

Elemental Urbanism. Engaging the terrestrial in city making

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Introduction

Element City, as depicted in the new Pixar film *Elemental*, is a city where everything, from buildings to residents, is made up of one of the four elements: fire, water, earth, and air. Giant pine-tree-like buildings and waterfall skyscrapers are home to Water and Earth creatures, Air celebrates its sporting events in the Cyclone Stadium, and Fire Town is a smoky place made of ceramic, bricks and metal. In Element City, each group sticks to the materials that complement and sustain them. The two main characters, a fire woman and a water man embark on a love story that defies what reveals itself as an ultimately ungrounded rule: "That elements cannot mix" (@pixarelemental/twitter). Indeed, elements do continuously mix and re-activate each other, if unleashed in wildfires and in floods, or in form of chemical substances that menace air, soil and water.

As director Peter Sohn explains, when he first saw the periodic table of elements in school, he imagined it to be an apartment complex where the elements are neighbours: "Platinum lives next to gold, but be careful of mercury because they have toxic relationships" (quoted in: Parks, 2023). In Pixar's *Elemental*, the line between the classical four elements (fire, water, earth, air) and the chemical elements is blurred. The elements are anthropomorphized (hot-tempered fire woman versus contemplative water man), whereas the city is elementomorphized, shaped by both the four elements of matter and by the chemical elements that inhabit it. As film analysts and editors report, the major challenge for the character designers and story artists of the movie was to model buildings and residents that take the form and the qualities of things that are essentially fluid, elusive, and transmutative (Murphy, 2023). But why is it so "challenging" to imagine an Elemental City, a city which is built with elements and not against them?

The Western world has a long history of conceiving of the city as in opposition to the elements, very much in analogy to an understanding of human bodies as separated from and immunized against their environment. The ontological assumption of the self-contained human body that needs to be shielded off against the intrusion of pollution particles, environmental toxins, or electromagnetic waves, seems to live on in the worlds of

architecture and urbanism. The unfortunate “modernist” city has been built to mediate or repel the “wild power” of the elements: soils have been sealed, winds walled out, waters channeled, fire tamed (Koolhaas 2014). Today, the city is haunted by the elements it has tried to ban; by their overflows and burning presences. Yet, even critical engagements with architects’ stance towards a “broken planet” base their claims for responsibility and critical care practices on the assumption that “buildings are made to protect people from the elements” (Fitz and Krasny 2019, 27).

But also beyond the building professions, social science and humanities’ work on cities sticks to an understanding of “nature” and “natural elements” as being urbanized, that is, shaped by but not really shaping urban processes. This is indeed the central concern of the tradition of urban political ecology (UPE), which since its introduction in the late 1990s as a new field of study in geography, has taken the lead in engaging with urban natures. What UPE has brought into the discipline of urban studies is a renewed interest for overcoming the separation of city and nature, shifting focus on the ways in which “natural elements” have been integrated into, and transformed by contemporary cities. From an UPE perspective, flows of elements such as water are urbanized through infrastructural politics. The “urbanization” of water, for instance, is critically analysed with view to the canalization and deepening of rivers or the commodification of drinkable water (Kaika 2004, Swyngedouw 2004). And, yet, UPE’s view on the city, and on urbanization as a process of taming or “metabolizing” the elements, reproduces an asymmetrical view where urban actors eventually manage to reshape the environment according to political economy rationales, and natural elements remain deprived of vibrancy and agency. In opposition to an elementomorphization of the city, as in the film above, scholars in the tradition of UPE assume that the elements are either functionally or symbolically urbanized.

From elemental thinking...

Recent engagements with elemental thinking in the Environmental Humanities and in the field of Science and Technology Studies (STS), in contrast, provide a pathway for urban anthropology to develop a less dualistic and more integral perspective on the interaction of cities and the elementals. In their introduction to *Elemental Ecocriticism* (2015), Jeffrey Cohen and Lowell Duckert propose an elemental re-activism in the sense of a “renewal of non/human ethical enmeshment” through a generative engagement with non-modern and even pre-Socratic cosmologies. As the authors recall, the pre-Socratic Empedocles didn’t simply propose that matter ultimately consisted of four elements (water, air, earth and fire) held together by love and pulled apart by strife, but also that elemental matters are ceaselessly active, inherently generative, constantly recombining in vortex-structures that trouble distinctions between the micro and the macro. This resonates with Derek McCormack’s observation that such elemental cosmologies entail a speculative proposition: “the elemental as a kind of generative chaos from which things and perception take shape” (2017: 421). Elemental ecocriticism is thus oriented by the question of how we could forget the inherent activity of matter. It prompts us to investigate how the elements have been pacified and commodified through material semiotic operations, thus opening for new descriptive and conceptual approaches that are needed for a “re-story-ation” of our relationship to, for instance, urban ecologies (see McCauley 2011, 5).

