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ESSAY

Drinkable cities. A regenerative approach for cities and their rivers

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Abstract

The regenerative approach encourages human communities to re-connect with the essence of place and advocates becoming indigenous to place, again. Nothing new, but values forgotten in contemporary life. This paper explores how to implement the regenerative development goal of drinkable cities. Recent legal breakthroughs by Indigenous communities are advancing "Rights of Nature". What if their river basin guardianship model expanded globally to maintain the "health and well-being" of all rivers? To understand how sacred connections were lost in Europe, a post-colonial lens explores Ireland's connections with place, people and language. Adventures to keep "old ways" alive, involving Dublin's River Dodder kingfisher, are remembered through autoethnography. Bioregionalism requires cities work with all communities of their river basin, through a nested approach. Following natures patterns, work from Curitiba, Brazil, demonstrates how cities can organize fractally; communities within communities. Municipalism envisages a citizen-led fractal network of ecological neighbourhoods communicating through local assemblies. Inspiring multilevel governance examples exist in Rojava and Spain. Swiss, Danish and Dutch water regeneration projects show clean, safe, loved nature spaces are possible within cities. A Dutch woman's impactful work helps urban citizens imagine drinking the river water that their cities located themselves on and around, again. Let life flow.

Keywords: drinkable cities, regenerative development, bioregionalism, fractal governance, rights of nature, indigenous wisdom

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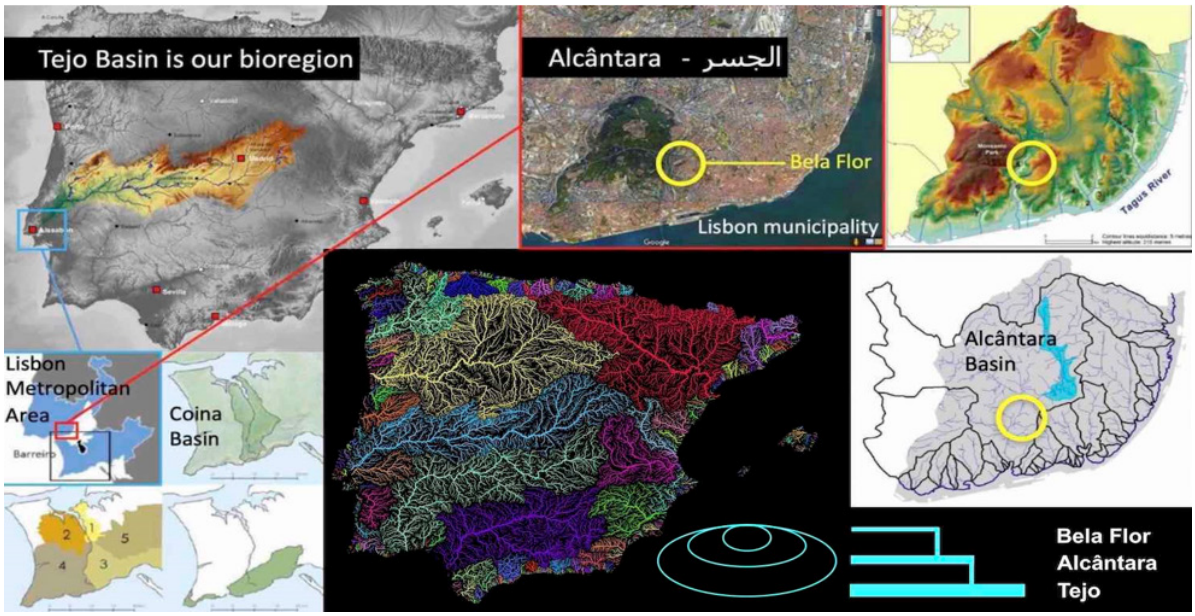
E rere kau mai te Āwanui,
Mai i te Kāhui maunga ki Tangaroa
Kō au te Āwa, kō te Āwa kō au.
The great river flows
From the mountains to the sea.
I am the river, the river is me.

- Proverb of the Whanganui Iwi, Indigenous Māori tribe of Aotearoa (New Zealand)

Cities and their rivers. A regenerative approach

This paper explores a regenerative approach that encourages human communities to re-connect with the essence of place. This is not connecting with something new, but rather it is re-connecting with something very old, that all peoples had, but that most in contemporary society lost. Regeneration incorporates sustainability, but moves beyond it. It seeks to activate community responses to the ecological emergency in the places people live by embodying the value of design as nature. A key tool is bioregionalism, which are often specific geographic areas based around river basins. The existential challenges of climate breakdown and biodiversity emergency demand cities must, once again, align around the natural systems they have always been part of. Cities exist within bioregions; they have a bonded relationship with other communities they share their river basin, or catchment area, with. This relationship goes beyond the artificial constructs of national borders and often requires extra effort for impactful work to succeed. The regenerative approach requires work to happen in a nested fashion, where systems exist within wider systems in a fractal sense. For Lisbon city (Figure 1), the Tagus River basin is Lisbon's bioregion. It is Iberia's longest river and where the Iberian cities of Madrid, Toledo and Caceres also exist. In a nested fashion Lisbon is situated at the mouth of the Tagus. The Alcântara River is a tributary that flows into the Tagus. Within this basin flow the waters from Bela Flor. As regenerative thinking invites re-connection with the essence of place, old histories, even folk tales, need re-examination. Alcântara is one of the many Al- words found in Iberia, which was part of the Islamic empire for about four hundred years and where Arabic was spoken. Alcântara translates as the bridge in Arabic; الجسر. . Rain drops landing in Bela Flor flow into the Alcântara river (now channelled underground), which flow into the Tagus, to finally enter the Atlantic Ocean. Natures patterns.

