

ARCHITECTS OF DISRUPTION

Vapaa Collective

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Publisher: Vapaa Collective

ISBN 978-952-94-6124-0

1st edition

Helsinki / Copenhagen

2022

Originally published in Finnish as *Murroksen Arkkitehdit*, 2022.

The publication is supported by Arts Promotion Centre Finland.

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FOREWORD

1. A Future Worth Pursuing

Iines Karkulahti, Charlotte Nyholm, Meri Wiikinkoski

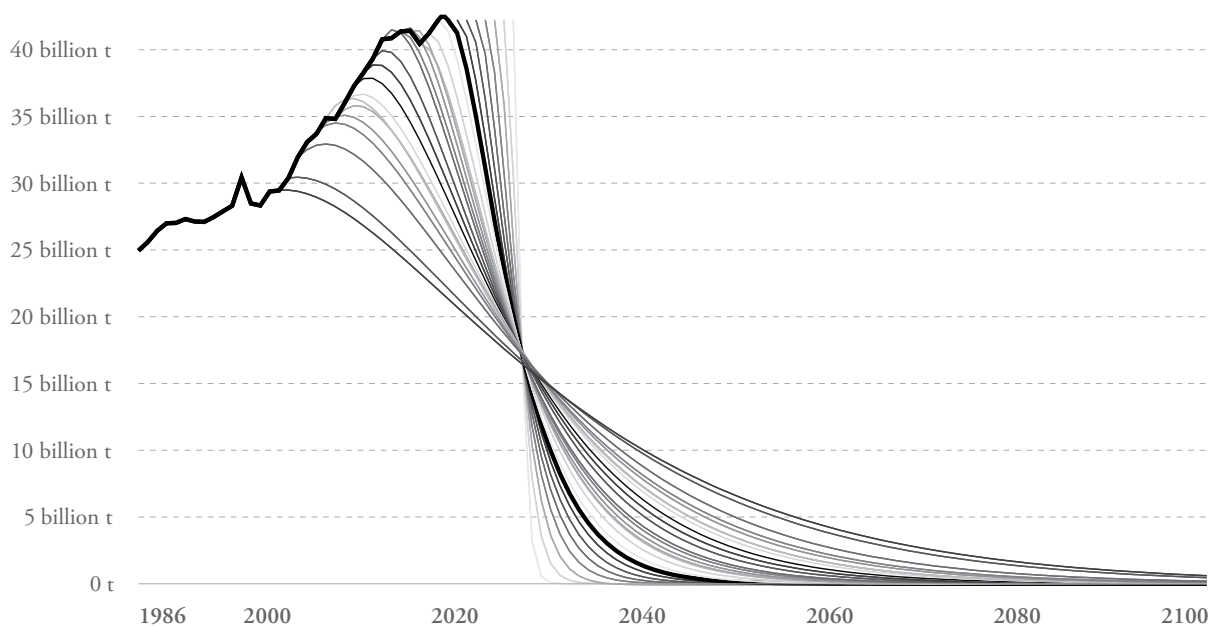
Iines Karkulahti, Charlotte Nyholm and Meri Wiikinkoski are the founders of Vapaa Collective. The Collective examines the role architects play in shaping sustainable living in the era of climate crisis. Vapaa designs, writes, curates and facilitates discussions on the topic with various collaborators.

Resolving climate and biodiversity crises is paramount to the survival of humankind. It is clear that our society's actions so far are insufficient. Architecture has a part to play in the impending climate disruption as it is a major source of emissions and consumes vast amounts of natural resources. On the other hand, architecture is also impactful as an art form that depicts and shapes our societal values. The disruption has already begun.

From Incremental Changes to a Large-Scale Disruption

According to scientific estimates, limiting the global temperature rise to 1.5°C above pre-industrial levels should prevent the most disastrous consequences of climate change¹. This is also what the international community committed itself to in 2015². The reality of climate change was, however, acknowledged much earlier³.

Over the years, information and awareness have spread, but the phenomenon itself has also evolved. In the early 2000s, the emission cuts required to cap global warming at 1.5°C would have meant cutting emissions in half over thirty years and reaching net neutrality by the year 2100. A transition like this could have been feasible through policy and incremental annual improvements. Although the climate crisis has accelerated since then, the idea of achieving results through gradual steps has stayed with us. Discussing some of the most devastating consequences of global warming – human suffering, uninhabitable land, and breakdown of social order – is still often considered alarmist because in the early 2000s it was fairly unlikely that these scenarios would become reality. Those that express concern about the situation have frequently been told that moderate action without any rash decisions is the best approach. We have, however, repeated this mantra for so long that to achieve the 1.5°C goal we now need to slash emissions in half by 2030.



Source: based on Robbie Andrews (2019); Global Carbon Project & IPCC SR1.5

Instead of the 1% annual reductions which would have sufficed in the early 2000s, we now need to reduce emissions by over 6% annually over the next eight years. Meanwhile, emissions have been rising, which has cut the timeframe for net neutrality from 2100 to 2050⁴.

Our procrastination has launched us from a period of moderate incremental changes directly into a moment when the biggest upheavals of humankind are likely to happen within the next decade. At the same time, every passing month makes it less likely that we are able to stop warming at 1.5°C. Unprecedented changes are no longer fanatical sci-fi, but an expected and likely future that all of society should be preparing for.

The Dual Role of Architecture

As different sectors of society are not equally complicit in the production of emissions, the changes necessitated by climate action also vary by sector. The built environment accounts for a significant part of the problem: it produces around 35% of global greenhouse gas emissions and 30% of all waste while using 50% of virgin raw materials⁵. These figures alone are enough to justify the need for an overhaul of the industry. In addition, the report published in February 2022 by The Intergovernmental Panel on Climate Change IPCC also highlights the importance of nature conservation, protection, and restoration. It states that 30-50% of terrestrial, freshwater, coastal, and ocean ecosystems need to be protected or restored for the planetary system to stay within safe boundaries⁶. This further highlights the need for a complete reevaluation not only of construction but of all land use planning. In light of all this, it is unthinkable that business-as-usual could continue in architecture.

In recent years, actors at all levels, from small-scale enterprises to international organizations have drafted strategies for reducing emissions and exploitation of natural resources. Ultimately, their impact comes down to is how well these different actors can implement their strategies in their everyday activities. Successful implementation requires not only carefully

crafted strategies but a large-scale cultural shift on a societal level. Culture, however, is not remade on command. A comprehensive yet palatable societal shift cannot be achieved solely through the well-intended but ultimately insular interventions such as the development of greener technology, improved resource efficiency, and environmental regulations. This is where arts and architecture come in. The arts and architecture have historically played an important and necessary part in questioning established practices and holding up a mirror to society's values. Artists and designers can act as catalysts for change also in this era of the climate crisis, but it requires an understanding of and willingness to challenge the current state of affairs.

From an Obsession With Newness to Redefining the "Best"

It is not just the climate that is changing. With it, a great societal transformation has been set in motion that will affect the way we work, live, travel, manufacture goods, and so on. When talking about this impending shift, architects frequently turn to modernism as an example, as did Vapaa Collective in the initial 2019 manifesto⁷. The textile artist and printmaker Anni Albers, one of the leading figures of the Bauhaus movement, described the confusion designers felt when faced with an uncertain future in 1938:

*"Life today is very bewildering. We have no picture of it which is all-inclusive, such as former times may have had. We have to make a choice between concepts of great diversity. And as a common ground is wanting, we are baffled by them."*⁸

The disruption brought on by industrialization and modernism is comparable in scale to what society is up against now. Thus, modernism can serve as an inspiration and reassure us that change is possible also today. Modernism flourished in the upheaval of industrialization and the World Wars. Although as a movement modernism is controversial and partly to blame for many problems in current society, the mindset of modernists is something we can learn from. At the time, the way to address an uncertain

future was not unanimous or straightforward, but modernists threw themselves at the challenge. They identified a new human being, liberated from the toils of labor, and then went on to envision the world they would like to live in. The result, as we know, was world-class architecture, design, and art. Modernist visionaries understood that absolutely everything had to change.

Modernist ideals still mark our thinking, which is indicative of how successful – or impactful – the modernist transformation was. Up until industrialization, natural resources, i.e. energy and materials, were scarce and thus valuable. Austerity defined the limits for good architecture and in cold regions, thick-walled buildings wrapped themselves around a heat source. On the verge of modernism, the fossil-fuelled harnessing of natural resources for human exploitation enabled us to forget these natural limitations⁹. Modernists believed that technological development would solve all of humanity's problems. Thus it was justified to rid oneself of all things old and worn to make space for the brave new world. An aesthetic of newness was born and with it a society to which a quest for newness is intrinsic. Simultaneously, form broke away from the long-held tradition of what was considered high-quality architecture. Thick walls gave way to large steel-framed windows as architects strived to blur the line between interior and exterior spaces. This newfound expression proudly manifested that architecture had escaped the confines of resource scarcity.

In today's era of climate and biodiversity crises, we have awoken to the fact that innovations that conserve natural resources somewhere often accelerate their loss elsewhere. Such is the case for example with the environmentally destructive mining frenzy, which is in part driven by a need for batteries for fossil-fuel-replacing solar power units. Technology seems to have limited potential for resolving the crisis within the given timeframe. However, the aesthetic of newness, which is based on a technocentric worldview, still governs our thinking and cripples our actions. As architects, we are attempting to resolve a crisis caused by overexploitation of resources with an aesthetic and form that was created to manifest a supposed liberation from resource scarcity. How could we possibly succeed?

We must redefine what we consider the best architecture.

This redefinition requires designers to critically assess deeply rooted assumptions. None of us are free from societal structures and ideals. Most practicing architects have graduated from university having studied only the construction of new buildings. This says something about how architecture has been seen even within the profession itself: the purpose of architecture is the production of new things. The architect does not exist without an architectural artwork, and in our society, creativity and creative work have become synonymous with the production of newness. But what status can be ascribed to a building that destroys the livable planet under our feet? Can the aesthetic of newness still speak to us and create “sacred” spatial experiences, as the best kind of architecture is said to do? Is beauty beautiful, if it exemplifies our blindness to the environmental disaster that threatens our existence?

How architects can respond to the climate crisis is the most pressing question of our profession and how we answer it will shape architectural history. All of society is changing. Resolving the issue is not in the hands of only one profession, but that does not justify inaction. As the operating environment changes, power in the construction industry is redistributed and new parameters are set for what the work of designers will be in the future. It is not enough that the architecture of the future corresponds to what we today perceive to be beautiful because the criteria for “best” have changed. Beauty and hope lie in a new place, a new expression, and a new role for the profession.

Architects of Disruption

If there were a single solution for halting the environmental destruction caused by the built environment, it would hopefully already be widely implemented and the whole problem would be resolved. Unfortunately, this is not the case, as even seemingly sustainable construction is not unproblematic at this time when global warming and biodiversity loss demand a complete overhaul of our practices. Wood construction is an often-cited example of green

construction, but it also requires emission-intensive foundations and cutting down trees, which could serve as carbon sinks if left to grow. We cannot stop building altogether either. Understanding the complex issue of building sustainably and addressing it requires us to consider many points of view.

For this essay collection, Vapaa Collective has invited collaborators from within the architectural profession and beyond. Each writer approaches the subject through their expertise. These essays take the environmental debate within the architecture and construction industries a step further and contribute to forging new forums for raising insights and viewpoints that are still missing from this publication.

The collection is divided into three parts, each of which zeroes in on a different aspect of the relationship between the climate and biodiversity crises and architecture. The first part examines the political nature of architecture and the inherent power dynamics within. Designers wield power also when they are seemingly just producing a solution for their clients. Architecture that does not critically examine the prevailing structures is not apolitical, but instead literally takes part in cementing the status quo. In the era of climate crisis architects must relinquish their role as seemingly neutral service providers and once again embrace their transformative power. What kind of architecture can today spark joy, provoke, or shock us? In his essay, doctoral student of political science **Aleksi Lohtaja** explores this political dimension of architecture. To achieve an understanding of what climate-sensitive construction should be like architects need to engage in difficult conversations. We need to understand what has led to the current compromise, which urban development and architecture inevitably always are. Architects must clearly express what we for our part have prioritized and what values we want to promote in the future. Only then can we find the right channels for making a difference. Geographer **Efe Ogbeide** expounds on power dynamics at play in architecture and planning using market-led urban development as an illustrative example.

The second part looks more broadly at the exploitation of natural resources instead of just emissions,

thus illuminating the complexity of the problems of contemporary construction: emissions, but also waste, and pollution as well as extinction and loss of biological diversity and species. We architects have a duty to change our approach to design to minimize the negative impact we have on the state of the planet. In this section, four writers shine a light on the current state of architecture's green transition. Which perspectives are particularly meaningful and what tools do we need? Professor of Architecture **Kimmo Lylykangas** ponders the ramifications of judging entries to architectural competitions not only on architectural quality but also quantifiably on emissions. Researcher and nature conservation NGO-founder **Jere Nieminen** reveals the kind of active relationship that can be fostered between urban nature and citizens when the concept of design is expanded to consider also non-human species. Architect and doctoral student **Ninni Westerholm** illustrates the steps required for circular economy practices to become mainstream in architecture. Architect **Mira Kyllönen** considers what repair of buildings actually is and what it should be at this critical time.

The third part discusses the meaningfulness of design work and what it means to be an architect during the climate crisis. According to one definition, the primary purpose of architecture is to protect humans from nature.¹⁰ Increasingly extreme weather conditions make us more vulnerable to nature. But the more fervently we try to build ourselves out of this predicament the more we accelerate the phenomenon. Perhaps, then, the answer is not furious barricading against nature, but rather turning the premise around. Architecture that protects nature from humans may be the only way to save ourselves in the end. Instead of spending massive amounts of energy, money, and effort on cleaning up after ourselves, we need to learn to inflict less damage. In his essay, MA and doctoral student **Antti Majava** of the research group BIOS analyzes the relevance of technocentricity for resolving environmental problems and envisions a new role for architects as the generalists of ecological reconstruction art. Assistant Professor of History of Architecture and Architectural Conservation **Panu Savolainen** reflects on the myth of the architect as a creative genius individual and

the heroic deeds our time now calls for. Finally, architect and doctoral student **Maiju Suomi** discusses the need for beauty in architecture and the potential of architecture to reconnect nature and humans.

