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New Ecologies of knowledge for the governance of water infrastructures in São Paulo

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Abstract
Today environmental crisis disputes pure technical management of water flows and faces us with the absence of a definitive solution for every problem. This situation can be clearly observed in cities built by moving water away from its hydrographic fabric, such as São Paulo in Brazil. Its first settlement was constructed in 1554 in the Atlantic forest -Mata Atlântica- and over the years the thick network of rivers crossing it was piped down below ground, the empty riverbeds and valleys used as roads, and the remaining outdoor rivers channelized to be control and exploited for the production of electricity. As a consequence, during the rainy season, water does not remain in the spaces decided by the public administration and technical projects: it takes back in particular in the eastern suburbs of the city historically relegated to receive the poor and the immigrants. Looking at examples in which water flows, hybridised (Swyngedouw 1996) by infrastructures (Gandy 2004) and political dynamics (Rolnik 2019) influence the production of space and its conflicts in São Paulo, the paper posits the need for a new model of knowledge production about water governance. In particular, it sustains that participatory art methodologies have the potential to produce and study new ecologies in which knowledge manifests as a product of the conflict and interaction, between the competing hopes and imaginaries that citizens, specialists, construction companies and politicians pour onto water bodies and infrastructures.

Key words: Knowledge, Participation, Social practices

1 | Introduction

In the modernist tradition water has been considered a force of nature to be feared and which must be controlled, contained and hidden through engineering. However, water is an elusive, queer object, without a shape. In the form of wetness (Marthur and Da Cunha 2009) water is always interacting with its surrounding and does not remain contained in the spaces that public administrations or technical projects have assigned it. This behaviour becomes clearer in the ecological crisis in which water manifests in extreme forms such as floods and droughts. Such events, in megacities built through the displacement of water bodies like Sao Paulo, are calling into question forms of governance made only through technical and managerial knowledge. It is in this context of uncertainty that the need for a new way to produce knowledge about water appears opening up to other forms of knowledge as those brought by collectives of citizens. Giving the possibility to a diverse set of knowledge to interact, creating an ecology of knowledges and favouring what de Sousa Santos (2014) called cognitive justice. However, it is important to notice that in the water governance arenas of Sao Paulo these interactions may manifest an agonistic character (Mouffe 2019): collectives of inhabitants, politicians, experts and lobbies compete with their different knowledge, imaginaries and hopes.
An oral interaction in which participants -speakers and listeners- across different turns create meaning(s) and discourse reacting to what is said is called conversation (Duranti and Brenneis 1986; Keating and Egbert, 2005:183; Sacks 1965). In a conversation participants may tell a story together, making the act of narration into a tool for a collaborative reflection on an event (Ochs and Capps 2001), but the conversation can also develop a dialogic and open-ended tendency. Recent art practices have been delving into these concepts with artists orchestrating conversations, organising oral storytelling workshops and exploring the listening in public space of recorded oral narratives as prompts for reactions.

2 |Sao Paulo

The first settlement of the megalopolis of Sao Paulo was built in the Atlantic forest -Mata Atlântica- and was called Sao Paulo dos Campos de Piratininga (1554). Piratininga, an indigenous word, describes a place where the water level first rises but then decreases considerably leaving the fish out in the open -a peculiarity of the hydrographic fabric that in the development of the city was ignored. Over the years the network of rivers crossing the forest was piped down below ground, the empty riverbeds and valleys used as roads, and the remaining outdoor rivers -the Tietê and its tributaries Pinheiros and Tamanduatei- were channelized to be controlled and exploited for the production of electricity. As a consequence, during the rainy season, water leaves the space that administration and the technicians had given her and takes back its flood plains. This happens in particular in the eastern suburbs -the part of the city beyond the Tietê and Tamanduatei crossroads- historically relegated to receive the poor and immigrants (Rolnik 2021).
Sao Paulo is both a city perceived as a natural phenomenon that like the wind affects us but cannot be altered, and a place where bottom-up initiatives are striving, tackling issues such as housing, management of public space, water sensitivity and polyphonic representation of neighbourhoods. A Megalopolis that «should, in its structure, educate us to coexist with the opposite» but where reigns «the principle of changing in order not to change» (notes from previous fieldworks between 2019 and 2022).