Figure 1. Lisbon and Tagus River basin: A nested fractal river system



Source: Iberian river basin map: Grasshopper Geography. Other arrangements author, 2025

The articulation of the sustainability concept since the publication of *The Brundtland Report* in 1987, followed in 1992 by the United Nations Conference on Environment and Development in Brazil, also known as the Rio 'Earth Summit', was positive and began to respond to growing environmental and climate problems. Despite some progress, like creating the Paris Agreement and the Sustainability Development Goals in 2015, serious global problems have not been resolved. Reed merely saw sustainability as 'doing less damage to the environment' (2007). Wahl (2016) developed and popularized this message, claiming boldly: 'Sustainability is not Enough: We need Regenerative Cultures'. For Mang & Reed (2013, p.3) regenerative development transcends and includes sustainability, in a holistic system approach to "reverse the degeneration of the earth's natural systems, but also to design human systems that can coevolve with natural systems". A recurring question in regenerative communities is what would it mean to become indigenous to place again. This brings our attention to powerful developments which could yet open truly radical transformative pathways for all peoples of the planet. From a distant corner of the planet, could battles from Aotearoa's Whanganui River improve the health and well-being of all Earth's rivers?

I am the river... We are the rivers?

Aotearoa is the Māori name for New Zealand. The country's third-longest river is the Whanganui, on the North Island. After a 140 year long legal battle by the indigenous Whanganui Iwi (a Māori tribe), with firstly the British imperialist system and later the New Zealand Government, they won a legal case that officially granted the status of a legal person to the river (Salmond et al., 2019; Kramm, 2020; Macpherson & Turoa, 2025), thereby advancing Rights of Nature (RoN) laws. A previous legal act, the Whanganui River Deed of Settlement, ended in 2014 and was superseded by the Te Awa Tupua Act in 2017. Key to this is the spiritual belief the Māori tribe has, as outlined in their proverb above. Its core outlines the intrinsic view that they are part of the nature within which they have lived for much time: *Kō au te Āwa, kō te Āwa kō au*. (I am the river, the river is me). Kramm (2020, p.2) notes:

> The document assigns to the river the 'rights, powers, duties, and liabilities of a legal person' and declares two guardians responsible for maintaining the river's 'health and well-being'. One of those guardians is a representative of the New Zealand Government, while the other is a representative of the Whanganui Iwi, which, by virtue of its genealogical origins, exercises the customary rights and responsibilities in relation to the Whanganui River.

Since 2017 there has been an increase in communities requesting natural ecosystems be given similar RoN laws. Many of them have been granted legal status, to varying degrees. Most of these cases have been granted due to calls from local social movements driven by indigenous groups who have somewhat similar spiritual or religious belief systems to the Māori's. Law changes outside traditional indigenous communities are also starting to emerge, which gives hope that this legal avenue is affecting real system change. In 2022 Spain's Parliament passed a law to recognize the legal personhood of the *Mar Menor* (Smaller Sea) and its basin, near Cartagena in Murcia, thus making it the first ecosystem protected by RoN in Europe (Salazar-Ortuño & Vicente-Giménez, 2025). The German District Court of Erfurt explored RoN via the EU Charter of Fundamental Rights in 2024 (Place, 2025).

It is still early days in this legal process, but it already prompts questions for how contemporary cities can organise around RoN and improve the health and quality of their rivers and with the wider community of fellow cities in their bioregions. Could there be more guardian groups soon speaking on behalf of their river communities, for both the entire land mass through which all tributaries of their rivers flow, and for all the people living there with their various livelihoods, in both indigenous and non-indigenous worlds? Could we see Aotearoa's precedent of the Te Awa Tupua Act rolled out to change local, national and ultimately international law, to where all of the planet's rivers basins, and their sub river basins, and those within are fully protected? Where two river guardians represent each catchment area, who are legally responsible for maintaining their river's 'health and well-being'? What parameters are used to decide if a river is healthy? Do urban channelled sections need reopening, do all dams need to be removed, does this include the forest cover and soil quality

for entire basins? From a regenerative approach's nested sense, will structures of communities within communities emerge? (Bela Flor, within Alcântara, within the Tagus) If yes, what governance structures can enable such ecosystems? What does this mean for big cities, what implications has this for new forms of architectural, urban, infrastructure and landscape design?

Wandering with Larry about Dublin's Dodder

Returning to the regenerative communities' question about what it would mean to become indigenous to place again, we can ask another question: When did peoples in the so-called, advanced, developed or modern world, actually lose their indigenous connection with place? All humans have come from traditional communities who held sacred connections with the life-giving world they were inherently part of. It is just a matter of how far back we must go, to see when and how these connections were lost. Europe deserves particular attention here, given its lead role in colonialisation and empire building, with horrific uses of power and violence to erode peoples, their languages and, to gain access to and control of their resources. Indigenous people still exist in Europe, the Sámi people still hold on to old ways and language, living in the large northern parts of Norway, Sweden, Finland, and parts of Russia. The term itself, indigenous people, is even contentious now, given the rise of far-right rhetoric and violent action that is worryingly growing in many parts of Europe and beyond. So, caution is needed here.