Editing this essay has made us at Vapaa Collective even more acutely aware of how complex and continuously undermined the problems of global warming and biodiversity loss still are within the field of architecture. At this time when crises seem to roll in one after another, it is tempting to succumb to depression over the state of the world. Amid these immediate threats, the climate crisis is easily overlooked. Yet it is precisely the climate crisis that is

at the root of much of the turmoil facing the world today. Giving in to paralysis or indifference isn't conducive to change-making. To cull increasingly severe turmoil we must also in this state of uncertainty be able to actively seek new solutions and find a way to reach beyond this black wave. These essays do just that. The writers do not deny the severity of the current situation, but instead of despair, they seize the imminent disruption as an opportunity to envision alternative futures worth pursuing. There are alternatives to our current way of doing things, which are far more inspiring than business-as-usual.

- ¹ The Intergovernmental Panel on Climate Change IPCC:n, 1.5-degree report: <https://www.ipcc.ch/sr15/> (Accessed March 19th, 2022)
- ² Finnish Ministry of Environment, Pariisin ilmastopimus [Paris climate agreement] <https://ym.fi/pariisin-ilmastopimus> (Accessed March 19th, 2022)
- ³ United Nations, Conferences - Environment and sustainable development, United Nations Conference on Environment and Development, Rio de Janeiro, Brazil 1992: <https://www.un.org/en/conferences/environment/rio1992> (Accessed March 19th, 2022)
- ⁴ For exact figures, please see Our World in Data, CO₂ reductions needed to keep global temperature rise below 1.5°C: <https://ourworldindata.org/grapher/co2-mitigation-15c>
- ⁵ Finnish Ministry of Environment, Rakentamisen kiertotalous [Circular economy of the built environment] <https://ym.fi/rakentamisen-kiertotalous> (Accessed March 19th, 2022)
- ⁶ Frilander, J. 2022 Jättiraportti: Peruuttamaton muutos maapallon järjestelmissä on jo käynnissä – "vaarallista ja laaja-alaista sekasortoa luonnossa", IPCC sanoo. [Enormous report: Irreversible change of the planet's systems is already ongoing – "dangerous and widespread chaos in nature", IPCC says] Finnish national Broadcasting Company news site: <https://yle.fi/uutiset/3-12336074> (Accessed February 28th, 2022)
- ⁷ Vapaa Collective. 2019. Architects and Climate. Vapaa Collective. Helsinki: <https://www.vapaacollective.fi/> (Accessed March 28th, 2022)
- ⁸ Albers, Anni. 1938. Work With Material. The Joseph & Anni Albers Foundation <https://albersfoundation.org/artists/selected-writings/anni-albers/> (Accessed March 20th, 2022)
- ⁹ Calder, B. 2021. Architecture From Prehistory to Climate Emergency. Penguin Random House UK. Great Britain.
- ¹⁰ Laugier, M. A. 1755. An Essay on Architecture. T. Osbourne and Shipton. London.

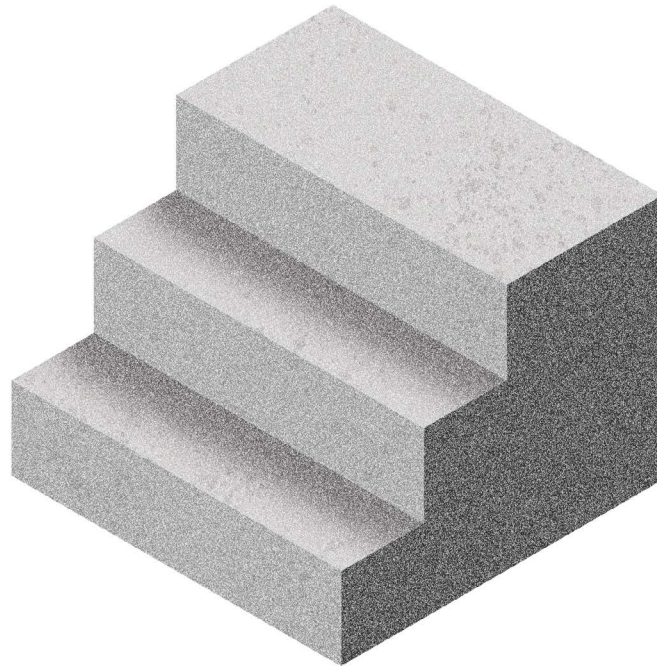
PART I



DESIGN

CHANGING

THE WORLD



The most pressing issue of our time is ecological reconstruction to create a future that our planet can sustain. The role of architecture, urban planning, and the whole built environment in this process is apparent and literal. But is architecture just the neutral physical manifestation of prevailing politics, or can architecture change the world?

2. Architecture as the Politics of Reconstruction

Aleksi Lohtaja

Aleksi Lohtaja is a doctoral student at the University of Jyväskylä. His work focuses on the political nature of architecture, design and urban space particularly through the framework of political philosophy.

1

The ever-worsening climate crisis places architecture, urban design, and the built environment at the center of politics. The key political issues of our time in one way or another tie in with the ecological reconstruction of society. The role of architecture in ecological reconstruction is of course obvious and literal. But the question provoking a variety of opinions is what the architecture of ecological reconstruction should be like.

The shift towards more ecological architecture and society can be understood through at least three different perspectives and focuses. Tier one is centered around the green transition and more sustainable and intelligent design solutions.

Green roofs, solar panels, circular economy, clean-tech materials, and new construction technologies are considered vital for us to leap into a carbon-neutral society. This perspective is particularly popular within the construction and business sectors. The climate crisis can even be seen as an opportunity since lowering carbon emissions of existing infrastructure and buildings increases the demand for the construction industry. In politics, this is a perspective where progress is seen as the solution for social and ecological problems.

The second, and in many ways very opposite view of ecological construction is traditionalism and heritage. This perspective is based on the premise that architecture and construction have for thousands of years been sustainable, ecological, and in balance with nature, but that this connection was lost with the development of increasingly complicated construction technologies and materials.

Proponents of this perspective maintain that instead of turning to increasingly automated building systems and structures consisting of multiple materials and parts, architecture should return to massive construction methods and handcraft-driven techniques. The argument is that we have solid historical knowledge and experience of the functionality, wearability, and repairability of these methods. However, politically and on a larger societal scale, traditionalism of this sort raises many questions. To what extent and on what timeframe can a transition to more traditional construction be implemented?

My objective with this paper, however, is to map out the third perspective, which can be defined as the return of the political project of modernism. The return of modernism may sound peculiar, to say the least, since it is specifically this worldview connected to modern architecture, which favors progress and novelty while destroying the old and traditional, which has undoubtedly been central to the creation of the ecological and wider societal problems we face today.

Reinforced concrete as a construction material is, for instance, an extremely young invention when seen through the scope of our entire urban and construction history. Ecologically speaking, however, it is highly significant. According to established estimates, concrete production causes as much as 5-8% of global carbon emissions, not to mention the problems caused by its subsequent life cycle. The problems of modernism are not merely technical, either: the worldview behind modern architecture was based on undisputed norms and a rather narrow Western ideal of what kind of progress is desirable.

In terms of politics, on the other hand, modernism entails another kind of tendency related to the rapid and widespread radical reorganization of society: the idea that society can be shaped by architectural means. This perspective does not view reconstruction through any ready or static utopian models, which highlight either progress or a return to the past. Instead, one must imagine, aim and fight for a radically different future and begin to change the world here and now.

Understanding this tradition may help understand also the current ecological reconstruction and the related multitude of political objectives as part of a renewal of modernism. An example of this is the Pritzker Prize awarded in 2021 to the architecture practice Lacaton & Vassal, who continue the tradition of modernism of harnessing architecture as a tool for social change whilst simultaneously challenging the notions of progress and novelty, that were traditionally intrinsic to modernism.

2

Can architecture change society? The utopian project of modernism, contradictory and disputed, boils down to this broad question. It can in many ways seem outdated to attempt to solve housing issues from top-down and through far-reaching utopian visions. But can one interpret this intention to change the world by architectural means in a different way? In my view, ecological reconstruction, which borrows from modernism, can be seen as an attempt to construct a new, more comprehensive understanding of the world, housing, living, as well as future aesthetics and politics.

*The World as an Architectural Project*¹, edited by Hashim Sarkis, Roi Salgueiro Barrio, and Gabriel Kozlowski, outlines a multi-faceted historical backdrop to what changing the world through architecture can mean. The book presents various utopian projects from the late 19th to the 21st century, which have challenged prevailing ways of living and notions of present and future. The collection conveys the notion that the various architectural visions and

utopias as projections of the world can be the politics ahead of current-day politics.

This should by no means be interpreted as a naïve or problem-free approach. Architecture cannot be the imagining of a better world for all, free from political interests or ideology. It is precisely this way of thinking, an alleged universality, which led to the widespread problems of modernism. Nonetheless, it is important to note the inherently political nature of architecture, which allows us to reframe the question of reconstruction. Architecture not only reflects the changing world but also redefines the question of what the world is and what it means to change it. Architecture in the context of reconstruction thus not only follows political decisions but actively produces a political reality by imagining alternative futures.

In *An Architecture Manifesto*², the architectural theorist Nadir Lahiji also argues that this more comprehensive political layer of architecture dates back to the dawn of modernism. According to Lahiji, in the early phases of modernism, numerous political changes happened specifically within and throughout architecture and urban planning. The solution to post-war socio-political issues and problems did not only require the political will for change but also the articulation of new questions, new notions on how to create a better everyday life, as established through architecture.

Similar notions crop up during the second half of the 20th century within brutalism, for instance. British architectural essayists Douglas Murphy³ and Owen Hatherley⁴, amongst others, wrote about how the political aspect of brutalism entailed an ambitious attempt to conceptualize a collectively better and radically different future, new public institutions and practices. The neoliberal era starting in the 1980s, seemed, in turn, to bring with it a notion that the future is canceled. Politics became focused on the individual and a so-called capitalist realism. These values were echoed by late 1980s architecture and urban politics in their celebration of privatization.

3

Both early modernism and its later variations, such as brutalism, prove that societal reconstruction and the role architecture plays as in it should not only be considered societal problem-solving but also framing of new political questions. In my view, it is precisely this concept of politics, historically linked to modern architecture, which we can draw from with regards to the prevailing ecological and broader societal crises. For instance, the transition to a carbon-neutral society does not only require political decision-making and a change in the political power balance, although also these are manifested through architecture in a seemingly neutral way through the built environment. Rather, the transition requires us to be able to formulate the key ecological issues and objectives and make them visible by architectural means.

One interesting example of such reconstruction policy is the work of architecture firm Lacaton & Vassal. Founded in 1987 by Anne Lacaton and Jean-Philippe Vassal, the office has established itself as an advocate for socially just and more ecologically sustainable architecture. These two recurring themes can be identified in the work of the firm, culminating in their approach to the problematic nature of demolition and new construction.

On an ecological level, the design of Lacaton & Vassal aims to preserve as much as possible of the existing building stock or of the structural frames of individual buildings. One of their best-known works, the 2019 Mies van der Rohe Award winning renovation of Grand Parc Bordeaux, is based around preserving the old concrete framework instead of demolishing it, and on building large balconies and winter gardens around the old façade, which have the additional function of energy-efficient thermal insulation.

In addition to its ecological aims, the project has ambitious social objectives as well. Grand Parc, consisting of 530 apartments, was originally a modernist social housing project. It was riddled by the same social issues relating to for example multiculturalism

and unemployment as other similar modernist areas now facing comprehensive renovation. Demolition and new construction that allow for more social mixing and societal integration are often suggested as a solution to the social problems of such neighborhoods. Lacaton and Vassal, however, represent the opposite view, since for them such residential areas cannot be reduced to causes of social problems, rather, the community and sense of place formed is often in itself significant for residents. Thus, the firm aims to make the eco-social transition on the residents' terms contrary to many other well-intended renovation projects, which by requiring demolition often end up breaking the social bonds of the community.

To the extent that ecological and social issues are mainstream in current architectural discourse, it is easy to understand why Lacaton & Vassal currently receive considerable attention culminating in the 2021 Pritzker Prize. According to the Pritzker Prize jury, Lacaton & Vassal has restored the utopian effort of the modernist project – to improve the quality of life, not only for a few but for all, by means of a more democratic architecture. In so doing, the practice demonstrates, that renovations to improve energy standards can be undertaken both cost-efficiently and in a way that improves the quality of housing.

Yet, such popularity may tame the original, sometimes even radical political objectives of Lacaton & Vassal, which often challenged the obscure link between modernism and democratic design. The work of Lacaton & Vassal can also be seen as a critique of the future-orientated, progress-minded, and naive interpretation of reconstruction stemming from modernism, where reconstruction is seen as an all-unifying universal political project.

Tahl Kaminer, a researcher of the relationship between architecture and various political strategies, suggests in his work *The Efficacy of Architecture*⁵, that Lacaton & Vassal could be perceived rather in opposition to modernism, within the tradition of radical democracy, where local organization and autonomy, for instance, are central rather than

large-scale change. In this sense, the political dimension of Lacaton & Vassal is smaller in scale and emphasizes local organizations aiming for present change, rather than state-driven, universal and future-orientated modernism, which historically emphasizes reconstruction.

Lacaton & Vassal are indeed closer to new architectural collectives such as Assemble and Raumlabor and their small scale as inspiration for political change. For instance, Grand Parc does not simply trace back to an update of a modern building and its democratic nature but rather it invites new political questions: the extension of the facades allows for a variety of unpredictable activities rather than aiming to standardize a way of residing and living, in the spirit of the modernist project. The renovation's focus on winter gardens suggests that Lacaton and Vassal have taken inspiration from guerrilla gardening, where one specifically aims to use the spaces in originally unintended ways.