3 | Torresmo, an example of agonism

Itaim Paulista is the easternmost subprefeiture of Sao Paulo, here in 2015 the Sao Judas University created a living lab, Lab Itaim Paulista, aiming to improve the condition of people living at the borders of rivers by bringing together inhabitants, professors and technicians. The Lab designs solutions to mitigate problems and proposes them to the politicians responsible for intervening in the territory (subprefeito), moreover it advocates citizens' problems to administrative bodies and provides scientific knowledge to politicians and local administrations.
Torresmo is an informal settlement in Itaim Paulista, coexisting with recurrent pluvial floods and built alongside the river Ribeirão do Lageado. In 2015 the Lab Itaim designed and proposed to the subprefeitura a Plan for the water basin of the Lageado that making use of a Nature-Based drainage system would have been able to reduce the impact of the rain and floods in Torresmo. However, even if the subprefeito demonstrated his interest, all the efforts of the Lab failed: in the end the territory saw the construction of a solution that favoured the lobby of the construction companies, a cement channel with catastrophic outcomes for the community. The Lab Itaim tried to block the construction works, presenting a technical report on the problems that the channel would have generated, however, the lobby with the backup of Army Militia proved to be a stronger actor. The choice between the possible hydraulic solutions was not based on rationality but undertaken in an *agonistic space* (Mouffe, 2008a, 2013b) where several interests and imaginaries competed. Ana Paula, director of the Lab during an interview called herself « An eye witness of state violence », and describing the situation in which they operate shared that « There is a militia infiltrating the general secretariat (for drainage) and operating in the local political system ». The construction of the channel left the members of the Lab with a feeling of having been naive. Ana Paula spoke of failure, « The lab does not help the inhabitants, it only manages to understand their problems, to think of helping them ». To know failure, as Fisher & Katsouraki (2019) wrote is to learn something about ourselves and about the confines of what is possible for us in the world.

After this event, the Lab decided to concentrate its research mainly in Torresmo. Their presence there brought the inhabitants to recognise themselves as a community and to acknowledge their need to organise (politically), moreover it helped them in seeing the presence of a drainage problem. If before the community perceived floods as « A problem part of nature », after the Lab has illustrated the concepts of drainage and water basin, inhabitants of Torresmo started to see floods as a consequence of a technical drainage issue.

4 |Rios and Ruas, visibilizing buried waters

I first met the citizen initiative Rios and Ruas in June 2022 while doing fieldwork in Sao Paulo, in the context of the art residency Pivo Pesquisa.
Rios e Ruas was created in 2010 by the architect José Bueno together with the educator and geographer Luiz de Campos Jr. as a response to the perception that inhabitants in Sao Paulo -after decades of politics that channelized rivers and brought them below ground- have accepted that rivers no longer exist in their town. José and Luiz started a practice of explorations on foot or by bicycle, looking for hidden and channelized rivers, picking up each time a different stream, identifying its possible springs on old hydrological maps and following its path through Sao Paulo. These explorations were open to participation of the inhabitants of Sao Paulo who helped with their situated knowledge and engaged in a collective reflection on the presence on water in urban space.
As José told me « A ten minute walk anywhere in the city you will cross a river », with this in mind, Rios and Ruas for five years studied maps in the archives of the Empresa Paulista de Planejamento Metropolitano and the Instituto Brasileiro de Geografia e Estatística. The informations they got together with the ones collected during their explorations, brought in December 2015 to the publication on the online platform GeoSampa, of a map showing the city of São Paulo with all its rivers, channelized or not. Following this, the duo started to: organise workshops in schools and universities about the rediscovered water in Sao Paulo, proposing laws to protect water springs (PL 0719/2021) and running creative actions to visibilise urban rivers, such as printing portions of their map of Sao Paulo in huge dimensions so that people can walk on it. Furthermore, in November 2015 Rios e Ruas started their first sticker action, adding on street signs information about the microbasin to which a street belong. In these actions, the participants first clean a sign, then apply a sticker -with transparent background using the same font of the street signs- photograph it and publish the picture on social media.

A similar and more recent action, is the one conducted by Gabriel Neistein in the neighbourhood of Vila Mariana within the framework of the academic research of Vladimir Bartalini on the hidden rivers of Sao Paulo. Starting from an old map of Sao Paulo, Gabriel retraced the buried river Sapateiro and represented his course in the urban landscape (Neistein 2023): using a stencil that depicts the hidden river above a map of the neighbourhood, he marked the path of the river on the walls standing above it.

These Brazilian examples resonate with a famous experience of mapping the consequences of moving the hydrographic network underground, the West Philadelphia Landscape Project (WPLP) started by Anne Whiston Spirn in 1987. Hypothesising that the distribution of deteriorated buildings and vacant lands in Philadelphia followed the course of a buried river, the Mill Creek, Spirn asked her students at Penn University to conduct observations from a moving car of every vacant lot, helping her in (re)tracing the river and its floodplain in the city map. Such work gave birth to a website and an interactive map of the Mill Creek (https://wplp.net/maps-mill-creek/) as well as to a series of proposals: they develop community gardens and plans for stormwater retention on vacant lands

5 | A toolbox of experiences on participation and listening in Arts

From the early 1990's we saw a global surge of artistic interest in socio-political contexts, participation and collaboration that the art critic Claire Bishop (2012a) called P*articipatory Art*: an art practice where people are the subject, the medium and the material. The spectator, previously conceived as a viewer, becomes a co-producer or participant (Bishop 2012b). The artists slowly became organisers, creating situations and infrastructures for relationships. Grant Kester (2004) identifies within participatory art a sub-genre, *Conversation Pieces,* in which artists orchestrates conversations between invited members of a community and the spectators are eavesdroppers or viewers of the documentation of the artistic event. In conversation pieces, the choice of the place where the conversation takes place as well as the design of the set becomes crucial elements.