Many reckon that as little as 180 years ago, similar indigenous relationships with place existed on the island of Ireland, when pre famine communities living at the western (poorer) edges saw their rivers as goddesses. These were areas local indigenous groups had been driven to during countless waves of ethnic cleansing, led by a host of neighbouring armies. In the 1650's, England's Oliver Cromwell cried 'To Hell or to Connaught', as his army drove local people over the island's biggest river, the River Shannon. These Gaelic communities held onto traditions, music, culture, language and, many say, spiritual attitudes. Despite being identified as Catholic, they were seen by the Pope in the 1840s as the worst sort, as they seemed to not take much heed of the rules, had quite an open attitude to sexual relations and held deep connections with place, especially rivers and holy wells that they associated with the sacred feminine (Kennedy & Ní Chinnéide, 2021). All rivers were seen as goddesses, some as gods. Condren (2009) argues these are pre-Celtic attitudes, a continuation of old Gaelic ways held since building the Neolithic passage tombs of *Brú na Bóinne* (Newgrange), on a fold of the river Boyne over 3,500 years ago, a millennium older than the oldest of Egypt's pyramids. Investigation and disputes are ongoing here, such as at Dublin's 2004 film screening of *The Land of Sex & Sinners*, and around plenty solstice fires. Calling the 1845-50 period a famine is not correct, as much food existed, about 1 million died and another 2 million emigrated (Woodham Smith, 1962). A contested idea is that Irish people went through a collective trauma in this period, resulting in the near abandonment of 'old ways' and wholehearted embrace of Catholicism and its rigid rules system. Since this period the language died off considerably and the connection with rivers was all but lost.

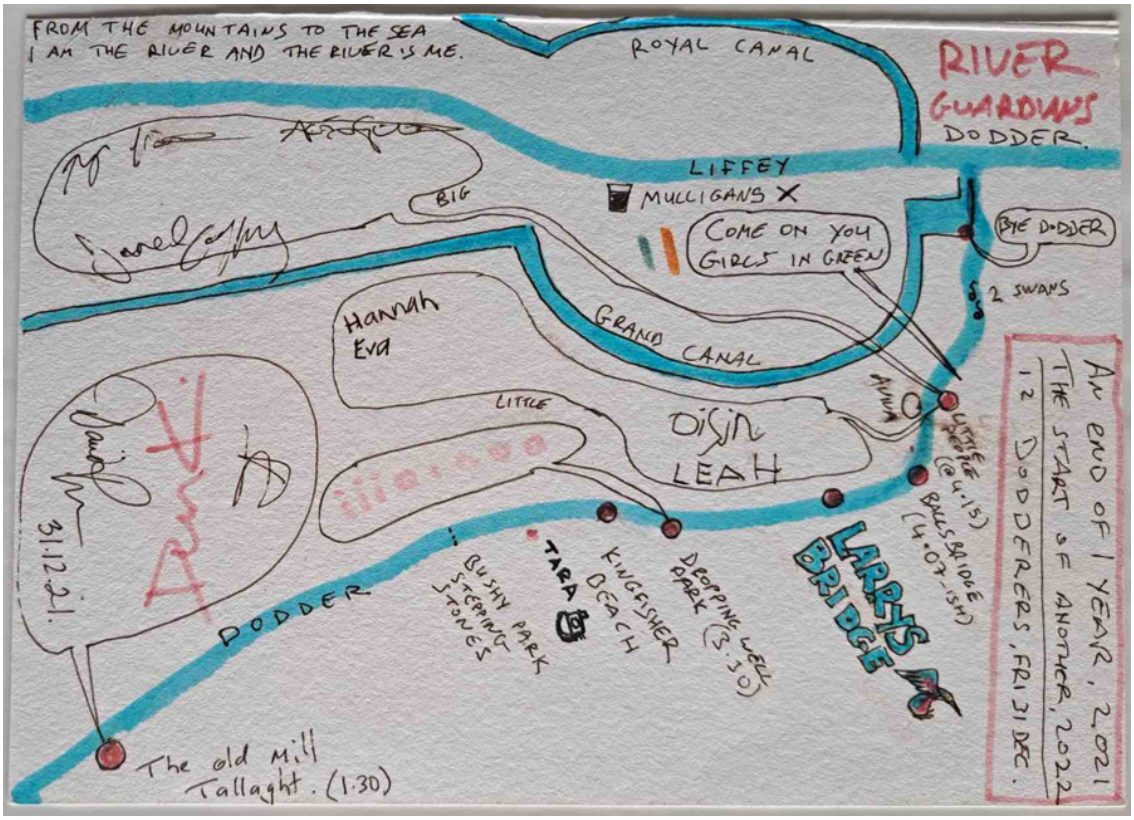
Dublin city's name in the Gaelic language, Irish, is *Baile Átha Cliath*, which translates as "the town of the hurdled ford". It refers to a fording point of the River Liffey. It's other name *Dubh Linn*, translates as the Black Pool, and is where the Poddle River joined the Liffey, and where boats could be left. A little further down within the area that joins before entering the Irish sea is the River Dodder, *An Dothra*, in Irish, which means turbulent. This is a special river to the author, as there is a Kingfisher who lives near the Milltown section, whom he calls Larry (Figure 2). He first saw this amazing electric blue, low flying, quick bird, while out on his lunch breaks by a small river beach while working there in 2005-2006. Since then, a small group of friends organized nature walks along the river, to enjoy nature together, to try to spot the little birdy and at a deeper level to explore those 'old ideas' of seeing their rivers as goddesses, again. The names of most places and people in Ireland are now in the English language, but their meanings come from the Gaelic Irish language. For most people today, sadly, the true meanings of place and people have been lost. But thankfully, in recent years, there has been a resurgence of interest in the language (Blindboy & Magan, 2020; 2021; 2025) and a return to learning it. An example of the richness of the language being Manchán Magan's 2020 book *Thirty-Two Words for Field. Lost Words of the Irish Landscape*. The group began a tradition of doing nature walks, or wanders, on New Year's Eve. On the last day of 2021 they did a walk along

the Dodder, from the Old Mill in Tallaght to where the Dodder meets the Liffey, now at Grand Canal Basin (Figure 3). As marked on the map, two of the wanderers were lucky enough to see a Kingfisher dart under the Clonskeagh bridge. They assumed it was Larry saying hello, after all these years. One wanderer's father later took the below image of Larry. Seeing the intense blue, especially in the city, gives a great sense of magic to things and increases the love all have for the river, the city, the adventure. The map was signed by each of the twelve wanderers, aging from 6 to about 46. After the wander, four of the wanderers made their way to Mulligan's pub, for some tasty pints of stout and to further discuss ideas encountered that day in the waters and the wild.