In my view, however, it seems the popularity of Lacaton & Vassal is based on reconciling these two conflicting premises: the project of modernism and the critique of it. This contradiction gives rise to a new understanding of how ecological reconstruction should be approached with respect for social sustainability and acknowledgment of the various political actors.

Our understanding of the interrelation of political change and novelty has also changed. A century ago, reconstruction implied a distinct change in the world, creating something new by modernizing society, whereas reconstruction today seems to imply preservation and reform in relation to what already exists. Where modernism and its related utopias took a clean slate as their starting point, the Lacaton & Vassal reinterpretation of modernism seems to stem from an understanding that sufficient material resources already exist to enable a social and ecological reorganization of life.

Instead of new buildings, we need a renewed political and conceptual shift to analyze this reorganization, which is a reinterpretation of the present and future. Indeed, the concept situation cabable is

highlighted in the work of Lacaton and Vassal: new possibilities must be unearthed in relation to the present, not just imagined as abstract images, where the future is radically different but without any exploration about how it may be achieved.

Politics articulated through architecture in this sense presents new possibilities, not final solutions. These new policy inputs do not merely resist, restrain or realize political decisions external to architecture in a seemingly neutral way, but rather they change the political system, the sensory constitution, and the state of society. This introduces a new perspective to modernist utopias and to what "changing the world" through architecture means as part of the greater project of reconstruction.

4

The political importance of architecture has become heightened in recent years. Repeated housing crises, ecological crises, and most recently the organizational challenges of urban and shared space inflicted by the COVID-pandemic have shown that current political issues are increasingly related to urban space, the built environment, and material infrastructure design and societal power dynamics, which are mediated through architecture and urban design.

It is clear, therefore, that policy related to climate change is in many ways tied to policy related to the built environment and architecture. The situation is not, however, completely new. Architecture has repeatedly been brought to the forefront during times of societal upheaval, be it to improve the living conditions in the industrializing cities in 19th century utopias, the breakthrough of modernism post World War I, reconstruction post World War II or, later on, the structural change of society, where alongside physical infrastructures, a broader understanding of the values and ways of life in society, is being built. We are in many ways experiencing an era of reconstruction similar to previous historical upheavals. This time, however, the issue at hand concerns not only societal transformation but also the fate of our planet.

Times of reconstruction stir up various political imaginaries and utopias: societal crises are critical moments, but they also enable us to radically rethink society. It is precisely in relation to the climate crisis that architecture must find new and broad political meaning by questioning what ways of life are ecologically viable and politically worth pursuing. In this sense, ecologically sustainable design should move beyond form-making to contemplating the conditions and prerequisites for sustainable and unsustainable lifestyles.

Thus, architecture as the politics of reconstruction does not merely respond to today's most dire and so-called wicked problems or strive to be ecologically sustainable. Instead of architecture just reacting to the most central challenges of our time, that is climate change, the refugee crisis, the COVID pandemic, and so on, it is useful to recognize the broader political dimension of architecture and urban planning, where the notion of the present is being thoroughly redefined.

This paper aims to outline this broader political dimension in relation to updating the political project of modernism in the context of an era of reconstruction. Indeed, it seems that ecological reconstruction

must simultaneously continue and challenge the legacy of modernism. A renewed analysis is needed with regards to which extent ecological reconstruction can be perceived without prior modernist notions of progress, unlimited resources, and, at times, rather narrow-minded view of humanity.

In the age of ecological reconstruction, a new collective understanding of housing and life must be created, which does not reproduce political structures and physical infrastructures that bring about new problems. Infrastructures and built environments we have inherited from modern society, continue to define our lives and force people to live in ways considered ecologically unsustainable today. However, it is more crucial to consider whether this built environment is indeed a given and neutral, or do we consider it a stage for political conflict and for devising alternative futures here and now.

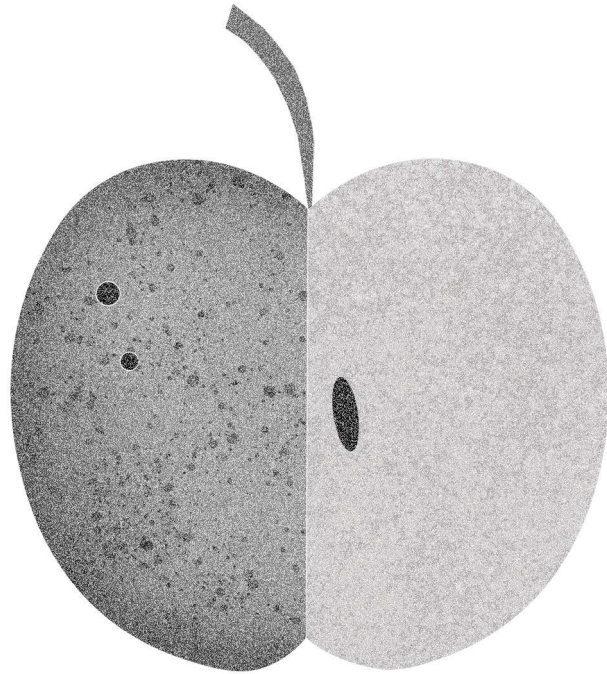
¹ Sarkis, Hashim; Salgueiro Barri, Roi; Kozłowski, Gabriel. 2019. *The World as an Architectural Project*. The MIT Press. Cambridge.

² Lahiji, Nadir. 2019. *An Architecture Manifesto*. Routledge.

³ Murphy, Douglas. 2015. *Last Futures: Nature, Technology, and the End of Architecture*. Verso. London.

⁴ Hatherley, Owen. 2009. *Militant Modernism*. Zero Books. Ropley.

⁵ Kaminer, Tahel. 2017. *The Efficacy of Architecture*. Routledge.



Like most crises, the climate crisis hits those in vulnerable and marginalized positions the hardest. On the other hand, societal change creates momentum for re-examining the distribution of power. In the best case, the crisis could help us become more conscious of who currently exercises power and who the power ultimately belongs to. In this article, the example of market-driven urban development is used to examine power relations in the built environment.

3. We Should Talk About Power in Urban Planning More Precisely

Efe Ogbeide

Efe Ogbeide, MA in Geography, is co-founder of the participatory urban planning agency FEMMA Planning. She is interested in sensuous knowledge, localness, and birdwatching.

Together with a small group of architects and social and cultural scientists I am in a book club that focuses on urban planning. Our get-togethers have been rewarding, as discussing the readings from varied perspectives has helped structure my own thoughts. We have discussed power and urban planning thoroughly. In particular, we have discussed market-based logic and its effects on urban planning.

In a book club meeting, it was brought up that we are all a part of a wider capitalist system that we are actively upholding. This perspective left the group silent for a while, as this structure is of course a persistent sin of people living in the Western hemisphere. All our choices have a wider impact than we can imagine, and it is difficult to make “right” choices.

On the grand scale, it simply looks like market forces, or the law of supply and demand, guides urban planning. Profit-seeking combined with urbanization and climate change put unforeseen pressure on the stability and the boundaries of our ecological and social environment. Changing the power dynamics appears challenging, as does changing the course we are on. It is also difficult to separate oneself from the wider structure, where ownership and amassing wealth benefit only the few, and one must participate in the pursuit of owning property and investing in the stock market just to survive in the riptide of market forces.

The consolidation of ownership and influence on ever larger and fewer private actors was discussed in the critical *Kenen kaupunki* -pamphlet¹ [Whose city?] published in early 2021. In the pamphlet, which addresses planning-related questions with

the city of Helsinki, Finland, as a case example, the writers express concern for the way in which power over urban planning seems to be increasingly in the hands of private real estate and construction companies, and aesthetic qualities and pleasantness of the urban environment are subjugated to financial gain. This critique is not a new phenomenon in Helsinki, as the publication has drawn inspiration from a pamphlet called *Kenen Helsinki?* [Whose Helsinki] written in 1970 by architects Vilhelm Helander and Mikael Sundman, in which the writers critique market-based real estate development, the strive for efficiency, and the readiness to demolish old buildings.

The phenomenon of market-force-driven urban development is tied to a worldwide trend, as noted by the general director of ARA (The Housing Finance and Development Center of Finland) Hannu Rossilahti in his speech in an ARA seminar in January 2021³. The market mechanism drives urban development because large corporations and the elite have invested their capital in land and real estate because of low interest rates. This has further consolidated wealth to a smaller group of people and driven up housing prices. Now even fewer can afford to own their own property or rent an apartment in the area they wish to. Moderately priced housing has become ever more scarce.

In the book club we concluded that though this setting feels paralyzing, we should be able to act within the market-driven system and improve the things we can influence.

We should be able to discuss more precisely the forms of power at play in urban planning to be able to build a more sustainable society within the existing systems, while simultaneously dreaming of

grander structural changes. This requires us to identify power structures and who uses power at different stages of the process.

A position of power entails the ability to implement changes. Power can derive from the capability to act, social status, authority, or another force that compels other people to act in the way one desires. Traditional power, which has been concentrated in specific institutions or persons, has changed, and become fragmented. According to UC Berkeley researchers David Booher and Judith Innes⁴ relying on direct authority in an increasingly complex world is difficult. New ways of wielding power can lay more subtly in shaping ideas and ideals as well as in information warfare. The book club meetings have strengthened my understanding of how complex questions of power are in urban planning and how much broader the issue is than market-driven planning. We must reach deeper.

Researcher Jaana Nevalainen⁵ speaks about the power of definition, where power is used to specify a planning problem and carry out the plan. Different actors define things from the perspective of their respective realities and experiences. This can affect how for example urban planners speak about specific planning areas or participants, such as suburbs and their inhabitants. It can also affect what is perceived as a good urban environment in general.

“Good” is a complicated term, to say the least, and it can be viewed from different perspectives. For example, Central Park in New York was built on top of a historically black neighborhood. Developing green infrastructure is surely desirable and developing a large park builds a desirable urban environment according to many, but to whose detriment? Most likely the people evicted from their homes did not feel like the project was building a better city.

The construction of Central Park is a classic example of the complicated relationship between power and planning, or how power is often used to promote the interests of members of the middle class or the wealthy. In Helsinki, the majority of members of the City Council live in centrally located or wealthy districts⁶, which may create a similar structural imbalance, where the issues that are important to the

middle and upper classes get more attention from politicians. It is difficult to compare one’s perception of reality to those of others, as it is hard to know or see that which one does not experience personally.

Finland's biggest daily newspaper Helsingin Sanomat⁷ wrote about a doctoral student's Master's thesis, which found that the city area people actively use is significantly more localized among inhabitants with a lower education level. They also visit the city center more seldom than citizens who have received higher education. The analysis does not, however, consider the relationship between low education and income, and how this affects mobility and choice of place of residence in the capital region where the cost of housing is rapidly rising. The study looks at how people frequent the downtown area, which is very expensive to live and spend time in. Desirable use of urban space is thus defined as a setting that only middle-class and higher-income citizens can afford.

I see this research setup and research problem as a typical example of exercising the power of definition, which we should be more conscious of. Accumulation of wealth and education is a trend that is equally worrisome as the cycle of poverty and low education, but the first-mentioned is rarely a hot topic for the country’s largest newspapers.

This example exemplifies a common, though debatable, way of thinking. Policy and actions aimed at reducing segregation as well as studies on the topic are typically rooted in the assumption that vulnerable people and groups, for example immigrants or people with low income, and their actions, are seen as a problem. Instead, we should scrutinize political decisions and planning, which create structural problems, such as concentrating rental apartments in specific neighborhoods, boosting segregation, or cutting funding for teaching and learning services which increases learning differences and weakens learning outcomes.

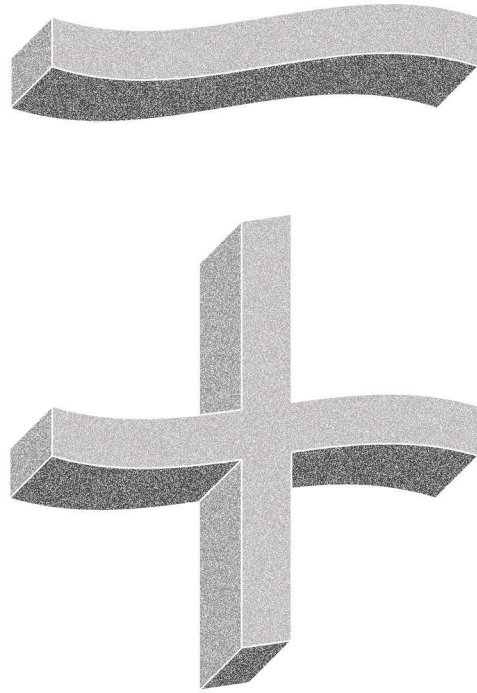
To continue the idea from the book club: we could start changing urban planning narratives by discussing power structures and their impacts on planning in a more precise way. Only then can we identify the places where the greatest impact is made and hold those in positions of power accountable.

- ¹ Hautajärvi, H., Heikonen, J. et al. 2021. Kenen kaupunki? Helsingin kaupunkisuunnittelu ja kulttuuriympäristö törmäyskurssilla. [Whose city? City planning of Helsinki and built heritage at odds.] Docomomo Suomi Finland [Finnish chapter of ICOMOS] Rakennustaiteen seura [Society of architecture], Rakennusperintö-SAFA [Finnish Association of Architects Built Heritage society]. Helsinki. <https://icomos.fi/kenen-kaupunki/>
- ² Helander, W., Sundman, M. 1970. Kenen Helsinki. [Whose Helsinki]. WSOY. Helsinki. <https://www.helsinginvasemmisto.fi/kenen-helsinki-2020-luvulla/>
- ³ Rossilahti, H. January 21st, 2021. Varakkaiden asuntomarkkinat – case Zimbabwe. [Housing market for the wealthy - case Zimbabwe]. <https://www.youtube.com/watch?v=VkZP1japkWs>
- ⁴ Innes, J. E., Booher, D. E. 2000. Network Power in Collaborative Planning. UC Berkeley. Berkeley. <https://escholarship.org/content/qt2mm270mp/qt2mm270mp.pdf?t=lnqdsv&v=lg>
- ⁵ Nevalainen, J. Kaupungista puhumisen tavat vallankäytön välineenä – julkista puhetta kaupunkikeskustan muutoksesta. [The ways we talk about cities is a way of using power]. Yhdyskuntasuunnittelu, vol. 42: 3-4, 13-29. <http://www.yss.fi/Nevalainen.pdf>
- ⁶ City of Helsinki, City Executive Office. 2017. <https://www.sttinfo.fi/tiedote/helsingin-kaupunginvaltuutettujen-asuinpaikat-painottuvat-kantakaupunkiin?publisherId=60590288&releaseId=62180099>
- ⁷ Helsingin Sanomat, July 20th, 2021. <https://www.hs.fi/paivanlehti/20072021/art-2000008111192.html>

PART II



ARCHITECTURE
IN THE ERA
OF THE
CLIMATE CRISIS



The climate and biodiversity crises are quantifiable problems – carbon emissions are soaring, natural populations are dwindling, and species are becoming extinct. This has meant that we now also have quantitative metrics, such as carbon emission calculation tools, in addition to the traditional qualitative indicators for successful architecture. The definition of good architecture can and should change with the times, but how can architects assure quality remains relevant in a discussion that threatens to become just an exercise in number crunching?

