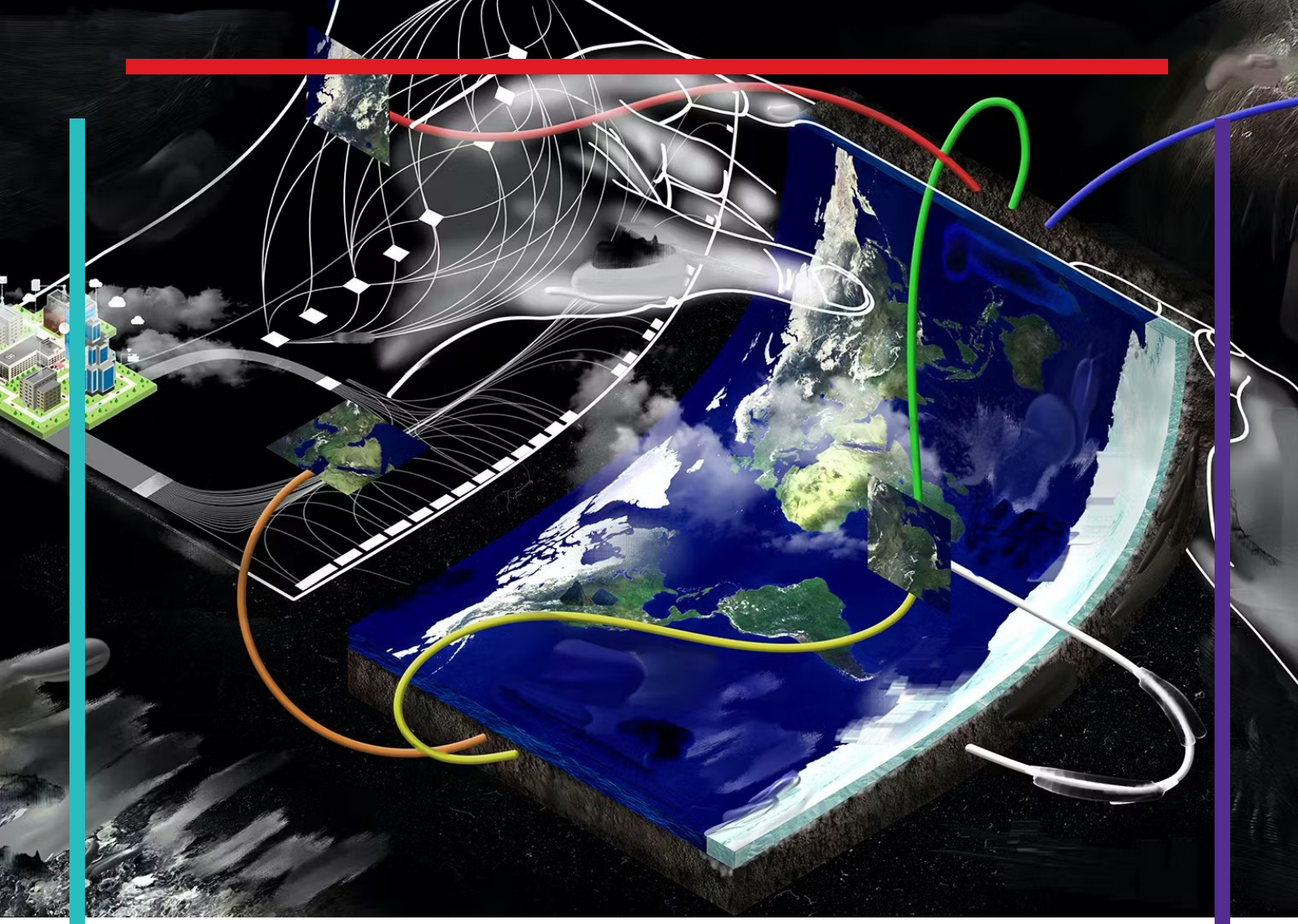

Towards regenerative technologies

Position paper

waag futurelab

Executive Summary

The following statement piece explores how Waag Futurelab plans to counteract degenerative/extractivist attitudes imposed on the wider audience as well as specifically on practitioners in creative fields. With the introduction of the project Designing Regenerative Technologies, it proposes a transition away from defeatist and tech praising sentiment to one that supports proactive approaches ensuring a liveable planet for humans and more-than-humans.

In this article argues for a shift in how technology is designed, developed, and deployed by describing a three-step plan that Waag Futurelab will undertake with support of partners from critical infrastructure lab (UvA), Willem de Kooning Academy (Rotterdam University of Applied Sciences), Greenhost and Zoönomic Institute. Key contributions include addressing needs of creatives in pursuit of regenerative practices, engaging the public, building a knowledge hub, and fostering systemic change through frameworks such as the Public Stack and Zoop models.

Introduction

As a society we find ourselves in an uncomfortable spot. We are realizing the impact of our contribution to the environmental crisis, and yet we are also entrenched in systems that make us complicit in its further degradation. It is also becoming clear there are no quick fixes to this problem. That also means that since this issue is so expansive and we cannot name a single solution, discussions around this subject often feel exhausted or devoid of tangible action.