Figure 2. Larry, the Dodder Kingfisher, February, 2025

Source: Conor Ryan, 2025

Figure 3. The Dodder River Guardians Nature Walk

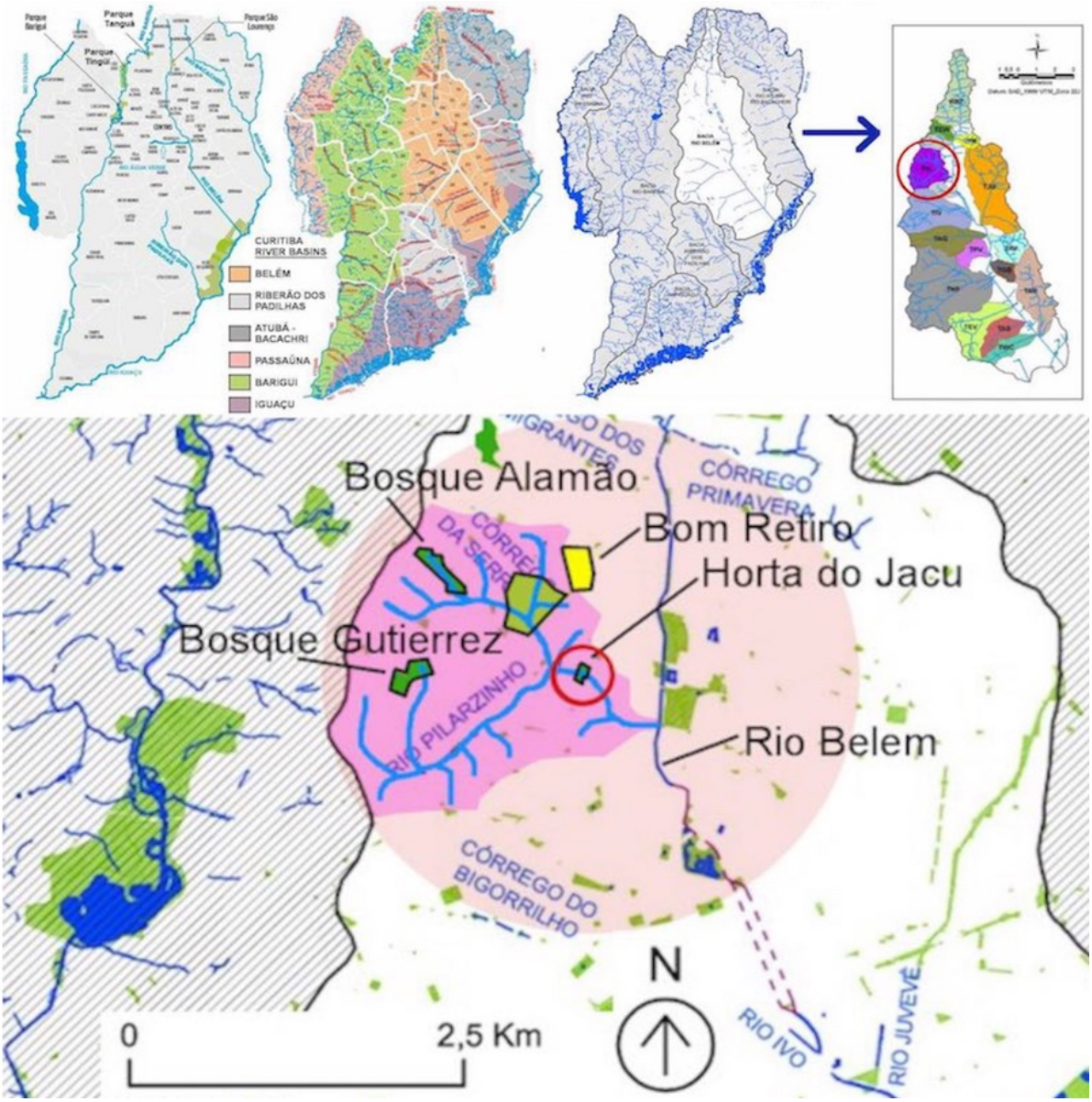


Source: Author, 2021.

A fractal governance proposal from Curitiba, Brazil

The Portuguese word for Kingfisher is *Guarda-rios,* which translates as guardian of the rivers: A perfect symbol for a global guardian network for Earth's rivers, working at all the levels, to implement RoN. Work to explore how the regenerative approach's nested dynamic, of communities within communities, could be governed in big cities was carried out in what had been deemed the Earth's Greenest City (Barth, 2014), Curitiba, in Brazil, in 2017. Patterns found in nature inspire a multi-level governance structure. Fractal structures found in so much of nature, from the patterns of leaves to trees, to the forms of rivers themselves offer a key. It imagines how a RoN approach could work at all the levels: for a fractal, multi scaled, community-led, bottom-up governance model, that all cities could implement within their watersheds and bioregions. The main challenge is to determine a clear process to establish what specific areas communities exist within, to determine which basin, and sub basin, and so on. Figure 4 explores what the governance and communication process of municipalism might look like here.

