This vision goes beyond mere urban development; it strives for a symbiotic relationship by intertwining lines of life between the built environment and nature to foster a transformative journey for local residents. This proposal not only enhances connectivity but also paints a picture, wherein weaving becomes an urban life narrative by stitching together physical structures, as well as experiences and narratives along the riverbank. This process gives users the opportunity to observe and analyse different aspects, be it the urban transformation of Goiás City, the river, biodiversity or introspective exploration.

Proposals (Figure 17) include small pedestrian networks resembling bridges to enrich the urban fabric along Vermelho River. In addition to these bridges, one finds contemplation squares, as well as the provision of spaces for people to connect and enjoy the river flow. Both the bridges and the squares are linked to adjacent sidewalks through permeable pathways, and they provide perfect connectivity for users to access both sides of the river and its surroundings. Moreover, circles of Goiás' native species were created to reintroduce local species to the riverbank, to connect users to the region's biodiversity. The existing trees are preserved, and the positioning of bridges, squares and circles merge with the urban context.



Figure 17: Act of Weaving: panorama of an urban narrative

4.3. Micro-utopia 03: Connecting Strategies



Figure 18: Map locating micro-utopia 03.

Contemplation stands as a crucial aspect of human existence inviting deep reflections. The proposal aims at making a subtle shift of attention by moving away from the usual focus on human constructions towards the river. This reversal aims at inverting what is seen as backward to help improve individuals' perception about riverbank textures. Fragmenting a given wall and reorienting street food trailers to face the river helps breaking barriers to vision, encourages close observation and sparks visitors' curiosity to approach the river and its surroundings. This process fosters an immersive experience. Both solutions enable users' visual connection to the river, which is now blocked either by the wall or by kiosks' arrangement. Thus, replacing the gap in the urban fabric and the relation with the river established by current ordination.

The existing heightened wall (Figure 19), which once acted as a visual barrier, is cut to establish a connection with the river by inviting users to flow towards and engage in it. This visual link is tangibly reinforced by permeable pathways leading to the river zone and bringing users closer to nature. Sitting and contemplation spaces are proposed along the riverbank after crossing the wall.

Kiosks (Figure 20), which once obstructed users' view of the river, are now systematically arranged to allow an immersive experience with natural sounds and sights of the river, and with its surroundings. The open spaces between these kiosks invite users to engage in the river, whereas pathways guide them towards the riverbank for contemplation purposes.



Imaging 19: Towards contemplation: Fragmenting Walls to Connect with the River



Figure 20: Towards contemplation: Re-orientation of spaces

4.4. Micro-utopia 04: Green Streets



Figure 21: Map locating micro utopia 04.

It is essential re-imagining the streets in Goiás City's urban landscape to reinforce the sense of belonging among its citizens. This re-imagination process aims at cultivating connections between individuals, as well as between humans and the environment, through the seamless integration with the river's edge. This merger is essential to help instil in users' confidence in the accessibility to Vermelho River. It aims at encouraging pedestrians to navigate these spaces, as well as to feel connected to the river and to its surrounding environment.

The existing streets are re-imagined as green streets to give users the sense of ownership over the city and its natural surroundings through their design (Figure 22). Wide sidewalks, along with greenery, bioswales and a two-way bicycle track flanked by proposed avenues of trees take one step forward in the re-naturalisation of what were green backyards, until 100 years ago. The street seamlessly merged with the river edge, and contemplative spaces were defined. Consideration was given to the flow and potential rise of the river's level, and stepped seats were implemented.



Figure 22: Re-imagining green streets

4.5. Micro-utopia 05: From Grey to Green Infrastructures



Figure 23: Map locating micro-utopia 05.

The proposal aims at transforming what previously were grey infrastructures (car parking areas) into a new green infrastructure focused on regulating the exchange of waters between the city and the river. The prototype proposal for different parking areas incorporates two key elements, namely: deployment of solar panels and implementation of bioswales. The solar panels can harness energy, whereas the bioswales help manage stormwater and create a sustainable and resilient urban ecosystem by filtering the city waters through bioswales before discharging them into the river.