In the volume *Re-Activating Elements*, Dimitris Papadopoulos, Maria Puig de la Bellacasa and Natasha Myers (2021) go one step further than theories of ecocriticism by proposing

to overcome the distinction between elemental cosmologies and the modern classification of elements as chemical substances. They understand the elements represented in the periodic table ("how the world is made") as inseparably connected to elemental thought, which is "figuratively" grounding social and political theory (from Greek and Chinese cosmologies to traditional knowledges). Similarly, McCormack (2017) speaks of a physico-chemical approach to the elements as a "refinement" or a "filtering" of the cosmological one. Understanding it as a techno-scientific, rather than a speculative approach, McCormack suggests that the periodic table's organization into "patterned entities with relatively predictable properties and capacities" (2017: 421) is shaped by the infrastructural conditions of scientific practices. This point has been largely developed by Isabelle Stengers (2021), both in relationship to Lavoisier's definition of the elements as that which the chemist cannot decompose and which, of course, depends on the means of decomposition at hand. But also, in relationship to Mendeleev's periodic table, where elements are no longer defined as non-decomposable substances, but as real abstractions based on theoretical atomic weights and chemical affinities.

In this context, the proposition of re-activating elements means to approach them as or through the ecologies of material and scientific relationships that constitute them. Such ecological approach means also knowing the elemental in pragmatist manner through their effects, that is, through the stories they tell as they are unleashed from the lab and intermingle with different substances, materials and bodies. But reactivating elements is also a question of the societal imaginaries and speculative fabulations needed to attend the making and unmaking of worlds in the context of the multiple environmental crises and disasters that shape the contemporary. In this line, the Pixar movie *Elemental*, as much as Nickelodeon's comic series *Avatar*, can be seen as examples of a "return to the elemental imaginary" (Bellacasa 2021: 203) in popular culture.

Avatar is an adaption of the Chinese Wuxing system of wood-water-fire-earth-metal, where the four elements constitute four nations living in different regions and with different political systems and cultural traditions and always on the verge of war. The Avatar brings peace into the world by being the only human able to "bending" the four elements (with "metalbending" being a sub-skill of earthbending). "Bending" might suggest a form of control or power over the elements, but it is rather a process of merging and becoming one with the elements and acting with or through them. It reminds of Stenger's (2021) description of chemists as not operating upon chemical substances, but as harnessing the power of chemical agents that operate in their own terms.

For Papadopoulos, de la Bellacasa and Myers, "re-activating" in the sense of inviting something that is as "outdated" or "archaic" as air, water, fire, earth into the present generates a sense of belonging or material identification that points beyond the world of animation studios. Elemental thinking activates critical reflections about more-than-human relations in the midst of the current environmental predicament. Indeed, as Stengers argues, in a context where the wild power of the "ancient four elements may well ... thrive on anthropogenic transformation of earth ecologies" (2021: 25), a colloquial use of the term "elements" needs to be recovered.

...to elemental urbanism

Paying attention to the elemental changes the way we look at cities and attunes us to the multiple ecological crises we are currently confronting. Attending to air, for example,

allows to rethink cities in relationship to carbon dioxide emissions, heat stress, environmental noise, or aerosol pollution. Attending to water allows us to tell stories about droughts and floods, about water pollution and blue infrastructures, about ground water depletion and rainwater runoffs. Whether water, air, earth or fire, an elemental perspective invites us to attend to the fundamental conditions for life, human and otherwise, in the city. Hence, it invites us to conceive of cities as key locations in the so-called critical zone, that is, the thin spatial layer surrounding the earth where life is possible, and which has been defined as a dynamic interface between the solid Earth and the atmosphere, where highly complex interaction processes take place between geological, biochemical, hydrological, and atmospheric elements and processes (Latour 2014).