Figure 4. A fractal governance proposal from Curitiba, Brazil



Source: Top: 1 & 2: Gazeta do Povo, 2017. 3: IPPUC, 2011. 4: Córrego do Aviário, 2017. Bottom: IPPUC, with "eco barrio Rio Pilarzinho" arrangement by author, 2018

With nearly 90% of the municipal boundary of Curitiba being formed by 4 different rivers, all with indigenous names, (Iguaçu, Barigui, Passauna, Atuba), the city has developed strategies to attempt to protect and preserve floodplains which act as the main drainage system of the metropolitan urban territory and are also important regional biodiversity corridors. Six river basins make up the geographical structure of the city, all of which feed into the Iguaçu River. These waters travel 1320km downstream to form part of one of nature's wonders of the world, the giant waterfall at *Foz do Iguaçu*. Initial investigations happened with local communities in Curitiba to explore the basins fractal like sub basins, as possible areas for eco neighbourhoods. The river Belem is the chief river by the old part of town, some sections of it have been channelized and covered over. The Jacu community garden was publicly owned land that had been derelict for over 15 years in the *Bom Retiro* neighbourhood, which has a tributary of the Belem River running through it called *Rio Pilarzinho*. The fact that the river goes through that site was very interesting and discussions were had about how a future biophilic urban project could be developed there, connecting walking routes along the sections of the Pilarzinho River which were still open. There were also discussions about how the garden could act as a catalyst for an ecobairro (eco neighbourhood) plan for the river basin of the Pilarzinho, a size of about 5km^2. Within this area are two very special woods; the *Bosque Alemão* (German Woods) and *Bosque Gutierrez*. Gutierrez Woods has a natural water spring from an underground reservoir, with very pure and clean drinking water. People come from around the city to fill water bottles. Right there, Curitiba is a drinkable city. There is also a memorial to Chico Mendes, the famous Brazilian environmental activist who fought and died defending the Amazon rainforest in 1988, whose famous quote is remembered there: 'Environmentalism without class struggle is just gardening'. Also in the park is a major NGO space, the Brazilian headquarters of the 350 movement, which many local ecological social movements use. The fractal structure of river systems offers a perfect blueprint for a governance system of nested communities, where each basin acts as an independent entity that, together with its neighbours, forms a new independent entity at the higher up level of the system: river basins within river basins, eco neighbourhoods within eco neighbourhoods. Citizens living within these areas can co-create management plans for how their communities can exist, along sustainable living lines, within these areas. This structure and process could form the basis of a fractal planning and governance proposal, using the cities river basins as a source for ecocity transformation, where decision making happens from the bottom up. Citizens from river basins act as river guardians, who represent their communities at higher levels.

Mimicking nature's patterns using Municipalism

Municipalism can increase self-governance and has the potential to feminize politics. It is generating increasing interest around the world as a strategy to challenge the neoliberal political and economic order and respond to demands for greater democracy' (Shea Baird & Roth, 2017, p.100). Municipalism could facilitate the river inspired model described above to be scaled up to today's cities; a fractal-like Citizen-led network, consisting of communities within communities; confederations of clusters of ecological neighbourhoods, communicating with each other non-hierarchically, organizing both horizontally and vertically through local assemblies. Where any node within the structure is both local and global at all times. Municipalism as both structure and process was developed by Murray Bookchin from the philosophical solution he called Social Ecology, believing organised groups of active citizens are the ones best suited to manage local affairs with decisions moving upward from the local to the global, a social reconstruction along ecological lines to create a truly ecological society. For Bookchin, ecological problems originate in deep-seated social problems, due to an aggressive hierarchical and exploitative class society that exploits for power and profit through economic growth, gender oppressions, ethnic domination and corporate, state, and bureaucratic incursions. His solution is to confront these forms of domination 'by collective action and by major social movements that challenge the social sources of the ecological crisis, not simply by personalistic forms of consumption and investment that often go under the oxymoronic rubric of green capitalism.' (Bookchin, 2006). This living politics goes by different names in different locations in today's world. It can be seen as a grassroots democracy at a global scale, Finley (2017) notes these various names:

> A growing number of people in the world are proposing 'communalism': the usurpation of capitalism, the state, and social hierarchy by the way of town, village,

> and neighborhood assemblies and federations... Communalism is often used interchangeably with 'municipalism', 'libertarian municipalism' and 'democratic confederalism'.

Social Ecology took a surprising turn in the last decade, when Bookchin's writings were read by the imprisoned Kurdish secessionist leader Abdullah Öcalan in Turkey. The Kurdish independence movement (PKK) moved away from their Marxist-Leninist ideas of national liberation to Democratic Confederalism. Due to the political instability in Syria, including the recent war against ISIS, a giant experiment has been underway since 2012 in the mostly Kurdish Northern Syrian region, Rojava. A Feminist and anti-capitalist society has been created (Staal, 2015), based around networks of grassroots people's assemblies and co-operatives, or communes, a process called Tekmîl, (Weller, 2018; O'Keeffe, 2018; Tekoşîna Anarşîst, 2022) who have declared their autonomy from the state, building what they refer to as a real democracy. Society is structured in fractal like fashion where communes form confederations with each other across regions. Local assemblies elect representatives at the village or street level, who represent their assembly at the level of the city or region (Figure 5). Weller notes that one Municipality is based around five districts, 20 neighbourhoods, 150 communes, 2500 families and the assemblies have two co-delegates that represent their group at the upper level, decision making is done through Consensus and voting, in a bottom-up process and women are involved at all levels as equals. A number of committees or workgroups (People, Economy, Health, Women, Youth, Art & Culture, Self-defence, Martyrs, Education, Merchants, Communication) cover day to day matters and challenges. The city or region elects representatives to represent them at higher levels. Eleven different committees or institutions facilitate the day-to-day running of the Commune. This all happened within the vicious, multi sided, Syrian civil war, where women's anti-fascist militias fought ISIS alongside male comrades, including international volunteers. Turkey began launching military strikes against the region in 2018 and in early 2025 there was a major regime change in Syria. This experiment's future is unclear, but it shows that large numbers of people can organise in this manner.