4. Greenhouse Emission Calculations as a Driver for Design

Kimmo Lylykangas

Kimmo Lylykangas is a professor of architecture and head of the Academy of Architecture and Urban Studies at the Tallinn University of Technology. He has held research and teaching positions at Aalto University 2003-2012 and Umeå School of Architecture 2014-2016 as well as running his own practice since 1996.

Science has warned us about climate change already for a century. The first Swedish Nobel laureate, Svante Arrhenius (1859-1927) was the first scientist to estimate the influence of atmospheric CO₂ on the temperature of the environment. A hundred years later another Swede, Greta Thunberg, twice nominated for the Nobel Prize, persistently appeals for policymakers to acknowledge the warnings of scientists about the consequences of climate change.

The climate crisis has spurred an increasingly expanding number of architects into action. At the time of writing this paper, 146 Finnish architecture offices have signed the Architects Declare¹ declaration focused on the dual crisis of climate and biodiversity. ACAN (Architects Climate Action Network)², founded in 2021 brings together climate activists working with the built environment.

Architects, however, seem to prefer to rely on first-hand knowledge rather than science or quantitative analysis. This is probably because architecture is synonymous with the quality of the built environment and when assessing architectural quality, quantitative methods are useless.

Climate change caused by humans is, however, a quantitative problem. Greenhouse gas emission calculations are a numerical model of the factors that cause global warming. From the architect's standpoint, the outcome of the calculation should not be the only interesting factor. We should be equally interested in the mechanisms depicted by the model and the parameters that influence the result the

most. This lets us know which design solutions we should focus on to maximize our impact on greenhouse gas emissions.

Climate change indicators are increasingly applied also in judging architectural competitions. A simple calculator for the carbon footprint of the building materials and material efficiency was developed by the Finnish Environmental Institute and Pöyry Building Services Ltd already in 2010 and used to judge the architectural competition for an office building in Finland³. Last year, in a competition for a low-carbon sustainable block in Verkkosaari, Helsinki, half of the possible maximum score for each entry came from quantitative factors: an energy efficiency indicator, a "green coefficient" as well as carbon footprint⁴.

The Verkkosaari competition reveals that this type of competition setup isn't fully functional yet. In the end, the jury selected the best entry. However, assessing qualitative and quantitative design aspects on the same scale is problematic. There is no need to use quantitative evaluation criteria to justify awarding the architecturally superior proposal. Lack of transparency regarding the chosen parameters will only reinforce the profession's wariness of such tools. If the objective is to discover innovative solutions for sustainability, better criteria than computations set by regulatory authorities can be developed, especially since in Finland the interpretation of such calculations is left up to individual municipal local building control officials whose interpretations may vary.

Calculation reports rarely provide sufficient information on how the results were achieved, nor does usually the software used to produce such reports. Still, significant decisions and investments are made based on such reports. These kinds of reports would be significantly more useful and trustworthy if they were required to contain detailed enough information that anyone could replicate the calculation and achieve the same results.

In this paper, I will assess commonly used evaluation criteria for greenhouse gas emissions of the built environment, assessing especially how these criteria influence design.

The Carbon Footprint of a Building

In Sweden, Norway, and France, the carbon footprints of new buildings are regulated by national building codes from the beginning of 2022. Among others, Denmark, Finland, and Estonia are preparing their own carbon footprint regulations. The carbon footprint of individual buildings is assessed based on lifecycle as well as European standards applied nationally.

National regulation can have a significant impact. In principle, it is based on limiting values, which prevent solutions that perform worse from being carried out throughout the building stock. Regulation helps develop competence within the construction industry: a new method sparks the need for new products and services and creates an understanding of best practices, which can be utilized when setting project-specific objectives.

Regulatory control extending to the carbon footprint of construction materials has at least two kinds of effects:

- manufacturers of materials develop their processes to achieve a lower CO₂ (carbon dioxide equivalent) emission factor
- designers choose low-emission materials and products

Should carbon-free steel be produced, or the use of low-carbon concrete become widespread, the Ministry of Environment would have achieved its goal.

However, caution is advised with percentages purportedly indicating the impact of a singular component on the building's carbon footprint. Contrary to European standards, the Finnish calculation model for the building's life cycle carbon emissions assumes that the emissions factor of grid electricity and district heating will improve in the future, which may very well prove unrealistic. It is easy to imagine a Swedish, Finnish, or Estonian government, putting an end to the current trend of sinking emissions of electricity. Should the scenario of steadily decreasing emissions not materialize, the percentages the Finnish calculation model is based on will cease to be true. It is often overlooked, that the emission factors of materials are also not constant, as the carbon emissions of electricity used in production also have an effect. Hence, the coefficients of the Finnish database of construction materials⁵ should be updated, perhaps frequently, to begin with, should the emissions factor of electricity rapidly develop as predicted. A similar update is also needed for the limit values, that regulations have established for the maximum carbon footprint of various building types.

The type of foundation a building requires is bound to the conditions of the building site. The architect is not always in a position to decide the load-bearing material. In such cases, greenhouse gas emission limitations on materials lead to a situation, where the focus becomes not the choice of material but rather minimizing the amount of material used. The compact form of the heated part of the building thus promotes both energy and material efficiency.

Recent housing developments in Finland have been critiqued for focusing too much on financial gain. The core of the critiques is, that optimizing costs can easily lead to excessively deep buildings and apartments that only face one direction. In this case, construction costs, energy efficiency, and material carbon footprint all drive design in a similar direction. Good architecture, however, requires the possibility to utilize varied volumes. To counterbalance the fact that carbon footprint calculations favor compact designs, it would be useful to also similarly evaluate daylight conditions indoors, spatial flexibility, and other such factors which also influence the sustainability of a building, for instance by extending its lifespan.

The building's carbon footprint turns a blind eye to the effects of occupancy rate. In terms of true climate impact, it matters if a housing block of 1000 square meters, i.e. the investment in energy and material required for its lifespan, offers a home for 25 or 50 people. The occupancy rate is, however, taboo since no one wishes to suggest limiting occupancy as a solution for the climate crisis.

Other factors which enable or restrict an eco-friendly lifestyle, such as building location, have not been included in carbon footprint calculations of buildings. There is a clear need for holistic evaluation on a regional level, taking into account the impact of land-use changes, location, and construction of necessary infrastructure.

The nature of decision-making in land-use planning may initially seem different to architectural design. Municipal urban planning leaves a lot of questions open. From a climate-change standpoint, however, the two scales of design are closely intertwined since land-use decisions may irreversibly fix certain decisions or enable the possibility for certain solutions, which may or may not be utilized at a later stage.

The Challenges of Regional Climate Goals

Cities are considered the pioneers in the fight against climate change. The city of Copenhagen's aim is to be the first carbon-neutral capital already by 2025⁶ and Helsinki strives for a similar goal by 2035⁷. In 2017, the president of Helsinki University, sustainability researcher Jari Niemelä, and Ph.D. student Karna Dahal showed that greenhouse gas emission calculation methods of various cities are not compatible⁸: even the calculated results of Helsinki, Stockholm, and Copenhagen cannot be compared. So, when cities rush to declare their sustainability goals, we cannot precisely know what they are committing to.

Cities and regions typically evaluate greenhouse gas emissions territorially, where the limits of a region are mapped, and emissions produced within these limits are evaluated by sector. A similar approach is used in national inventories of greenhouse gas emissions.

The mere idea of a territorial analysis prevents the comparison of the calculations of various cities. For example, if several industrial buildings happen to be located within the limits of a given area, their energy consumption increases the greenhouse gas emissions of that chosen area, even if the production does not benefit the local inhabitants in any way. In another city, the amount of industry most likely differs or is located outside city limits.

Within the mobility sector, territorial analysis is equally problematic. All greenhouse gas emissions related to mobility are included in the territorial analysis. Hence, it includes a lot of the mobility of inhabitants, but not all, as inhabitants also move outside the limits of their home city. However, outsiders and transiting goods also travel through an examined region, the subsequent greenhouse gas emissions of which are included in the analysis.

Take, for example, the city of Riihimäki in southern Finland, a city of 30 000 inhabitants, located at a railway junction and along the nationally important Highway 3. If Riihimäki aims for carbon-neutrality (or climate-neutrality), it must in practice decrease greenhouse gas emissions and then compensate the remaining amount through a method of choice. Compensation can for example mean investment in a reforestation program or exporting emission-free energy. All compensation options incur a cost so greenhouse gas emissions must be cut as much as possible first.

If Riihimäki, like other cities, uses territorial analysis, the traffic on Highway 3 is also included in the total greenhouse gas emissions for the stretch that the motorway runs within city borders. Similarly, passenger and cargo traffic of the busy main railway line is also included in the emissions of Riihimäki for the section of the tracks that are located within the borders of Riihimäki. Riihimäki cannot influence the traffic on Highway 3 or the main railway traffic, but carbon-neutrality would require Riihimäki to compensate for also these emissions with the residents of Riihimäki paying for it. Territorial analysis clearly puts cities at an unequal footing in pursuit of carbon neutrality.

The territorially calculated greenhouse gas emissions of cities are commonly reported per inhabitant. This easily gives the impression that the conclusion is the carbon footprint per inhabitant of the city in question. The territorial calculation does not do this, as is quite evident from the previous description.

Examining consumption might be a useful tool to indicate carbon footprint per inhabitant. It includes all greenhouse gas emissions caused by the consumption of the inhabitants of a city – wherever in the world they are produced. This approach is recommended, for instance, by C40-cities committed to fighting climate change, and can produce very different results than territorial evaluation. In Finland, consumption-based studies conducted by Professor Seppo Junnila's research team⁹ led to a debate, which turned political, on the climate impact of urban densification in 2015. Consumption-based evaluation raises questions relating to lifestyle and consumption habits.

Climate Strategies and Redirecting Urban Development

Territorial analysis of greenhouse gas emissions is often based on the Greenhouse Gas Protocol guide for cities¹⁰. It does not define calculation models, but rather advises on limitations and documentation. The model works better for evaluating realized emissions than as a design tool for future-orientated land-use planning. Designing the future requires a scenario approach, for which no instructions nor comprehensive protocol exists.

Greenhouse gas emissions of changes in land use are typically calculated with national greenhouse gas inventory methods recommended by the Intergovernmental Panel on Climate Change (IPCC), which is based on six land-use categories. This division, however, is far too crude to evaluate the land use within cities. The six land-use categories of the IPCC do not differentiate between green urban space and a treeless plot paved with asphalt, meaning that the method does not account for the climate impact of urban vegetation.

In pioneering cities, land-use planning typically aims to mitigate climate change by promoting urban densification and preventing urban sprawl. The city of Portland, for instance, sets a distinct limit, the urban growth boundary, for urban growth. All new construction is kept within this limit to densify the urban fabric. The cities of Minneapolis¹¹ and Hamburg, among others, have completely banned the zoning of new plots for detached houses, partly with the specific aim of densify the city.

When urban planning utilizes urban densification to prevent the use of natural areas for new construction and construction thus doesn't require new infrastructures to be built, greenhouse gas emissions caused by changes in land use are avoided. As for transportation, the impact of densification is relevant only once proximity to services and public transport influence the daily kilometers traveled per person. Should greenhouse gas emissions of material production not be included in the calculations, as is often the case, the advantages of urban densification are only partially recognized; this kind of calculations entirely omit the climate impact (a spike in carbon emissions¹²) caused by the construction of new infrastructures (such as roads, and water and sewage systems).

It is, then, possible to decrease the climate impact of cities using measures that encourage denser urban development. The climate strategies cities draw up, however, also typically include many measures, which do not fall within the scope of land-use decision-making. Many measures are in fact outside the realm of what the city can control. The transition to electrically powered traffic, for instance, depends on decisions made by operators, car manufacturers, the state, and the EU. Have cities promised too much or have they chosen a calculation method ill-suited to measure their climate commitments?

Measure What Can Be Measured

The words "Measure what can be measured, and make measurable what cannot be measured." are often attributed to Galileo Galilei. According to

historians, the father of modern science thankfully never blurted out anything so foolish. The compulsive need to measure qualitative factors of the built environment is one of the fundamental problems of evaluating sustainability.

However, climate change is a problem that requires quantitative assessment to be resolved. Within our profession, we can promote scientific knowledge by making sure quantitative evaluation is always transparent and understandable, and by keeping architectural quality and quantitative evaluation of climate impact separate - and, on the other hand, by having an open discussion on the benefits, shortcomings, and blind spots of various calculation models.