Cities, we would say, are critical spots in the critical zone. They are not only critical, in the sense of being one of the major causes for the planetary transformation; they are also extremely exposed to those transformations. Cities are spaces of planetary care and critique, spaces in which alternative modes of attuning to what Latour (2018) has called the "terrestrial" are being developed and experimented with. The terrestrial designates a specific mode of inhabiting, knowing and intervening the "critical zone" that is based on a bodily, conceptual and political attunement to the fragile elemental interdependencies that shape it. The terrestrial thus entails a commitment to the local as a specific territory of more-than-human cohabitation, and it does not relate to the local as the space of a human homogeneous, historical or authentic community. The terrestrial defines rather a commitment to a locality or, as Anna Tsing and colleagues (2019) would call it, a patch that is a crossing point for planetary processes. The terrestrial is thus global, but, as Latour (2018) insists, not in the sense of a higher scale or scape for the accelerated circulation of things, people or resources. The terrestrial designates rather a mode of attending to planetary flows and interconnections from within.

Looking at cities from the standpoint of the terrestrial, especially at how cities are increasingly responding to the multiple ecological crises of the contemporary, can help us to understand what an elemental urbanism might entail. The concept of "urbanism" commonly designates a designerly and hence political response to the social challenges, infrastructural problems and ecological disasters generated by urbanization processes. Urbanism is thus a recursive practice – one of revising and problematizing previous designs and of re-imagining and reconstructing the urban environment. If modern urbanism has been fundamentally concerned with the forms and norms that enable urbanization to extend over the planet, what we would like to call elemental urbanism is fundamentally concerned with how earthly forces pervade the urban. Accordingly, if modern urbanism calls for a critical analysis concerned with the development of green infrastructures and nature-based solutions as globally deployable "modular simplifications" (Tsing, Mathews and Bubandt 2019), an elemental urbanism calls for a more speculative approach attentive to the material overflows, environmental affordances and ontological experiments through which elements come to matter in contemporary urbanism.

The elemental provides new vantage points on the vitality and agency of the more-than-human in urban environments. In contrast to the idea of urban assemblages, which emphasizes the co-constitution and co-functioning of human and more-than-human entities, elements such as water, air or carbon dioxide are not yet entities. In order to become actors, that is, entities that do something, elements need to enter in relationships of association with and against other entities forming heterogeneous assemblages. Elements thus designate a virtual capacity. As we have seen, Stengers describes them as generative principles (Empedocles) or as real abstractions (Mendeleev). The elemental is thus not an actor that

could be empirically observed, described and analyzed. Elements come to matter rather as excess, as unruly forces and "feral overflows" (Tsing, Mathews and Bubandt 2019) that resist containment in sociotechnical infrastructures and urban regimes. Elements, as not yet entities, but as virtual forces, are less or rather more-than-urban.

This special issue

This special issue starts from an understanding of the elements as not outside of or in opposition to cities, but as always-already part of its material and social components, shaping as much as shaped by urbanization processes. It thus aims to avoid the common mistake of focusing either on the urbanization of the elements or on how the elements have shaped the city (what we have termed "elementomorphed", above). The notion of elemental urbanism is rather concerned with the co-constitution of the urban and the elemental, thus pointing us to the unruliness and the excess of the elemental as more than an "entity" or an "actor". Re-imagining the urban as emerging through the constant interactions with the elemental does not just lead to the crafting of new questions and concepts, but also to reassessing the methodologies at our disposal.

Engaging the elemental poses an important epistemic and practical challenge, namely, how to observe, describe and conceptualize something that by definition exceeds what we encounter empirically? The two student research seminars that come together in this special issue did not start from an explicit concern with the elemental, but quickly arrived to it. Ignacio's seminar "Strange Weather: Overflow of the Anthropocene" (academic year 2019-2020) invited students of the masters programme on Ethnography at HU Berlin to explore the reconfiguration of urban naturecultures in Berlin in the context of local warming, with students quickly focusing on water-related projects and overflows along the river Spree. Laura's "Soil-idity" (summer term 2021) drew HU human and physical geography students' attention to forms of terrestrial urbanism that are not limited to merely cognitive or techno-scientific relations between city residents and soils, but where (feminist) concepts of care, repair, and healing allow for conceptualizing soil-idity as bonds of unity between people and earth. Apart from the two student research seminars, we also invited friends and colleagues connected to the Stadtlabor for Multimodal Anthropology at HU Berlin to contribute their work of in a more speculative manner.