Figure 5. People's Parliament of Rojava, Kurdistan

Source: Stall, the Democratic Self-Administration of Rojava & Victoria and Albert Museum (2018)

Spain's 'Rebel Cities' began when Municipalist citizen platforms won 8 major cities in the 2015 local elections, including Barcelona and Madrid. Barcelona's first woman mayor, housing activist Ada Colau, stated: 'We can prove there is another way to govern, more inclusive, working together with the people, more than just asking them to vote every four years. We're very aware that the real change must be global, that one city alone cannot solve all the problems we're facing' (Democracy Now,

2015). In 2017 these networks launched Fearless Cities (fearlesscities.com), The Global Municipalist Movement, to radicalize democracy, feminize politics and drive the transition to an economy that cares for people and the environment. Various summits happened around the planet.

City rivers as urban playspaces

Although written over 70 years ago, the words of the wise old Finnish architect and lover of organic forms, Alvar Aalto, still ring through. Written for his experimental house project at Muurasalo in 1953, at the 1955 inaugural lecture at the Finnish Academy Alto said: ‘‘Though we are in the middle of an experimenting, calculating and utilitarian age, we still have to believe that play has a vital role in building a society for man, the eternal child’. (Botz-Bornstein, 2003). Aalto saw play as a vital role for life, something that was becoming increasing lost in the early post war years by the modern approaches of one size fits all, industrial, factory driven means of bland mass production, including in the urban and architectural realms. The regenerative approach aligns much with his vision, where forms are uniquely linked to the essence of place, from which they are both born from and dwell in.

The 1960s were perhaps the worst period for rivers in the “developed” world, when there was little or no regulation as to what people were allowed to dump into rivers. As understanding of the health impacts from pollution grew, new bodies such as Environmental Protection Agencies (EPAs) were set up, beginning with the US EPA in December 1970, followed by more national EPAs in Europe to protect people and the environment from significant health risks, sponsor and conduct research, and develop and enforce environmental regulations. Writing about Switzerland in the 1960s, Phoebe Weston noted:

> Switzerland had among the dirtiest water in Europe, blighted by mats of algae, mountains of foam, scum, and dead fish floating on the surface. For decades, swimming was banned in some rivers such as the Aare and Limmat on health grounds, and people could get ill if they swallowed the water. Raw sewage and industrial wastewater flowed directly into water bodies – in 1965 only 14% of the population was connected to a wastewater treatment plant. (Weston, 2025)

A typhoid outbreak in 1963 led to three deaths and over 400 people left seriously ill. This prompted the government clean up Swiss waterways and in 1971, treating wastewater was written into Swiss law. Today 98% of the Swiss population are connected to wastewater treatment plants. This action has led the country to having a reputation for pristine swimming waters, which includes city centre locations. Now all along the much-loved coast of Lake Geneva there are many swimming clubs, that are enjoyed all year round, by people from all walks of life.

The Danes have a long tradition for beautiful design, but also for doing things very playfully. In the early 2000’s Copenhagen began its harbour baths and beaches project. These are free and free-floating public swimming pools, located in a harbour or on a fjord, staffed by lifeguards in the city centre. The first harbour bath, Islands Brygge, opened in 2002. In 2003 it was towed to the other side of the harbour and set up at Fisketorvet, and Islands Brygge got an iconic, larger and permanent bath (Figure 6) designed by now famous architecture firm Bjarke Ingels Group (BIG), for which they won the 2004 European Prize for Urban Public Space. Their essence of the project was:

> Copenhagen’s harbour is in the midst of a transformation from an industrial port and traffic junction to being the cultural and social centre of the city... Rather than imitating the traditional Danish indoor swimming bath, the Harbour Bath offers an urban harbour landscape with dry-docks, piers, boat ramps, cliffs, playgrounds and pontoons. As a terraced landscape, the Harbour Bath completes the transition from land to water, making it possible for the citizens of Copenhagen to go for a swim in the middle of the city. (BIG, 2003)