¹ Architects Declare Finland, 2020. <https://fi.architectsdeclare.com/>

² Architects Climate Action Finland Network, 2021. <https://www.acan.fi/>

³ Synergia -toimistotalon kilpailu [Architectural competition for Synergia office building], 2010. Finnish Environment Institute and Pöyry Building Services Ltd.. https://www.syke.fi/fi-FI/Tutkimus_kehittaminen/Tutkimus_ja_kehittamishankkeet/Hankkeet/Ekotehokas_toimitalo_pilottihanke_passiivitoimitalon_energiaratkaisusta_ja_niiden_ekotehokkuudesta

⁴ Verkkosaaren vähähiilisen viherkorttelin tontinluovutuskilpailu [Architectural competition for low-carbon green city block in Verkkosaari, Helsinki], 2021. <https://www.safa.fi/kilpailu/verkkosaaren-vahahiilinen-virherkilpailu-tontinluovutus/>

⁵ Finnish Emissions database for construction www.co2data.fi

⁶ *CPH2025 Climate plan. A green, smart and carbon neutral city.* 2012.

⁷ *The Carbon-neutral Helsinki 2035. Action Plan.* 2018. Publications of the Central Administration of the City of Helsinki 2018:4.

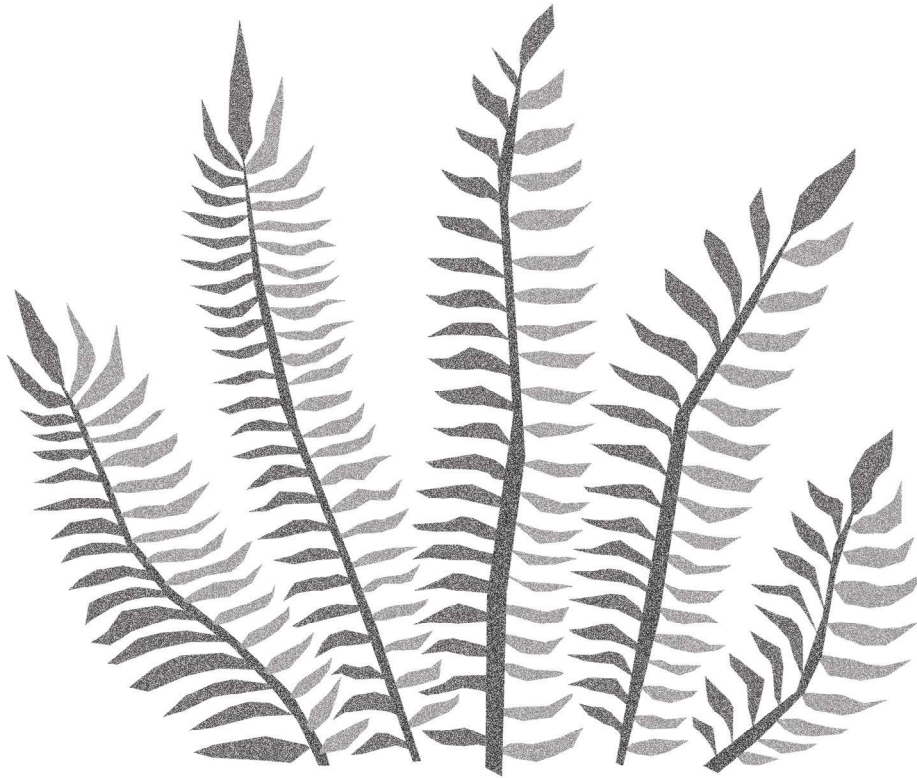
⁸ Dahal, K.; Niemelä, J. 2017. *Cities' Greenhouse Gas Accounting Methods: A Study of Helsinki, Stockholm, and Copenhagen.* Climate 2017, 5, 31.

⁹ e.g. Heinonen, J.; Junnila, S. 2011. *Implications of urban structure on carbon consumption in metropolitan areas.* Environmental Research Letters. Vol.6. 98.

¹⁰ *Global Protocol for Community-Scale Greenhouse Gas Emission Inventories. An Accounting and Reporting Standard for Cities.* Greenhouse Gas Protocol. World Resources Institute, C40 Cities, ICLEI.

¹¹ Kahlenberg, R. D. 2019. *How Minneapolis Ended Single-Family Zoning.* Rights & Justice Report. The Century Foundation.

¹² e.g. Säynäjoki, A.; Heinonen, J.; Junnila, S. 2012. *A Scenario analysis of the life cycle greenhouse gas emissions of a new residential area.* Environmental Research Letters. Vol.7. 1-10.



People are taking over land areas on Earth at increasing speed. When we encroach on new land, we build it up or harness it for processes needed to sustain human settlements. Due to climate change, even the last untouched areas are now subject to human influence. This has made natural nature into a declining phenomenon. When land use threatens nature, it is sometimes proposed that nature can instead be protected “somewhere else”, beyond the areas utilized by people. This is no longer sufficient. Simultaneously, there is a need to bring about a more profound societal understanding of how we relate to non-human nature. This idea can be promoted by promoting biodiversity in people’s everyday environments. In this text, the paradigm shift required to view flora as an active part in interaction with nature is contextualized through the example of herbaceous natural vegetation in urban areas.

5. Natural Vegetation as an Infrastructure – Solutions for Nature Loss in Cities

Jere Nieminen

Jere Nieminen is the chairperson of the nonprofit organization Wild Zone. He believes that nature conservation needs an exciting vision and new ways for caring for nature.

His motto is: The nature of any area can be improved.

Natural Vegetation in Cities

Wild plants are generally organically growing, self-regulating elements. Until now human sentiment towards them has varied from indifferent attitudes to active conservation. To reverse nature loss, we must change our perceptions of urban vegetation and start seeing plants through a lens of active interaction.

The growth and densification of cities threaten vegetation amidst the urban fabric. Many of these plants are rare or endangered, and particularly in cities, there are several reasons to foster diverse vegetation. Intentionally created meadows and fields improve the cityscape and are attractive to citizens. Some rare urban plant species are so-called anthropochores, introduced through human cultural exchange and activities, and cultivating these is an act of caring for the cultural heritage. Preserving biodiversity in everyday urban environments also allows for accessible nature education. Implementing creative solutions for cherishing wild urban vegetation is a pioneering act in preserving biodiversity. The goal of this essay is to reflect on how cities should change to better accommodate natural vegetation.

This text looks at herbaceous plants and their presence in cities. The focus is on rare and endangered plant species; those, whose preservation can be seen as particularly meaningful in preventing biodiversity loss. Many other groups of species are threatened in cities and critical for maintaining biodiversity, but in the case of herbaceous plants, the solutions are somewhat more advanced and thus provide a good example through which to broach the topic.

Examples are taken from findings gained through the activities of the Finnish Villi vyöhyke (Wild Zone) association and experiences of creating meadows in cities. The association has established over 70 different meadows in the past 10 years and helps maintain dozens of other sites important for urban vegetation, some of which have sprouted organically, while others were created intentionally. The goal of the association is to care for, restore and improve natural values in areas where human activities have damaged them. These areas are common in cities. In Finland, city policies are starting to acknowledge the qualitative restoration of weakened natural areas in addition to conserving currently valuable areas.

I will utilize the concept of infrastructure as it is understood in science and technology studies (STS) to structure the argument. The term infrastructure is understood as defined by researchers Geoffrey Bowker¹, Susan Leigh Star and Karen Ruhleder², and Ashley Carsen³. According to Carsen⁴, infrastructures include hierarchical relationships. I introduce the definitions as I use them as a narrative structure in the text. In using the term, I do not refer to the “green infrastructure”, prevalent in the governmental discourse of recent years.

As wild vegetation is a living, growing element, I utilize the binary contradiction of “spontaneous-intentional” to specify the aspects of the infrastructure of urban vegetation that are naturally occurring and intentionally organized. Intentionally cultivated vegetation is often guided by human activity and often established to promote human enjoyment, and thus might not best serve the diversity of natural vegetation. Green space management in cities

should leave space for the self-regulatory processes of plants. It can act as a complementary element, which shows us new possibilities for urban vegetation to thrive. There is not a strong enough commitment to the justification of natural vegetation in cities, which means it is often superseded by other urban functions. Care, attention, and new ways of thinking are needed to observe and learn from the spontaneously spreading of vegetation.

Places for Natural Vegetation in Cities

The prefix “infra” denotes something happening under or within. “Structure” describes the relationships between different entities that form a system and give the whole a specific character or quality. Cities are made up of multiple built infrastructures, among which natural vegetation can occur spontaneously or can be intentionally introduced.

Intentional, endemic herbaceous vegetation in cities is almost exclusively present in the form of meadows. This means a somewhat spacious, continuous patch of land, maintained regularly. Meadows are often created through careful planning, and they are pleasant to the human eye.

Dry grasslands are similar, vast flowering areas of herbaceous plants. Many urban green roofs are similar to these types of open environments. On the large green roof of the Tampere University central campus, Wild Zone association sowed esker plants that have grown rare in the wild, and the roof was named an esker roof.

Spontaneously spreading herbaceous vegetation in urban areas is much more varied than the above examples. Plants occupy areas between different types of infrastructure and areas that are temporarily unused. The herbaceous flora of different types of wastelands is typically irregular, patchy, and mixed with trees and shrubbery, and it is not organized similarly as in parks and other built green areas. In areas of ruderal flora, meaning that of new growth in wastelands, manmade growing mediums like rubble are usually not intended for plant life.

Though ruderal plant growth is often worthless in terms of human use, it can be a habitat for rare and even endangered plant species. These could indeed provide inspiration for how to cultivate natural vegetation in a more controlled way. As an example, the Wild Zone uses sand, gravel, and rubble as a growing medium for new meadows and sun-exposed dry habitats. Seeds gathered from the vicinity are sowed there - they are in a sense planned wastelands. For example, in Tampere, these experimental areas have shown to be habitable for several rare plant species.

Built and maintained areas also attract their own naturally occurring plants. Spontaneous vegetation can be found in many narrow areas between structures, like along walls. Even rare plant species can be found on the narrow embankments of road areas. Intentionally cultivated natural vegetation does not always require vast open areas to form vigorous growths. Learning from this, the members of the Wild Zone have experimented with narrow meadowlike areas, for which it is easier to find space in the urban environment.

Regardless of their size, the value of individual patches of vegetation is lesser than a network point of view. Networks are important for the wider dynamics of plant life, as such a structure allows plants and insects dependent on them to migrate between different green areas. Strong network connections boost resilience in the city, as species from other areas can take up patches that have declined. An example of this is a block in Nekala, Tampere, which provides a varied habitat for the extremely endangered moth species *Anacamptis fuscella*. In the area, both intentionally and unintentionally different, interconnected xerothermic (hot and dry) habitats were built in the yard of the school and daycare center, near parking areas and empty fields. Members of the Wild Zone have planted and sown zigzag clover (the only food plant used by the moth) as well as rare esker and wasteland species in these areas. Some of the spreading between different patches is thus aided through human intervention, which is a new way to perceive the dynamics of natural vegetation in cities.

Propagation of Infrastructures

Infrastructures always have a spatial and temporal dimension⁵. In science and technology studies also naturally growing nature is perceived as infrastructure, instead of using the term to describe only built, artificial environments such as buildings, roadways, and power lines⁶. When understood like this, infrastructure is not only built, but it is also organically grown. Natural plant growth occurs at different spatial and temporal rhythms.

Due to their capability to disperse, plants do not always stay where we intend them to. In the best case, rare or endangered species start to spread in a new environment more vigorously than expected. This means that surrounding infrastructures are subjected to intentional or unintentional impacts. Hopefully, such an occurrence would also entail a willingness to change the way these areas are maintained. In cherishing natural vegetation, it is key to allow the self-organized dispersal of plants from intentionally founded green areas, which is something we are not used to in the maintenance of urban green areas. It is also possible that once a plant has dispersed to another site, the original site has developed so that maintaining the presence of the species there is no longer relevant. When controlled sensitively, spontaneous and intentional plant dispersal, and growth creates chain reactions that can surprise us much like the human inhabitants of cities do. Allowing the spontaneous dispersal of vegetation in cities shapes a new way to perceive nature, where the significance of any given area changes over time. The members of Wild Zone view it as a sign of success when the plants introduced to a Wild Zone meadow are found to have dispersed beyond the original area.

The Connections Between Natural Vegetation and Urban Functions

According to Carse⁷ when speaking about nature, the term infrastructure can be used to describe the activities, benefits, or services it provides, not so much the types of individual characteristics of

natural areas. According to Carse, components are linked together, so natural infrastructure can produce a function. Cherishing natural vegetation can thus provide new activities and meaning also for humans.

What kind of social structures could we have in cities where we embedded natural vegetation? The Wild Zone has explored this in collaboration with educational institutions. The newly developed school meadows have been introduced in schoolyards, and their foundation and maintenance have been worked into the educational aims in various subjects. The link to biology or plant species identification is obvious, but not the only one. In woodshop classes, students can make insect hotels that support the meadows, information signs can be developed in language classes, and maintaining the area can be made part of sports or history classes. School meadows are an example of controlled vegetation, where urbanites can become more familiar with nature and form a personal relationship with it.

Organization and Production Chains of Natural Vegetation

The science and technology studies approach highlights the process-oriented nature of infrastructures and particularly emphasizes how infrastructures are built rather than focusing solely on how they are used by society. Infrastructures are always social structures containing embedded meanings and representing human relations⁸.

In urban green areas, we must pay attention to established modes of production and maintenance. Working in established networks, designers, contractors, and landscapers work according to routine steps which follow one another. Seeds and saplings are acquired from a producer, like a nursery. Maintenance workers, who are often landscape contractors, take care of the areas. When cities start to tackle biodiversity loss, traditional supply chains cannot meet the demands for cultivating rare and endangered plant species. Local or even domestic seeds and saplings are scarcely available from current vendors.

Wild Zone has solved this issue by gathering and cultivating its own seeds and growing saplings. For infrastructures to be cultivated for counteracting biodiversity loss on a large scale, we need new production chains and actors – a new organizational model for the whole sector.

When the value of a meadow lies in the local flora, maintenance differs from common practices of upkeep in urban green areas. Annual cutting isn't enough, but rather these meadows must be weeded, as rare species are often weak in the competition with other plants. This requires the ability to identify young sprouts of the intended species and undesired weeds but also the sensitivity to recognize spontaneously appearing species that are nonetheless valuable additions to the ecosystem. For example, in its meadows, Wild Zone has not removed spontaneously appearing red sorrel, heath cudweed, or sheep's fescue, all of which can be considered rare or beneficial to insects. Such recognition requires the green area maintenance teams of cities to put in significant effort to acquire new knowledge.