In most cases, rather than explicitly focusing on the elemental, research was led by ethnographic encounters with human and more than human actors entangled in all sort of practices, projects and ecologies. The elemental appeared thus as a concern in the "environmental milieus" (McCormack 2017) for different forms of life and we ended up doing elemental research as we followed our research partners, their stories of objects and actors and their reflections about elemental powers and capacities. The contributions reflect thus this kind of research process in reverse, that is, going back from specific objects, forms and entities to study the elemental. They paint a maybe less cheerful or colorful picture of elemental urbanism, drawing attention to dirty canals, melting asphalt and toxic rubble soils. But they do not judge them. They approach their dynamics and unruliness through embracing more speculative-artistic and multimodal modes of knowing the elemental.

The first section of this issue explores the urbanization of WATER through socio-material processes of pollution and purification. Anthropologist Tülin Fidan's ethnographic study of a test-filter/boat at the river Spree explores the effects of re-urbanized waters on knowledge production, focusing on how engineering experiments with purifying water are

troubled by a multiplicity of species that are inhabiting and overflowing the laboratory. Visual artist Mirja Busch takes us into a visual and performative typologization of urban puddles in Berlin, thus making visible often forgotten entanglements of climate/weather, water and urban practices. Bringing the issue of feral landscapes to the city centre, human geographers Lucas Beseler, Antonia Bloch and Akira Schroth then take over to map the modes of socio-ecological cohabitation that have emerged in and above polluted waters and sediments since the transformation of a rainwater retention basin at Tempelhof Airfield into the Floating University. The issue of "gaps" and mismatches in scientific knowledge production are also at the heart of the multimodal contribution by Sarah Coordes, Nina Schuster, and Merle Quade. Experimenting with the method of writing SF stories, as developed by Donna Haraway (2016) and others (cf. Van Dooren and Rose 2012), the authors show how the waters and soils at Floating University challenged them to pose new questions about "elemental solidarity" from their respective disciplinary backgrounds in human geography, gender studies, and physical geography. Finally, in her article about the "Braune Spree", anthropologist Kristiane Fehrs studies the feral, or unruly dynamics of polluted waters that connect Berlin's (recreational) hinterlands with the former lignite mines of the Lausitz region.

In section two, we gather a set of papers that study how concepts such as environmental awareness and care feature in both residents' and practitioner's dealings with EARTH in an urban context. The renaturalization of a Berlin-specific soil type, the moorland soils in the city's southeast, is at the heart of anthropologist Sarah Felix' contribution. From her ethnography of the techno-social practices around the protection and conservation of a moor-specific plant, the sundew, Sarah Felix makes a case for considering spatio-affective dynamics of distance and detachment in more-than-human care relations. A walk with colleagues from physical geography and soil sciences at the 11th Conference on Soils of Urban, Industrial, Traffic and Mining Areas (SUITMA), inspires Laura Kemmer and Sandra Jasper to trace the locally specific history of urbanizing soils in Berlin and to reflect on "rubble pedogenesis" as a way of elemental thinking that troubles assumption about elements' "purity" or "unity". Human geographers Mathilde Kærgaard-Skaaning, Husseim Stuck, and Judith Oesch move on to discuss how "soil-awareness" (as found in soil scientific discourse) and "soil-care" (as used in the environmental humanities') can be mobilized for reflecting on Berliner's relations to the grounds underneath their feet. From their interviews with two composting practitioners in Berlin, physical geographers Lara-Helene Deppermann and Josefa Vergara invite for a reflection about how common urbanistic takes on urban elements' "ecosystem services" can be decentered from the perspective of soil microorganisms. Based on stories of urban gardens in public spaces in Munich, anthropologists Ignacio Farías and Kristiane Fehrs challenge human comfort as a design value for urban spaces and propose re-imagining public spaces as infrastructures for more-than-human care work.

The third final section – AIR – revolves around the governance of the solar in Berlin. In "Heated atmospheres and hot topics", anthropologist Moritz Roemer brings us down to the street level, where he explores the problematization of heat in urban contexts as a process that sheds new light on "vulnerable" communities especially the homeless. Anthropologist Elisabeth Luggauer and architect Jorge Martin provide a speculative collage/dérive, in which they use fiction and speculation as methods to explore Berlin as a "hotspot". Finally, unpacking the premises and promises of the Berlin Masterplan for a "Solarcity", anthropologist Svenja Bär describes the urbanization of solar power as a process that produces particular urban ontologies – from rooftop to renters city – with implications for the refiguration of urban collectivities.

Thank you

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Notes

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