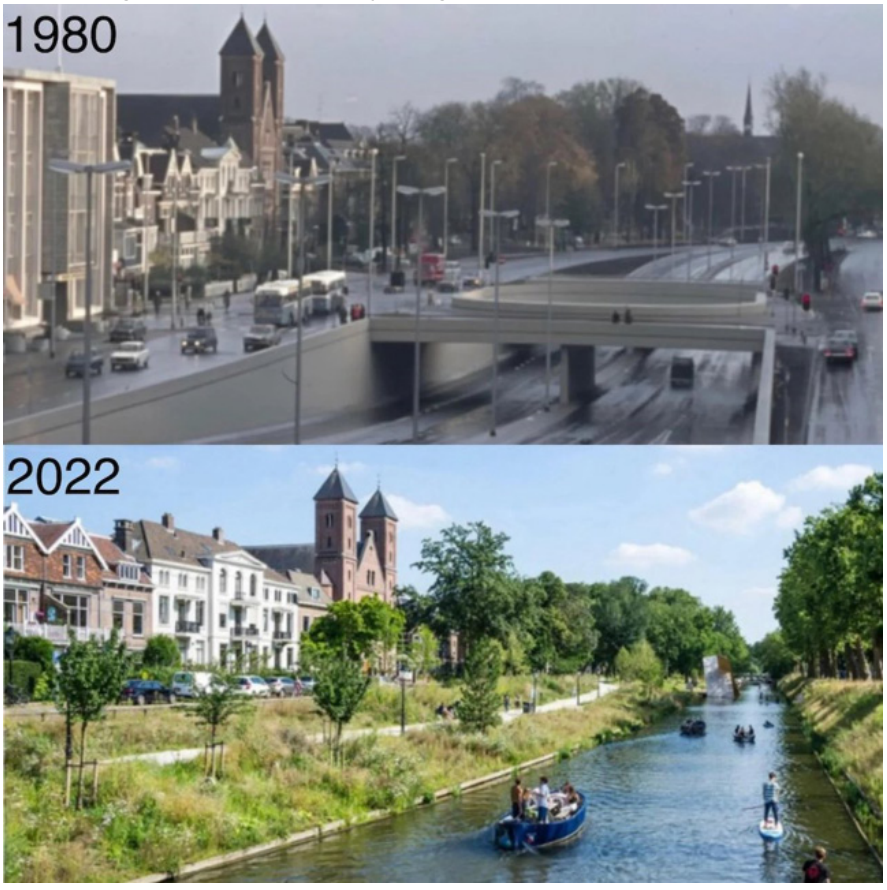
The Dutch city of Utrecht has seen one of Europe’s most celebrated waterway transformations take place. In 2020 the cities 900-year-old moat, the Catharijnesingel, was lovingly restored after 40 years since the canal was covered in by concrete to create a 12-lane motorway. In 1969 a major section of the canal was partially drained to allow cars better access to Utrecht’s shopping district in the 1970s. This and similar projects had disastrous consequences for the public space in the city centre. In a

2002 referendum the citizens of Utrecht voted to restore the Catharijnesingel, to remove cars, to bring back water, to rewild a new public space for the city and make it accessible for cyclists and pedestrians. OKRA's project won the 11th European Prize for Urban Public Space. Before and after images of the same stretch (Figure 7) seem from different worlds, one dead, one totally alive.

Figure 6. Islands Brygge Harbour Bath, Copenhagen, Denmark

Source: Lauge Elkær Furhauge

Figure 7. Utrecht's Catharijnesingel, before and after, Netherlands



Source: OKRA Landschapsarchitecten / CCCB Public Space, 1980 / 2022

Drinkable cities

In 2005 a young woman from Rotterdam, Li An Phoa, canoed the full length of the Rupert River in Canada, spending much time with indigenous communities of the Cree Nation. At all times drinking fresh water straight from the river (Figure 8). Li returned three years later, to an extremely upsetting change of events, possibly brought on by elements of global "progress" and "Sustainable Development"? The river was polluted and poisoned as a result of dams and mining. Fish died and indigenous people were getting ill. The delicate balance in the ecosystem was destroyed. Nobody could drink directly from the river again.

Figure 8. Li An Phoa drinking from the river

Source: Henk Ganzeboom

From this traumatic experience, Li found her life's mission; to make all rivers drinkable again. The Rupert became her teacher, and she set up a not-for-profit organization called Drinkable Rivers. She organises community walks along rivers, from source to sea. Li contacts all the city and town mayors in the rivers catchment area, as well as local community groups and schools, to ask how can they make the river drinkable again. Li has walked over 15,000km along a host of different rivers in different continents. Speaking as an ecological philosopher, Li points out that water is like a mirror of how we are living on a daily basis, she reminds us that our current relationship with water is broken, that we ought to relearn the wisdom of our ancestors. She reminds us of the magic of this strange substance that is the essence of life, that has nourished every single thing that has ever lived on this blue planet of ours. Having been here for over 4 billion years, there is not a single extra new drop since the world began. We constantly reuse it, it constantly regenerates itself, it never runs out, it's what gives life to this planet and all life on it. All old cities grew because of direct access to fresh water, for their citizens to drink and use for planting food. Why can't we simply drink the river water that our cities located themselves on and around, again?

Li's Drinkable Rivers group (drinkablerivers.org) does three things; 1) River Walks: Walking along rivers to engage with people and activate them to care for river. 2) Citizen Science: Engaging people to experience rivers by doing citizen science on water quality. 3) Action Communities: Building networks in watersheds to initiate actions towards drinkable rivers. The Action Communities include Youth for Drinkable Rivers, Mayors for a Drinkable Meuse, Swimmable Rivers and Swimmable Cities. The Citizen Science community has 80 organisations, organized in hubs, in 24 countries, in 4 continents. They monitor the health of their river by inviting their communities to engage in citizen science, learning and using scientific methods for data collection. Having schoolkids regularly check the local water quality is great way to connect them with the wild nature around them.

Conclusions

The regenerative approach encourages human communities to connect with the essence of place, again. Regenerative city organization requires appropriate participation and design as nature, where human systems coevolve with natural systems. Incorporating bioregionalism means cities must work with other communities in their water basins, or catchment areas, of the river systems they are part of. Inspired by the patterns of nature, like how a river's tributary system is a network within the wider network, the regenerative approach works in a nested sense with municipalist structures of governance, of communities within communities.

To ensure all waters within a river basin are clean and healthy, vigilance is needed at all levels of land use, within main tributaries and sub basins, and at the internal levels within again, confirming that what is being put into the soil and the waters ensures healthy, safe and clean rivers. A system of river guardians could ensure such a system.