Simultaneously, the planning processes are also in need of a revolution. Cities' infrastructures are typically controlled very hierarchically through zoning and green area plans. Separate park plans can dedicate spaces for meadows or organically spreading natural vegetation. Many of the meadows founded by Wild Zone are located in places that are already designated for this purpose at a high level in the planning hierarchy.

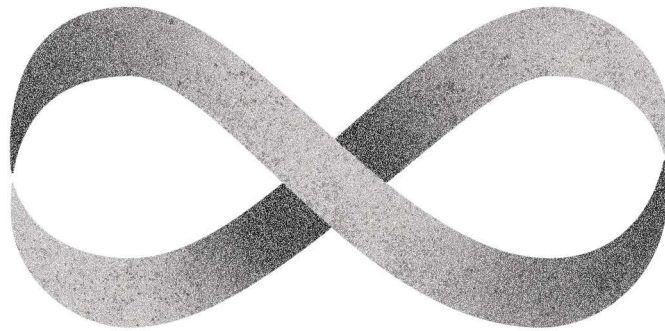
Natural vegetation can, however, also be fostered without hierarchical urban planning, from the bottom up. An example of this are the dozens of guerilla meadows founded by Wild Zone in the Tampere area. At least two of these have since become officially recognized as meadows in the green area registry. Both guerilla meadows were created in areas where the land use was designated as a green area, which most likely made it easier for them to be accepted in the official system. The planning codes and guidelines for green areas are less binding than those regarding buildings, which benefits natural vegetation and meadows.

Infrastructures in the Era of Biodiversity Loss

People are changing cities so rapidly that flora that has adjusted to the urban structure can no longer keep up with human rhythms. Building cities with natural vegetation will require more systematic synchronization. Otherwise, a large number of valuable plant species will be lost in cities, which weakens not only nature but also the quality of human everyday environments.

Though the task ahead is vast, the starting point is fertile for sprouting diverse, creative solutions. Future will tell what types of infrastructures are formed in cities in the era of biodiversity loss. Paying attention to natural vegetation allows us to view cities as more than mere human living environments, but rather habitats for varied species. This widens our perception of the nature of cities and their dwellers.

- ¹ Bowker, Geoffrey. 1994. *Science on the Run: Information Management and Industrial Geophysics at Schlumberger, 1920-1940*. MIT Press, Cambridge, MA.
- ² Star, Susan Leigh & Ruhleder, Karen. 1996. *Steps toward an Ecology of Infrastructure: Design and Access for Large Information Spaces*. Information Systems Research 7:1, 111-134.
- ³ Carse, Ashley. 2012. *Nature as infrastructure: Making and managing the Panama Canal watershed*. Social Studies of Science 42:4, 539-563.
- ⁴ *ibid*: 542
- ⁵ Bowker, Geoffrey. 1994. *Science on the Run: Information Management and Industrial Geophysics at Schlumberger, 1920-1940*. MIT Press, Cambridge, MA. ja Star, Susan Leigh & Ruhleder, Karen. 1996. *Steps toward an Ecology of Infrastructure: Design and Access for Large Information Spaces*. Information Systems Research 7:1, 111-134.
- ⁶ Carse, Ashley. 2012. *Nature as infrastructure: Making and managing the Panama Canal watershed*. Social Studies of Science 42:4, 539-563: 540
- ⁷ *ibid*: 542
- ⁸ Bowker, Geoffrey. 1994. *Science on the Run: Information Management and Industrial Geophysics at Schlumberger, 1920-1940*. MIT Press, Cambridge, MA. ks. myös Nieminen, Jere & Jokinen, Ari. 2018. *Hulevesi muuttaa kaupunkia. Infrastruktuuri suhteiden rakentamisena*. Tiede & edistys 43: 2, 129-144.



The dual crisis of climate and biodiversity is intrinsically bound to the overconsumption of natural resources. Our finite planet, and according to recent research even the entire universe are based on closed loops in which energy and matter move and shift, but do not disappear. Paradoxically, our contemporary economic model assumes it can detach from this universal order by churning out products that are used and then “removed” from circulation. By reverting to a circular economy, we can begin to unravel the crises by reducing waste production and the need for virgin raw materials. What does it mean for architecture and its processes, when materials designed for a linear lifespan can no longer be used in construction?

6. Architects Amidst the Transition to a Circular Economy

Ninni Westerholm

Ninni Westerholm is an architect and researcher, whose research at the University of Tampere focuses on circular economy and multi-story wooden construction. She also works with building design at HELST Architects where she is currently developing life cycle assessment tools.

Biodiversity loss, global warming, increasing extreme weather conditions, and the pollution of our environment are hardly new concepts to us anymore. They are all in some way connected to overconsumption. Modern humans are accustomed to throwaway culture, and the linear economy based on producing, using, and discarding products is also heavily present in the building industry. We build, often consciously, things that are not sustainable or that are difficult to maintain, repair, and adapt when needs and requirements change. In nature, nothing is single-use. Natural processes utilize renewable energy and circulation - organisms get their life force from the sun and the waste of one creature a vital nutrient for another.

Our estrangement from natural processes has led to the greatest crisis humanity has faced. It is time to learn once again from nature and to redesign our economic models based on closed-loop systems which utilize renewable energy. If we accept the challenge in its severity and act fast, a solution for the unfolding environmental crisis can well be moving to a circular economy. But what is a circular economy and what does it mean for future architects?

In a circular economy, all human activity adheres to planetary boundaries. Materials are not removed from circulation, but rather utilized efficiently for as long as possible. Recycling of materials and products is optimized and emissions eliminated (or minimized). How materials circulate also affects their value. In the worst case, the value of the material deteriorates significantly (downcycling). In principle, all forms of recycling are still better alternatives

than using waste for energy production or disposing of it in landfills, which leads to materials being removed from circulation.

Currently, we are recycling building materials in ways where the value reduction is significant, for example using aggregate (crushed concrete) in road construction. Our goal when moving towards a circular economy is reusing materials and products as they are, allowing them to retain their value for as long as possible. Additionally, we must find ways of recycling where the value is retained or even heightened in the next life cycle (upcycling).

Transition Requires New Ways of Thinking

Circular economy thinking in modern construction is still in its infancy. The topic is prevalent in speeches but lacking in action. The whole construction industry requires a rapid, major transformation as the built environment is the cause of over a third of emissions in Finland. The Finnish building industry also uses approximately half of all the virgin materials and produces a third of all the waste. A big issue in Europe is that the building stock is relatively old and has not been designed with circularity or adaptability in mind, which often leads to premature demolition and inefficient reuse and recycling of the used building components.

Our attitudes towards building materials and the buildings they form must change. The maintenance and repair of buildings must gain priority. We must only build new buildings where there are no alternatives. The new buildings we find necessary must be

designed with circularity and adaptability in mind and utilize primarily secondary materials that are already in circulation. This includes practicing urban mining by building from secondary materials within the city, and where these materials are not available, using renewable low-carbon virgin materials in ways that allow them to be repaired and reused easily and efficiently.

For a designer, this means favoring simple structures and easily openable joints. This may feel like a radical thought, but the principle has been practiced for centuries in log construction, which is a great example of a circular economy. Old log buildings are still in demand as they are easy to disassemble, transport, and reassemble in a similar form as the original structure or modified in varied ways to meet new needs. We must find similar processes for other building types. There are many ways to achieve this.

As the whole economic model changes, the materials available to designers also change. This means that architects must change their attitude towards materials. A sustainable material palette of the future is based on secondary materials and renewable natural materials. Buildings may well utilize materials whose original use has been something completely different. For example, a glass bottle or a car tire might become part of a wall, like in buildings designed by Michael Reynolds. The material palette, which has been quite static, will become more fluid as the availability and quality of secondary materials change constantly. This poses new challenges to design, as architects must learn to combine materials that are available at a certain time in ways that are of high technical and aesthetic quality. When used expertly, recycled materials can contribute to a more stimulating and livelier urban environment. Buildings comprised of parts older than themselves also add historical layers to the cityscape.

From Experimental Projects to the Mainstream

An interesting example of a pioneer company in circularity is the Danish Lendager Group which boldly researches, tests, and realizes different circular design solutions and distributes knowledge gained

through these projects in for example self-their published books. Their buildings utilize for example recycled windows, concrete- and brick elements, and recycled wood. They have not compromised on the quality of the architecture and the recognition given to the projects simultaneously honors the recycled building materials.

To mainstream circular construction it must be supported, promoted, and made easier. Currently finding secondary materials is difficult and time-consuming even if designers and customers are willing to realize a project out of reused and recycled materials. Designers need platforms that help them see where, when, and which materials are available. Sites like materialitorni.fi (“materialsmarket” for selling and buying materials and side streams) must become widely accessible to ease the transition. Designers must also be able to see what kind of materials will be required and available for renovation. For this reason, the building industry must begin to produce, maintain, and utilize “building passports”, frequently updated digital databases which collect relevant material data from the whole lifespan of a building. The passport would make maintenance and planning of renovation, adaptation, deconstruction, and recycling easier.

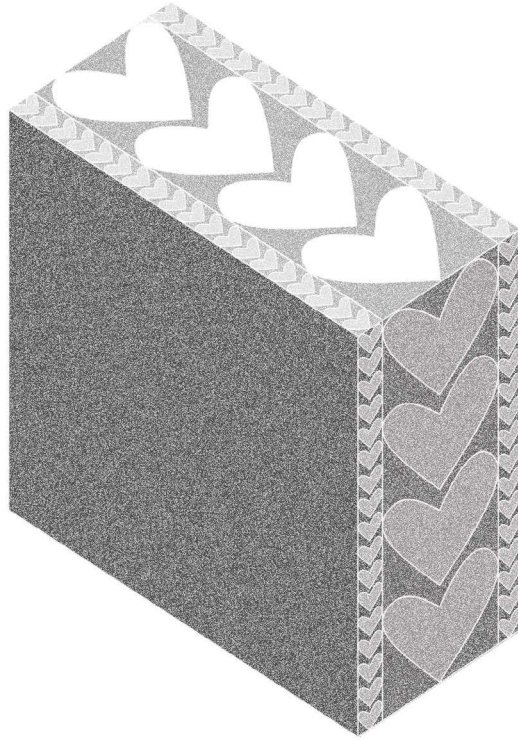
Procurement models must be changed so that a circular economy will be realized in practice. There are varied examples of this, including the particularly fascinating Brummen city hall extension in the Netherlands. It was constructed with the knowledge that the need for the building would most likely be temporary which led to a leasing contract. The agreements also included clauses that material suppliers must repurchase building materials for a set price when the building is dismantled. This means that for economic reasons the building was already from the outset designed for disassembly and value retention. This hopefully ensures value retention if the building reaches the end of its use. In this case, as in many others, the economic incentive is key.

Incentives alone are not enough but must be paired with laws, regulations, sanctions, and penalties. Changes to these are coming soon also in Finland. The land use and building act is being renewed¹

and one of the goals for the new legislation is preventing high emission projects. Different building typologies will have emission budgets. Life cycle assessment will become mandatory. As a result, architects have an excellent opportunity to widen their territory by integrating life cycle assessment (LCA) into their design process. In the best case, simple LCA tools for designers will become available soon, and this will help reduce the emissions from construction. Most of the decisions that impact emissions are made in the early stages of a project. For this reason, life cycle assessment should preferably be done by the architects responsible for the design instead of outsourcing the assessment to consultants who would produce the necessary documentation only for acquiring a building permit. This could also strengthen the position of the architect and increase their understanding of the environmental impacts of construction. Standards also need renewal, as the current building codes significantly complicate the usage of secondary materials.

We architects and other experts in the construction sector must boldly and ambitiously take on climate action, fearlessly adopt new tools and try new ways of working. We will not find the best solutions immediately, but we can and should share our knowledge and our experiences in order to mainstream best practices and learn from previous mistakes. While searching for solutions to our societies' problems, of which the current construction is one of the greatest, we must maintain good communication with our fellow members of society. The issues in the building industry cannot be solved by one profession - we can only tackle them by working together.

¹ Ympäristöministeriö, Maankäyttö- ja rakennuslaki uudistuu -nettisivut [Reform of the Finnish Land Use and Building Act] <https://mrluudistus.fi/> (Accessed March 19th, 2022)



Already now, most of the work done by architects is tied to existing buildings. Reducing the consumption of raw virgin materials and transitioning to a circular economy makes renovating the existing building stock an even more attractive option to new construction. But what do we mean by renovation? Can moving from a societal model of disposability to one of repairing generate new forms of expression and a reshaping of the architectural profession?

7. Sustainable Renovation Planning – How to Repair Buildings

Mira Kyllönen

Mira Kyllönen is an architect working with renovations and historic building evaluations. She is also a member of the Finnish Association of Architects' Repair Construction and Built Heritage Committee.

At the Arkkitehtipäivät [Architecture Days] seminar held in Helsinki, Finland, in May 2021, researcher and architect Satu Huuhka from Tampere University gave a powerful speech on the circular economy in the construction sector. During her speech, Huuhka mentioned, that many architects long for construction methods that utilize natural materials, which can be returned to the natural cycle, should the building be demolished. According to Huuhka, virgin raw materials should not be used for construction at all. Instead, the existing building stock should be utilized and looked after.

The report *To demolish or to repair?* (Finnish: *Purkaa vai korjata*)¹ written by Huuhka and her research group and published by the Finnish Ministry of the Environment in 2021 says: “In order to fight and adapt to climate change, we must avoid causing carbon emissions especially over the next few decades. Based on the studied cases, renovation does this more effectively than demolishing an existing building and replacing it with new construction.”

Ergo, in comparison to new construction, renovation stands at an advantage regarding sustainability; when the assumption is that emissions need to be reduced now, renovation makes sense, as it takes years for improved energy efficiency to make up for the spike in carbon emissions that new construction generates.