In Arts, a conversation can become a polyphonic gathering voicing different aspects of the same topic -for example in *The Declaration of Independence (2017)*, the artist Barby Asante designed the set of a forum where invited groups of black women shared the impact of political declarations on their lives- an oral history moment re-narrating conflictual events or a collective storytelling moment in which art becomes a means for people to imagine other ways of doing things (Dewey 1934), a way of rehearsing

(Couldry 2017). The latter trend can be observed in some artworks of Adelita Husni-Bey that manifest as storytelling workshops. Curios to understand if students educated in the libertarian schools still active in Paris were able to rehearse and exercise other ways of living and being governed, in *Holiday from rules* (2010), Husni-Bey asked them to discuss terms such as utopia, state and education, and in *Postcards from the desert islands* (2011) to inhabit a scenography – a desert island- inspired by the book The lord of the Flies (William Golding 1954), while discussing different governance issues.

Finally, in Sound Studies, some scholars recently paved the road for research in voice and listening, in particular focusing on listening in political interaction (Blickford 1996), listening as way to be with others (Lipari 2014), listening to stories as extended care (Hanna 2016) and speaking and listening in artistic activism (Farinati and Flirth 2017). Two notable artists built this interest up: while Susan Philipsz used her recorded sung voice in public space to activate memories and feelings in the listeners (Filter 1997, The Internationale 1999, Lowlands 2010), Janett Cardiff recorded her voice in audioguides that conduct the participants in walks and actions to rediscover the urban space and forests (Walk, since 1991).

6 | A proposal for participatory actions to conduct in Torresmo, a conversation approach

As Raquel Rolnik (2021) wrote "we built cities that eternally condemn us to consolidate the precarious", for this reason we need to learn how to inhabit the ruins that previous water management paradigms left us. In doing this, to trace back and make visible the underground and buried parts of the water network can become crucial. The experiences of Rios e Ruas and the WPLP have shown how experiential and technical knowledge can interact, helping in perceive the water network in its entirety and variability -not only where water is but where it was and comes back. Still, it is important to acknowledge that as seen with the case of the Lab Itaim Paulista, water governance in Sao Paulo happens in an agonist arena: the interaction between inhabitants and technicians won't probably produce the solution that the administration will implement to govern a drainage issue -or a solution at all. There are other actors and political and power dynamics that hybridise the water flows.

In this context it is hypnotised that the interactions between different collectives showing interests in the water bodies will produced instead of a definitive solution, an ecology of knowledges and a new knowledge crossed by failures, fracture and conflicts. However, for this interaction to produce knowledge, there must be a (space of) meeting between the different actors and a conversation. This is not what happens in the official hearings organised by the administration.

The 15th May 2024, I took part in the public hearing of the *Plano diretor de drenagem* (Sao Paulo Master plan for drainage, flood reduction and control) regarding the drafting of the Cadernos de drenagem for some neighbourhoods in the east periphery. The *drainage notebooks* (Cadernos de drenagem) contain for each neighborhood the representation of the areas at risks of flooding, the list of existing drainage interventions, the proposal of possible solutions and the complementary actions (zoning of floodable areas). Public hearings are organised by the Siurb (Secretaria Municipal de Infraestrutura Urbana e Obras) and must be done by law. However, as I observed they are not structured as a moment of conversation with the public, of interaction between a diverse set of knowledge and imaginaries. First speak the technicians, they give an overview of the possible tools to increase the drainage capacity and illustrate specific problems of a neighbourhood, then the public signs up to ask questions, each person has two minutes, for each question raised the technician's response follows and they move on to the next question. There is only a single interaction between speaker and technician, not permitting an effective conversation. It is no coincidence that participants and literature (Jacobi 2007; Libanio 2018) report that the hearings are perceived as not very effective.

Adopting a perspective that recognise agonism and the possibility, that the interaction between different participants in a conversation co-construct multiple meanings and not a single one leading slowly to deliberation -to participants aligning towards the best argument presented as the Theory of Communicative Action of Habermas (1984) would like- it becomes important to create public spaces that allow multiple and conflicting perspective to emerge -as Carpenter (2021) also intuited.

Therefore, grounding on previous example of participatory art, and responding to the drainage hearings, it is proposed to create together with the inhabitants of Torresmo, a space for conversation where the different actors can come together with their knowledge and desires for the water bodies crossing the territory, and voice their imaginaries. A space where starting from a conversation on wetness -how rivers are not the fixed bodies traced on maps- different ideas of coexistence between the actors inhabiting the territory or projecting interest in it, can emerge.

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