To respond to the regenerative communities question of what would it mean to become indigenous to place again, the paper shows that some indigenous-led victories are inspiring other communities around the world. Indigenous wisdom, coupled with a huge collective resilience to fight oppressive systems, have resulted in a paradigm shift that this paper argues is opening truly radical transformative pathways for all peoples of the planet. The legal victory of the indigenous Māori tribe, Whanganui Iwi, in Aotearoa (New Zealand) in 2017, to have their sacred river, the Whanganui, officially granted the status of a legal person has opened up law changes around RoN that is growing all around the planet, for both indigenous and non-indigenous communities. The first RoN legal victory happened in Europe in 2022, in Spain.

These legal shifts prompt questions for how contemporary cities can organise around, and improve the health and quality of their rivers and with the wider community of fellow cities in their bioregions.

Inspired by the simple essential and poetic worldview of *Kō au te Āwa, kō te Āwa kō au* (I am the river, the river is me), this paper imagines that Aotearoa's precedent of the Te Awa Tupua Act will be rolled out to change local, national and ultimately international law, to where the health and well-being of all of the planet's rivers are fully protected.

The paper has asked what sort of network of guardian groups could speak on behalf of their river communities, for both the entire land mass through which all tributaries of their rivers flow, and for all the people living within? This would require two guardians at each level of the river, representatives from the community living and working within each sub basin, and again another community within that, and so on... It offers a 'Fractal Governance Proposal from Curitiba, Brazil' for how such a RoN approach could work at all the levels in a municipality: for a fractal, multi scaled, community-led, bottom-up governance model, that all cities could implement within their watersheds and bioregions. Nature's patterns inspire a multi-level governance structure.

In attempting to respond to what governance structures can enable such an ecosystem, the paper has suggested municipalism. This being where organised communities listen to each other deeply, understand each other's concerns and make decisions together, and where representatives (guardians) from that unit bring the decisions, or findings, up the system, and so on. For big cities, this would employ a fractal-like citizen-led network, consisting of communities within communities; confederations of clusters of ecological neighbourhoods, communicating with each other non-hierarchically, organizing both horizontally and vertically through local assemblies. Where any node within the structure is both local and global at all times. Such a theoretical system was developed by social ecologist Murray Bookchin, but has been put into practice with considerable effect within the ongoing warzone that is Syria, by the Kurdish communities in the North, under different names including Democratic Confederalism. Similar municipalist advances and experiments happened in Spain since the 'Rebel Cities' victory of citizen platforms in 8 major cities in 2015, which was followed up by the formation of a global municipalist movement in 2017 called Fearless Cities, to radicalize democracy, feminize politics and drive the transition to an economy that cares for people and the environment.

We argue that all humans have come from traditional communities who held sacred connections with the life-giving world they were inherently part of. It is just a matter of how far back we must go, to see when and how these connections were lost. Focusing on Europe, the Sámi Indigenous people

still hold on to old ways and language. The spiritual relationships with place, especially with water, was lost only 180 years ago on the island of Ireland due to traumatic dynamics after the "famine", where people began to quickly lose their culture, language and old ways, including seeing their rivers as goddesses and gods. But a recent resurgence of interest in the language is reconnecting Irish people to true meanings of place and groups are beginning to reconnect with the rivers of their places, including the Dodder in Dublin, where Larry the Kingfisher dwells.

This essay's regenerative approach aligns to Aalto's view that a playful society is essential for a healthy society and explores recent urban transformations where rivers and waterways are being cleaned up and where humans are not only enjoying being beside such blue spaces, but are getting in and swimming in them. The role of Environmental Protection Agencies and water treatment bodies is briefly touched on in fixing problems. Examples over time from Europe are explored that demonstrate the power of restorative and regenerative systems in the heart of the city, these include the swimming clubs in Switzerland's Lake Geneva since the 1970's, Copenhagen's harbour baths and beaches project from the early 2000's in Denmark and Utrecht's restoration in 2020 of its 900-year-old city moat, the Catharijnesingel, in the Netherlands.

Regarding what should be the ultimate criteria for clean, safe and healthy rivers, Dutch ecological philosopher and river walker, Li An Phoa, advocates drinkable rivers. Since traumatic experiences seeing the deterioration of Canada's Rupert River, where indigenous communities of the Cree Nation could no longer drink from their river, she dedicated her life to the mission of making all rivers drinkable again. For this dream to happen, even city rivers need to be clean and drinkable again. This should be the goal if the Te Awa Tupua Act is enshrined globally.

The final conclusion of our argument is that humans are not separate from nature and are in fact part of nature. Our relationship with water is key to our wellbeing. Most cities have had very strong connections with their rivers and water systems. Sadly, in many cases such areas, and the wider bioregions they are part of, were undervalued. For much time cities turned their back on such places and often used them as dumping areas for pollution. In many cases, cities are recovering their connection with place. Urban waterways are being cleaned, biodiversity is coming back, old grey zones are being rewilded and treated with love. People are returning to these areas, to be beside them, to watch nature, to join their communities, or simply to have a little spot to go to feel good. In the best examples humans are able to get back into and play in the clean and safe waters, right in the heart of their cities. The regenerative approach to cities and rivers is going through a very positive moment, but it can still go further, to where even our cities' rivers are drinkable again. For this to happen, global networks of river guardians are needed, to work at all levels to ensure it stays this way. Somewhere within all of us there is the understanding that 'We are Nature', and perhaps it took the timely and courageous resilience of our brothers and sisters of the Whanganui Iwi to remind each one of us that *Kō au te Āwa, kō te Āwa kō au* (I am the river, the river is me).

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