However, not all repairs are sustainable. According to the Ministry of the Environment, the building sector generates 35% of greenhouse gas emissions and 30% of waste worldwide. Only 15% of this waste is generated by new construction, with the remaining 85% of construction and demolition waste being caused by renovation and demolition projects. Currently repairing produces substantial waste.²

Repairing or Renewing

What is a repair? Maybe one of the following:

- Maintenance (e.g. painting)
- Fixing up
- Conservation
- Restoration
- Preservatory repair
- Restorative repair, reconstruction
- Layout adjustments (e.g., the demolition and construction of partitions)
- Complete renovation, or refurbishment
- Extensive renovation (comparable to new construction), where all technical installations in the building are renewed
- Changes in use
- Repair of an (old) building and expansion of it
- Construction by utilizing an existing load-bearing frame on site
- New construction using recycled construction parts (e.g. an existing and relocated log frame)
- Demolition of the existing and replacing it with new construction

I invite the reader to mentally draw a line on the list where repair ends, and construction begins. Or to evaluate point by point which category each intervention falls into.

It is interesting to consider what is expected of a renovation. A restoration is successful, when users notice no change, even after considerable work has been done. Hanna Lyytinen gives an example of such a case in the interview “The Sacred Remains” published in the Finnish Architectural Review 3/2021³: “In the midst of constant changes, Lyytinen’s experience is that parishioners long for permanence. Her goal, then, is for the necessary changes

to be so natural that parishioners may not even notice that anything has changed.”

Contrary to restoration, “fixer-uppers” are expected to produce a wow-effect as seen on renovation or interior design programs on TV, where the owners hardly recognize their own home after it has passed through the hands of a professional. Viewers and homeowners expect a transformation, but why is the presented solution so often generic, indifferent to site or context?

Could the starting point of renovation be to reveal the essentials and to underline the fundamental spatial characteristics? Instead of radical changes, the building could be left in a state where visitors are able to read its stories, perceived perhaps through a cherished patina.

Instead of repair, many extensive projects undergo renewal. Sometimes the facades need to be preserved, for instance, due to conservation regulations, but everything else (partitions, floors, interiors, the roof) is redone. Occasionally, “to repair” means to change for something new by replacing the original repairable building component with a new unrepairable one. This is typical for windows and floor materials for instance, where wooden windows are substituted with wood-aluminium ones and parquet is replaced with laminate or another plastic product.

In an article published in the Finnish Architect news AU 3/2021⁴, Miia Perkkiö concludes: “Could renovation not also utilize restoration principles, instead of renewing buildings into a soulless state.”

For the various ways to renovate to become part of the discussion, I suggest that for projects that deal with the existing building stock, the terms renewing renovation and preservative renovation should be used. A distinction, in percentage, for instance, would be made to describe to what extent the building is:

- preserved
- repaired
- altered
- renewed

Renovation Objectives

It is widely thought that the most valuable old buildings, which are protected by law, are the kind to be restored. In Finland, these buildings constitute 2% of the building stock. Restoration, or conservation, is preservative repairing, where all existing material has value. At a time, when we have acknowledged the need for significant emission reduction in the construction industry and are aware of the amount of waste generated by complete or renewing renovation, we cannot limit restoration practices to specific sites only. We must treat the entire existing building stock with the same level of respect. So let’s only undertake the most necessary measures. Let’s keep buildings in use, care for them, and maintain them. Let’s keep renewal to a minimum and when a building is indeed renewed, let’s use materials that can be repaired in the future and components suited for the building.

Conservation and sustainable repair are not easy. For instance, surface materials dismantled to enable structural repairs take up a lot of space when cleaned and stored on the construction site (or in another temporary location) for the entirety of the renovation instead of being taken to a landfill. Structures that are not dismantled need to instead be vigorously protected from the wear and tear of everyday life of a construction site so that they do not need to be replaced in the end. The availability of recycled building components and storage of them also pose challenges. A cultural shift in renovation clearly requires construction sites to develop and implement new processes.

Not all buildings are in such condition, that preservative renovation is possible. If careful consideration results in the conclusion that only renewing renovation is possible, then let’s rather do that, than demolish an entire house. And obviously, when embarking on such a renovation let’s make sure to use materials and components that can be repaired in the future.

When implementing renewing renovations, it is time to forget the prevailing narrow-minded and unimaginative aesthetic and instead celebrate

historical layers and the appropriate styles (and recycled components) of each decade. Let's acknowledge that one-size-fits-all does not work.

Renovation of New Buildings

As I pointed out previously, it is sometimes hard to draw the line between renovation and new construction. It seems, however, that designers of new buildings often want to distance themselves from renovation. Why even try to pit new construction against renovation? Every renovated building has once been a new building. Instead, we need to understand buildings and construction as a whole and look at how to reduce the overall emissions.

If the design of new construction does continue, even after we have established that it does not make climate sense, we need to focus on how these new buildings will fare in the future. And I do not merely mean the timelessness of the massing or façade composition but also how the building as a whole, including its structural solutions and material choices, will fare over time.

An article on the Zero Arctic study conducted by the Finnish Ministry of the Environment, published on the Finnish Architectural Review 2/2021⁵, discusses the resilience of buildings: "Resilience refers to the ability to remain functional in fluctuating conditions and to withstand change. ... Climate change will bring about unpredictable weather conditions, which means that buildings will need to be designed to be repairable, fault-tolerant, and easily maintainable, and they need to allow for flexible utility in varied situations and weather conditions."

Having established that renovation makes more sense than demolition and new construction, I disagree with those that advocate for building design to adapt to the ever-increasing speed of change by designing new buildings for temporality and demolition. Instead, we need to design for permanence both in new construction and renovation. When a building is designed and implemented for resilience, it also enables future renovations to be restorative and require minimal intervention.

¹ Huuhka, Satu et al. 2021. *Purkaa vai korjata? [To demolish or renovate?]* Finnish Ministry of Environment. Available at: <http://urn.fi/URN:ISBN:978-952-361-221-1>

² Finnish Ministry of Environment, Rakentamisen kiertotalous [Circular economy of the built environment] <https://ym.fi/rakentamisen-kiertotalous> (Accessed March 19th, 2022)

³ Oikarinen, Essi. 2021. *The Sacred Remains – Interview with Hanna Lyytinen*. Finnish Architectural Review. Vol.3. 44-49

⁴ Perkkiö, Miia. 2021. *Korjata vai restauroida – korjausrakentamisen ikuinen dilemma. [Renovate or restore - the eternal dilemma of repair construction]*. Arkkitehtiutiset [Finnish Architecture Bulletin]. Vol 3. 20-23.

⁵ Huttunen, Marko et al. 2021. *Zero Arctic*. Finnish Architectural Review. Vol 2. 36-39.

PART III



NEW
EXPRESSION



A ccording to one definition, the purpose of architecture is to shelter human from nature. Conventional futuristic utopias are also often based on the idea of freeing humankind from nature's quirks and demands. This thinking is still evident in the grand visions of our time, such as the attempt to colonize other planets. We are spending an increasing amount of time and resources to separate ourselves from nature rather than caring for the natural cycles that sustain all life. For now, the attempts to liberate humans from nature are far from realistic, but in the meantime, the Earth's carrying capacity is on the brink of collapse. Should architecture's mission instead be to protect nature from us humans?

8. From Anthropocosmism to Ecological Reconstruction – Architecture as a Mediator of Impossible and Possible Realms

Antti Majava

In his work, Antti Majava has brought together experts and viewpoints stemming from science, arts, and other fields. In his doctoral thesis, which employs socio-ecological methods, he studies the effects of nature, society and science on the development of artistic phenomena, and correspondingly, the role of art in socio-ecological and scientific breakthroughs. Majava is a member of BIOS Research Unit.

Photographs of the small blue planet Earth in the middle of great black space taken during the first space flights became a symbol of the environmental movement of the 1960s and 1970s. The symbolic Space Ship Earth, whose vital systems humankind must take care of, was established in public debate. But what kind of system should Earth be seen as, and can it be steered at all? There is still no shared understanding of this.

Russian techno-utopians fantasized already in the 19th century about converting the Earth into a vessel capable of conquering space. Konstantin Tsiolkovski, an early developer of rocket science, believed in anthropocosmism, humankind's ability to control the universe¹.

Some decades later Kazimir Malevich, a pioneer of modernist art and design, introduced in his vast literary works thoughts inspired by thermodynamics of how art, spirituality, energy and technological development could merge optimally through the principle of economic efficiency². This efficiency would enable the separation from the body and of the material sphere of our planet:

"I declare Economy to be the new fifth dimension which evaluates and defines the Modernity of the Arts and Creative Works. All the creative systems of engineering, machinery, and construction come under its control as do those of arts of painting, music and poetry..."

*Today the world's intuition is altering the systems of vegetable world of flesh and bone; a new economic order is being brought about to smoothe the ruts in our creative brain, in order to carry further its plan for moving forward into the infinite."*³

In Gnosticism, which Malevich's visions touch upon, the material realm is an unsatisfactory product of a feeble-minded lesser deity, a demiurge⁴. Malevich thought that people should strive to transcend material existence, to enter eternal, holy emptiness. Development and spiritual pursuits required a large-scale replacement of organic nature with modern techno-economic design according to Malevich and many other modernists.

The Futurist artist Osip Brik relayed what Malevich explained to him:

*"The earth's surface is not organised. It is covered with seas, mountains. Some nature exists. I want to create instead of that nature, a Suprematist nature, build pursuant to laws of Suprematism."*⁵

Simultaneously, partly within the same circles, organic thinking grew: man was seen as one species among others, and societies as part of a wider ecological system. The human mind and body were understood as deeply entwined, and both were perceived to be completely reliant on nature surrounding the body. Human knowledge was seen as insufficient, and thus it was important to apply a precautionary

principle to the technical development and planning of societies. Artist Mikhail Matyushin describes organic thinking as follows:

*“The term ORGANIC CULTURE comes from the understanding of a series of evolutionary achievements and concepts of nature and the world as a single integrated organism. An organic understanding of life means to consider oneself as part of the world and its overall organism.”*⁶

Hannah Arendt’s 1958 monumental work *Vita Activa* begins with a description of the first flight of the satellite Sputnik⁷. Arendt contemplates why this contraption orbiting the Earth is so special to humankind. Arendt interprets it as a product of a long cultural narrative, in which humans have for one reason or another started to experience their bodies and eventually the planet they inhabit as a prison rather than an enabler of life.

In 1968 a group of leading designers at the time convened in Suomenlinna sea fortress in Helsinki to discuss the ecological and material dimensions of industrial design. Buckminster Fuller, a participant, also referred to the Earth as a spaceship and noted that modern hubris would quickly destroy the systems of this ship. Reading the catalog of the event now, one can but wonder how well global environmental issues were already understood at that time⁸.

A milestone of Nordic cultural environmentalism was also the Ararat exhibition at the Museum of Modern Art in Stockholm in 1976. The exhibition, which remains one of the most popular the museum has ever held, gathered developers of ecological art, architecture, design, and technology in an attempt to build an alternative for industrial modernity⁹. The creators were especially inspired by the *Whole Earth Catalog* published in the United States in 1968-1972, whose cover image was a recent photo of planet Earth¹⁰.

The picture of our planet, taken from space, met with humankind whose view on the foundations of life was fundamentally divided. The space flight itself depicted this conflict, where the planets’ uniqueness

and the fragility of its systems were understood better and better, but simultaneously the belief in the omnipotence of humanity and our capability to supersede the material sphere was stronger than ever.

A landmark of sustainability thinking, the *Limits of Growth* report¹¹ emphasized the precautionary principle in relation to changing natural systems. The report was written off in societal and economic discussions using techno-utopic arguments, or the belief that the boundaries of growth can be exceeded with innovative new technologies. Subsequent development has unfortunately closely followed the reports’ threatening predictions¹².

The current wave of environmental concerns speaks of a deepening suspicion towards techno-utopian narratives. The knowledge produced by natural sciences as well as the experiences of the masses prove that our planet is on a catastrophic trajectory caused by the technological and economical fantasies we have created, which are not based on an understanding of the planet’s and humans’ actual resources and capabilities.

In Finland and in numerous other countries there have previously been concerns about the state of the environment. Almost all parties represented in the parliament of Finland published election programs and principles in the 1980s’ and 1990s’, which centered on tackling the ecological crisis¹³.

The Centre Party’s platform draft from 1987 goes so far as to state:

*“The environmental perspective must be given superior importance in the political and economic decision-making of industrialized societies such as Finland. The core reason for environmental problems is the untenable economic growth which is based on the extravagant use of natural resources and the ignorance of scars left in the environment as a product of that growth.”*¹⁴

From these awakenings we have quickly fallen back into our slumber of growing consumption. The richest and most revered individuals of our time

– tech, social media, and electric vehicle billionaires – as well as many states still invest significantly more resources into space programs than climate change mitigation. Even the legendary cosmologist, the late Stephen Hawking, saw space programs as the only savior of humanity as our planet’s living conditions would in his view inevitably be destroyed by our absurd activities.¹⁵

Getting even one person to the planet nearest to us – which is unlikely to be capable of sustaining life in any form known on Earth – is still but a speculative possibility?¹⁶ The likelihood of humans being able to terraform Mars or that it would be possible to house billions of people in artificial biospheres on space stations even over a time span of several millennia is astronomically small. Environmental and climate disasters caused by humans, on the other hand, are likely to cause the collapse of our civilization (and thus any possibility of developing space travel) in the next few decades.¹⁷

The economy, whose role in societies has grown ever stronger, is also based on fantasy - that of perpetual growth, which is impossible in the material realm. Academic knowledge and observations of the development of the ecological crisis and the failures of preventative measures thus far have succumbed to the massive corporate lobbying, marketing, and advertising machinery, which perpetuates the myth that consumption can continue to grow while environmental threats are being dealt with¹⁸?

Self-reflection in Design

After the revolution, suprematism became a dominant artistic movement in the young Soviet Union. Malevich gravitated more and more towards architecture, as he felt it enabled him to realize artistic experiments in the real material world.