Thankfully, there is a growing pool of inspiration from which we can draw.
Waag Futurelab started the project Designing Regenerative Technologies to spotlight practices that actively and creatively counteract harmful attitudes ushered by big tech companies. To do so, Waag will source knowledge and expertise from our partners at critical infrastructure lab (UvA), Willem de Kooning Academy (Rotterdam University of Applied Sciences), Greenhost, Zoönomic Institute and work with creatives who, through their practice, emphasize our place in the ecosystem.

Though we collectively grew accustomed to tools, modes of working, and imaginaries that keep us in perpetual circles of dependency on technological expansion, there is also a shared recognition that this status quo is unsustainable. Current tech expansion will lead to depletion of life-sustaining resources, like potable water used to cool down data centers or toxic waste from deteriorating electronics polluting our soil.

Embracing this knowledge allows Waag and our partners to make one more important statement, that **all computational technologies are, by default, extractivist, and there simply is no 100% green tech**. That means that all devices and their use is coupled and dependant on the natural resources. This can only lead to a conclusion that quality of life for humans and non-humans on this planet is directly connected to how technology will continue to be designed, made and used.

Addressing this issue is not an individual responsibility but one that must be placed on the true perpetrators—tech companies that, more often than not, resist regulation and accountability. While legal and policy initiatives strive to impose social and environmental responsibilities on these corporations, another form of resistance is also taking shape. As this field continues to grow, Designing Regenerative Technologies is dedicated to working with those who seek to challenge both the perceived and actual role of technology in the environmental crisis.

1. Silent trade offs

Before fully embarking on this project, it is worth emphasizing that as an organization, we recognize the ecological crisis at the centre of this problem as rooted in socio-economic as well as technological systems. Tech expansion propelled by unwavering consumerism, encouraged by tech optimists has been a direct cause for the growing economic disparity between people on a global scale[1]. Our goals to achieve environmental and social justice are therefore deeply tied to technological dependencies and conditional on whether we are willing to name the harms they bring.

Yet, as a society, we are struggling to address these issues stuck in a seemingly contradictory approach to technology. On the one hand we witness technology being promoted as a tool that will help us innovate and escape planetary crises (e.g., carbon capture and biodegradable electronics). On the other, the reality we experience is that mass production and usage of technology exacerbates issues like e-waste, unfair labor conditions, energy consumption, resource depletion and digital colonialism[2][3].

Meanwhile, in our everyday life, we often resort to lesser evils. Overwhelmed we still gravitate towards what's easy and accessible: large energy-hungry digital systems and the use of devices that are designed to become e-waste within only a few years time.

This duality might make many people feel conflicted and even defeated. However, we are slowly recognizing that the difficulty of breaking this cycle is not a personal failing, but a direct consequence of the immense and pervasive influence of big tech infiltrating places of work, social life and even more explicitly, grabbing land, water and precious minerals.

In response, there is growing public pressure and, as of recent years, legal action, forcing tech giants to take accountability. Number of them react by announcing adoption of “sustainable” practices.

However, we are now aware that many of these actions often fall short of the promises. Like purchasing carbon credits[4] to offset ongoing pollution, rather than investigating the cause and subsequently cutting down emissions at their source. The impact of such attempts at sustainability is now often reported as overblown[5] or greenwashing[6]. **Still, tech giants have become skilled at co-opting sustainability efforts to align with their businessmodels, rather than risk losing profit to redesign their perfectly optimized operations.**

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[1] https://itif.org/publications/2022/10/03/inequality-has-been-the-price-of-winning-in-big-tech-thats-changing/

[2] https://www.aljazeera.com/opinions/2019/3/13/digital-colonialism-is-threatening-the-global-south

[3] https://www.researchgate.net/publication/336775102_The_Digital_Divid

[5] https://carbonmarketwatch.org/publications/ccrm_2022/

[6] counterhate.com/research/greenwashing-google-big-oil/

Moreover, the current political attitudes in the world tend to set the tone in favour of tech accelerationism, which encourages technological growth at all cost. For example, in the United States more concessions are made to disregard the impact on the environment in favour of financial profit. Something many tech companies rushed to embrace. What this exposes, is that many of the previous promises, like achieving net zero pollution stated by Apple, Amazon and Meta[7], are subject to political rather than ecological change.

2. Defining 'regenerative'

Sustainable transformation is often focused on adjusting already existing systems. Reports on sustainability efforts still leave too much room for interpretation and allow for obscure claims. Regenerative approaches go deeper, attempting to reimagine the system itself[8].

Thinking in systems is at the core of regenerativity. Practically, that means that singular efforts, like installing a green roof or swapping from plastic to paper straws, are not sufficient to be called a regenerative design. Unless if they are designed as a part of a larger system that can regenerate resources rather than drain them.
Regenerativity forces us to question the very intentions behind tools and practices we have grown accustomed to. It forces us to understand their impact on a larger scale than immediately visible or felt by us.