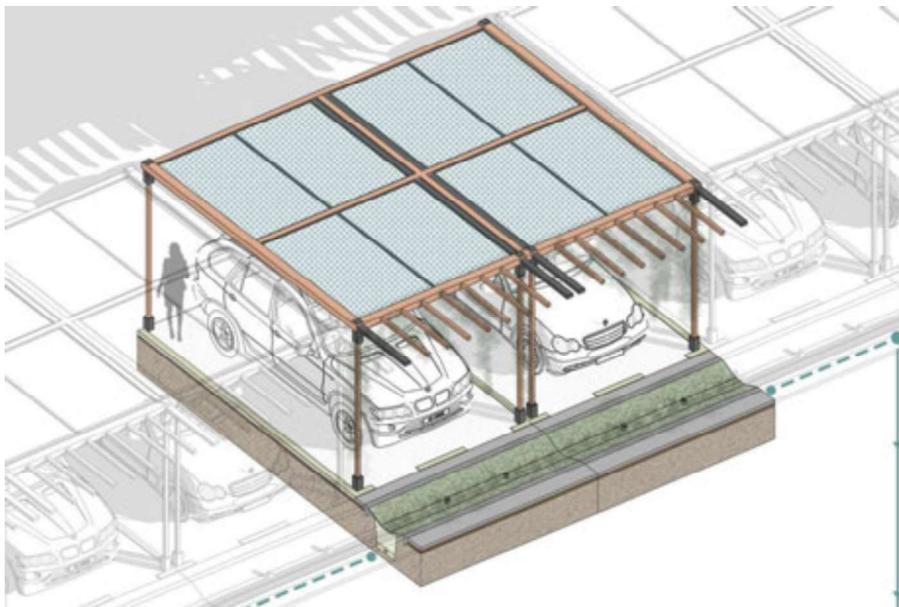


Figure 24: Prototype for Green and Filtering Parking Spaces

5. Final considerations

Subjects can be empowered to shape their environments as active participants in the ongoing social process by dialectically exploring micro-utopias to redesign nature itself, by acknowledging both concrete realities and creative potentials, and by advocating for the Right to Nature. Micro-utopias operate at multiple levels, such as integrating visualisation, imagination and seeding, to re-imagine our relationship with both nature and society. Drawing from perspectives, such as the commons, dark ecologies, and postcolonial insights, micro-utopian proposals seek to address pressing social, environmental and political challenges through practical and transformative actions grounded in local specificity and communal agency. By confronting the immanent potentials of the place, micro-utopian approaches provide a dynamic framework to envision alternative futures and to foster meaningful changes in both urban landscapes and societal structures.

By contemplating the transformative potential of micro-utopian practices, one may wonder: how can these approaches challenge the reproduction of relationships by the social performance of our ideas about nature? The goal is not to discover a swift and universal solution to manage the river and the natural landscape in Goiás City. Rather, it is about shedding light on inherent conflicts arising from the diverse desires and perspectives of several stakeholders. Contrasting visions emerge from this context: some see the river as a mere economic asset to be relentlessly exploited, whereas others see it as something sacred and untouchable.

Similarly, Goiás City's natural environment is susceptible to conflicting desires and visions that range from those advocating for its pristine preservation to those pushing for tourism development. These tensions underscore the intricate relationship between humans and their environment, as well as highlight the need of adopting a balanced approach that respects the manifold perspectives and the needs of communities living in it. The answer mostly lies on stakeholders' capacity to deconstruct prevailing notions of nature that objectify complex social relations within it. By actively engaging with and reshaping our conceptualizations of nature, micro-utopian initiatives have the power to disrupt entrenched power dynamics and to foster more equitable and sustainable relationships between society and the environment. Ultimately, this perspective contributes to establishing benchmarks for alternative modes of practice, as well as building a socially active approach to ecological transition strategies.

References

- Bourriaud, N. (2002a). *Relational Aesthetics*. Dijon: Les presses du réel.
- Bourriaud, N. (2002b). *Postproduction: Culture as Screenplay: How Art Reprograms the World*. Berlin: Lukas & Sternberg.
- Harvey, D. (2001). *Spaces of Hope*. Berkeley: University of California Press.
- Latour, B. (2004) *Politics of nature: how to bring the sciences into democracy*. London: Harvard University Press.
- Lefebvre, H. (1967) *Metafilosofia: Prolegômenos*. Rio de Janeiro: Civilização Brasileira.
- Lefebvre, H. (1976). *The Survival of Capitalism: reproduction of the relations of production*. London: Allison and Busby.

Lefebvre, H. (2000). 'Right to the City', in Kofman, E., Lebas, E. (eds.) *Writings on Cities*. Oxford: Blackwell Publishers, pp. 63-184.

Lefebvre, H. (2003a). *Key Writings*. London: Continuum.

Martinez Alier, J. (1988). Economia e Ecologia: questões fundamentais. *Revista Brasileira de Ciências Sociais*. n. 7 vol. 3, p. 99-115.

Morton, T. (2016) *Dark ecology: for a logic of future coexistence*. New York: Columbia University Press.

Ringel, F. (2012). Micro-utopias and creative presentism: From anarchist anthropology to the politics of collapse. *Anarchist Developments in Cultural Studies*, 1(1), 67-82.

Sande, J. (2013). Theatre of the Oppressed: Towards a Pedagogy of the African Context. *African Journal of Political Science and International Relations*, 7(6), 284-289.

Webb, P., & Lynch, B. (2010). On post-punk and 'pirate' spaces of globalisation. *Journal for Cultural Research*, 14(1), 1-18.

Wood, J. (2007). *Designing for Micro-utopias: Thinking Beyond the Possible*. New York: Princeton Architectural Press.

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