All current computational technology comes with costs to our ecosystem. And with the current rise of resource intensive computation (like generative AI), the costs are believed to grow exponentially.

We oppose tech optimistic claims that the current technological abuse towards the environment can be fixed by investing more time and resources into more high-tech solutions. By taking this stance, we avoid the fallacy of promoting green alternatives or green solutions, but rather **highlight tools and practices that expose, counteract, and critically engage with narratives spewed by big tech**.

3. Waag Futurelab's take on ecological resilience in three steps

After recognizing that all computational technology carries an extractivist cost, the next step is not to search for a 'perfectly green' alternative but to embrace new ways of thinking that prioritize long-term ecological resilience we can collectively inhabit. This is where alternative

[7] https://focus2030.org/The-impact-of-Donald-Trump-s-presidency-on-international-development-An

approaches to computation, revised assessment methods, and new models of governance come into play.

Permacomputing as a Guiding Principle

It is challenging to oppose the mainstream messaging of tech proponents. The pace with which we are introduced to yet another technological standard is astounding, typically leaving us with little to no time to question its applications before they get widely adopted. We need frameworks that prevent us from following the same ways of thinking and working. To resist this broken dynamic with technology, we must afford ourselves more time and energy to immerse, test, and potentially apply alternative approaches. For that reason, in the Designing Regenerative Technology project, we decided to use permacomputing[9] as a main guiding principle.

Permacomputing is described as both a concept and community of practice, oriented around issues of resilience and regenerativity in computer and network technology. Its name is inspired by permaculture: an approach to natural resources in which regenerative practices are used to ensure that natural resources used to grow food are treated with consideration of other forms of life dependent on the same ecosystem. Such practice invites us to face the scarcity of natural resources and asks us to care for human as well as non-human needs.

While permaculture practices cannot be directly translated to computation, in its essence permacomputing assumes a similar understanding of interdependencies between humans and nature. But rather than growing food, it focuses on the role of technology. Permacomputing exposes the tangible impact of tech on our environment and tries to expand collective imagination beyond immediate space and time we experience and forces us to foresee consequences of unregulated technological growth.

Practically, this translates to encouraging limiting energy use whenever possible, prolonging the life of hardware to reduce e-waste, avoiding obsolescence by promoting sustainable software built for resilience and accessibility for many years to come, and more.

Inspired by this approach, Waag will work in collaboration with various creatives who apply permacomputing and similar practices in their work. The goal is to learn from their process, understand where they succeed and struggle, and share knowledge with other creatives who might still be at the beginning of their journey toward alternative working modes.

Updating our methods

While Waag Futurelab has long explored the intersection of technology and society, integrating permacomputing and adjacent regenerative practices marks a new frontier for us.

[9] permacomputing.net

Waag has developed the Public Stack[10], a framework that breaks down technological complexities into more explainable layers. It showcases the values of various stakeholders that shape our interactions with digital devices. The Public Stack is a tool that helps to understand underlying reasons for how technology is designed and the consequences of design choices.

Since technology is constantly evolving, it's an ongoing effort to feature as many defining aspects of the human-tech relationship in the Stack. As we dive deeper into the relation between technology and life on earth, it has become clear that **we must update the Public Stack by giving ecology and its social dimensions a more prominent place**. Through deskresearch, physical gatherings and interviews with various creative practitioners, we aim to gain new knowledge on how to practically implement ecological layers in the Stack. Our goal is to stay true to the original purpose of the Stack—making the ecological entanglement of technology clear, compelling, and accessible.

New year, new governance

Beyond the design and implementation of technology, we must also rethink governance structures we apply that will consequently dictate how we use technology in a regenerative way. For Waag Futurelab that means looking inwards to find ways in which we can apply regenerativity in our way of working. Waag will experiment with a new governance model that will put into question our practices. By doing so, we clear path to similar action for fellow cultural organizations.

Waag Futurelab has decided to partner with Zoonomic Institute and adapt their model called Zoop[11]. We will work together with a *Speaker for the Living*, chosen by the Insitute. The Speaker for the Living will help to introspect on our, so far, rather human-centred operations. Our ambition is to identify where in Waag's day-to-day operations we can meaningfully accommodate the needs of non-humans: weather it's adjusting our design processes, material use or (big) tech dependencies. We hope to start with small incremental changes to apply as many of our learnings as possible, and if all goes well, be the first tech focused cultural organization to become a Zoop.

Call to action

This is a call for systemic change. With Designing Regenerative Technologies Waag maps the ecological impact of technology and creates opportunities for collective resistance. This is an invitation for designers, hackers, makers, and thinkers who already question or actively challenge their own technological practices and those imposed on them by their workplaces or educational institutions. Do you have ideas for collaboration, resources on regenerativity or relevant existing work- get in contact with us! Or stay updated via the mailinglist.

Contact: Ola Bonati ola@waag.org

[10] publicstack.net

[11] zoop.earth