“And this is possible when we free all art of philistine ideas and subject matter and teach our consciousness to see everything in nature not as real objects and forms, but as material, as masses from which forms must be made that have nothing in common with nature.”¹⁹

Malevich’s view of spiritual growth for the purpose of transcending the material realm maximized by economic efficiency is an apt portrayal of the inherent emptiness of efficiency-thinking. Increasing performance has not led to increased efficiency for a long time anywhere else except in self-perpetuating abstract matrices of the economy?²⁰ Another befitting depiction of the logical failings of modern economics is that we cannot find the funds necessary to resolve the ecological crisis which threatens the very existence of our societies and economic systems.

The cycle where technology and the economy compound each other’s senselessness must be broken and technology must instead be tied into close interaction with knowledge of ecological systems, sciences, and cultures. This way technology could become an expression of the interaction between humans and natural systems without an intrinsic, obscure goal of separating humanity from these systems.

The organic thought of fundamental cosmic unity does not mean the dilution of differences into a gray mass. This type of development is in fact more common for techno-economies that on the surface appear to promote individuality, but where corporations produce ever greater numbers of increasingly similar products. The father of innovation theory, Joseph Schumpeter, believed that an innovative capitalist economy will sooner or later approach communism through corporatism.²¹ The organic framework on the other hand is built on a foundation of immense diversity and the plurality of livelihoods and strategies.

Economy and technology should serve the pursuit of a good life, though a good life eludes easy definition. Architects’ visualizations come to mind. Do they not attempt to justify buildings or structures by stirring up ideals of a good life? Hypercharged housing and business property markets impart that the dream of a good life often manifests itself as desirable spaces, moments, atmospheres; the pursuit of a specific style of existence.

The Bliss of Metabolism

75% of the surface area of the Earth is already heavily impacted by human activity, and the rest of it is

inevitably shifting further from its natural state also due to climate change.²² Architects are involved in nearly all building projects that modify the planet. Though architects do not usually decide about the realization and funding of the projects, they create the desirability of the new structures.

Architecture can be interpreted as a socioecological process where material and ecological factors meet human social and cultural spheres. Socioecological research focuses specifically on recognizing the colonial approach human civilizations have towards nature²³. Suprematism and several other modernist schools of thought where nature is seen just as matter and a source of resources for humans to utilize in order to reach their goals can be considered prime examples of a colonial relationship with nature²⁴.

Socioecological research can identify different feedback loops where the environment and its change or human views of the environment affect the development of society and culture, which in turn impacts the environment.²⁵ Architecture can be seen as such a loop, which reacts to the environment and changes in its perception, but also, directly and indirectly, creates new environments and perceptions thereof.

Energy is often discussed as a techno-economical product, the perpetually increasing need of which engineers are desperate to meet. Societal and cultural energy research asks instead what we need energy for, and how energy transmutes into social practices²⁶. In this analysis, the quality of energy and the opportunities it creates are of key interest over the quantity of energy.

As we spend most of the available energy and resources on building and the use of buildings, the question of energy shifts to the question of building: what do we need it for, and how can each building enable meaningful social practices and wellbeing? Could an architect advise against the building of a structure that does not increase the quality of life but must still be heated or cooled for decades after construction?

Buildings and society are extensions of humans, bodies, and minds, as are nations' energy and material flows. Instead of severing ties between corporeal

experiences and natural systems, the connection could be emphasized. What kind of architecture could encourage us to draw inspiration from bodily experiences and planetary and life-sustaining flows rather than impossible cosmic visions?

Ecological Art of Reconstruction

Reconstruction after the Second World War was the golden era of modern architecture. Could ecological reconstruction, or the shifting of society towards a more sustainable path as quickly as possible, create unforgettable architecture in the process? I cannot think of a single reason why not.

The infrastructures of energy production and distribution, industry, transportation, and consumption must be largely rebuilt in just a few short decades²⁷. We must dismantle much of the old fossil infrastructure and build new low-carbon structures. We must recycle shopping centers and offices into apartments and meeting places, roads into parks. We must create combinations of flood barriers and water-based heat exchangers, and who knows what else. This is a challenge that cannot be undertaken without architects. Enabling new uses for spaces or even bringing about a complete sustainability transformation on a societal level with minimum intervention is the starchitecture of our time.

For a human individual, metabolic issues which manifest as mental and physical symptoms are cared for in multidisciplinary health teams²⁸. Adopting this approach of caring for the ill could help us treat the wicked social metabolic disorder threatening the continuity of our society.

Currently, despite good intentions, architecture and urban planning usually only serve to weaken the state of the patient society. Knowledge of the systemic effects of the ecological systems which sustain society and individuals is equally crucial in material planning and ecological reconstruction as knowledge of the human body and mind are in medical care.

The development of medical knowledge is carefully controlled, and new treatments must pass rigorous

testing to be approved. Spreading misinformation which puts patients at risk leads to expulsion from the medical community. In the case of socio-ecological systems such care is not taken to vet procedures or weed out misinformation. Ecological planning and design require strong education and capability for critical knowledge gathering.

Rebuilding society to abide by ecological boundaries requires numerous experts familiar with different systemic patterns. It is important to cherish multidisciplinary collaboration. In addition to architects, we do not yet have many professions where material, economic, technical, social, cultural and hopefully soon also ecological understanding would merge. The body and mind, the environment, micro-level personal experiences and macro-level global systems should be combined into this same picture. Only by collectively recognizing all these dimensions simultaneously can we prevent humankind from running into intellectual and ecological bankruptcy.

¹ Rocketry, NASA. Available at: <https://www.nasa.gov/audience/foreducators/rocketry/home/konstantin-tsiolkovsky.html> (10.12.2021)

² Malevitš, Kazimir S. 1968. *Essays on art 1915-1928, Vol. I*. Borgen. Copenhagen.

³ Malevitš, Kazimir S. 1968. *Essays on art 1915-1928, Vol. I*. Borgen. Copenhagen: 89, 117

⁴ Department of Exegesis, University of Helsinki. Gnostilaisuuden määritelmä -webpage [definition of gnosticism]. Available at: http://www.helsinki.fi/teoll/prolognostil/agnostilaisuus/gnostilaisuuden_maaritelmä.html (15.10.2020)

⁵ Lodder, Christina. 2012. *Man, Space, and the Zero of Form – Kazimir Malevich's Suprematism and the Natural World*. In Crowther, Paul & Wünche, Isabel (edit.) *Meanings of Abstract Art, Between Nature and Theory*. Routledge. London: 60

⁶ Wünche, Isabel. 2011. *Organic visions and biological models in Russian avant-garde art*. In Botar, Oliver I. A. & Wünche, Isabel (edit.) *Biocentrism and Modernism*. Ashgate Publishing. New York: 129

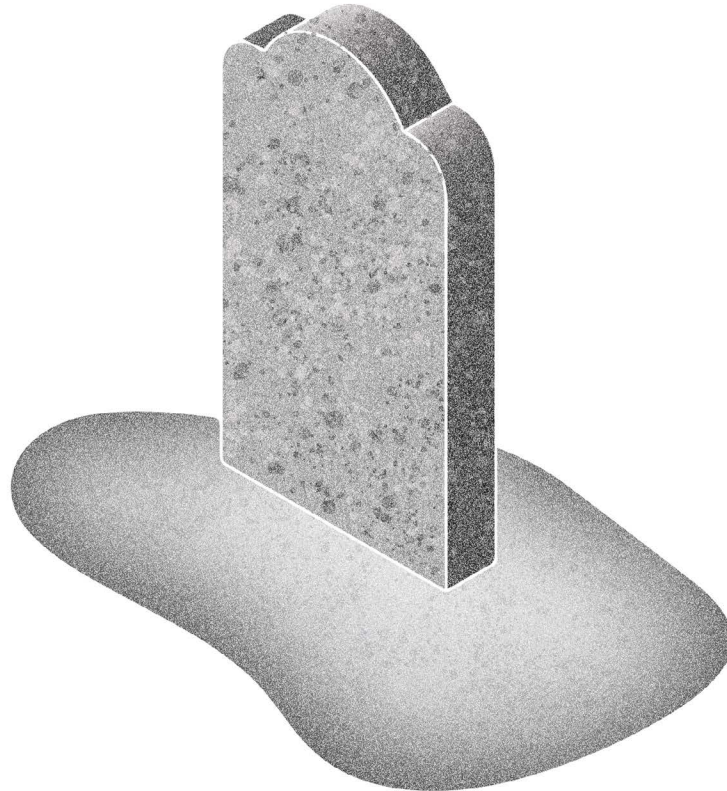
⁷ Arendt, Hannah. 1958. *The Human Condition*. 2nd edition. The University of Chicago Press. London. (1998): 1-6

⁸ Sotamaa, Yrjö (edit.). 1968. Skandinaviska Designstuderandes Organisation (SDO) [Organization for Scandinavian students of design] 2. SKK. Helsinki. Reprint of the catalogue. HIAP 2020.

⁹ Jansson, Ulrika. 2015. In Search for Ararat -webpage. Available at: <https://insearchforararat.wordpress.com/inspiration-to-ararat/> (10.12.2021)

¹⁰ Wikipedia s.a, Whole Earth Catalog -webpage. Available at: https://en.wikipedia.org/wiki/Whole_Earth_Catalog (10.12.2021)

- ¹¹ Meadows, Dennis; Meadows, Donella H.; Randers, Jørgen; Behrens, William W. 1972. *Limits to Growth - A report for the Club of Rome on the predicament of mankind*. Universe Books. New York.
- ¹² Herrington, Gaya. 2020. *Update to limits to growth: Comparing the World3 model with empirical data*. Journal of Industrial Ecology 25:3, 614-626 and Turner, Graham (2014). *Is Global Collapse Imminent?*, MSSI Research Paper No. 4, Melbourne Sustainable Society Institute, The University of Melbourne.
- ¹³ Majava, Antti. 2018. *Puolueissa herättiin ympäristöongelmiin*. [Political parties awoke to environmental problems] Poliitikasta.fi online publication. Available at: <https://politiikasta.fi/puolueissa-herattiin-ymparistoongelmiin/> (10.12.2021)
- ¹⁴ Suomen keskusta. 1989. [Finnish Centre Party platform for the 1990s (draft)]. Pohtiva online database for political platforms. Available at: https://www.fsd.tuni.fi/pohtiva/ohjelmalistat/KESK/215?start_year=1987&end_year=1992&setting1=0&type2=yleisohjelma&type1=vaaliohjelma&type3=erityisohjelma&type4=muu_ohjelma&party1=PARLIMENTARY&party=KESK&language1=FI&language2=SV&stext (18.12.2021)
- ¹⁵ Hawking: *Humans at risk of lethal 'own goal'*. 2016. BBC news January 19th, 2016 -webpage. Available at: <https://www.bbc.com/news/science-environment-35344664> (15.12.2021)
- ¹⁶ Grant, John. 2021. *Is there Life on Mars*. Smithsonian Magazine online publication. Available at: <https://www.smithsonianmag.com/blogs/air-space-museum/2021/02/25/there-life-mars/> (12.12.2021)
- ¹⁷ Barnosky, Anthony D.; Hadly, Elisabeth A. 2016. *End Game -Tipping Point For Planet Earth?* HarperCollins. London.
- ¹⁸ Vaden, Tere; Lähde, Ville; Majava, Antti; Toivanen, Tero; Eronen, Jussi; Järvensivu, Paavo. 2019. *Onnistunut irtikytkentä Suomessa?* [Successful decoupling in Finland?]. *Alue ja ympäristö* 48:1 3-13.
- ¹⁹ Malevitš, Kasimir. 1915.: *From Cubism and Futurism to Suprematism: The New Painterly Realism*. In John E. Bowl (ed.) *Russian Art of the Avant-Garde Theory and Criticism 1902-1934*. Thames & Hudson. London: 123
- ²⁰ Yliaska, Ville. 2014. *Tehokkuuden toiveuni-Uuden julkisjohtamisen historia Suomessa 1970-luvulta 1990-luvulle*. [A history of public management in Finland from the 1970s to the 1990s]. Into. Helsinki.
- ²¹ Schumpeter, Joseph A. 1943. *Capitalism, Socialism and Democracy*. Taylor & Francis e-library 2003. Available at: <https://eet.pixel-online.org/files/etranslation/original/Schumpeter,%20Capitalism,%20Socialism%20and%20Democracy.pdf> (13.12.2021)
- ²² IPBES 2019. Summary For Policy Makers of the IPBES Global Assessment On Biodiversity and Ecosystem Services. Available at: https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf (12.12.2021)
- ²³ Fischer-Kowalski, Marina & Haberl, Helmut (eds.) 2007. *Socioecological Transitions and Global Change*. Edward Elgar Publishing Limited. Cheltenham: 18
- ²⁴ Majava, Antti 2021. *Aineettomuuden jalanjälki -Suprematistinen modernismi globaalin ympäristökriisin kontekstissa*. [The footprint of immateriality - Suprematist modernism in the context of the global climate crisis]. In Johansson, Hanna & Seppä, Anita (eds.) *Taiteen kanssa maailman äärellä, kirjoituksia ihmiskeskeisestä ajattelusta ja ilmastonmuutoksesta*. Parvs. Helsinki: 244-253
- ²⁵ Berkes, Fikret & Colding, Johan & Folke, Carl 2003. *Navigating Social-Ecological Systems*. Cambridge University Press. Cambridge: 1-30
- ²⁶ Shove, Elisabeth & Walker, Gordon. 2014. *What Is Energy For -Social Practice and Energy Demand*. *Theory, Culture, Society* 31:5 41-58.
- ²⁷ Research Unit BIOS. 2019. Ecological Reconstruction website. Available at: <https://eco.bios.fi> (December 10th, 2021)
- ²⁸ Eating disorders. 2019. Finnish Student Health Service webpage. Available at: <https://www.yths.fi/en/health-information-resource/eating-disorders/>



As *creativity* is considered synonymous with the production of something new, architects are primed since university to pursue making their mark on the cityscape. Simultaneously, the definition of ambitious architecture has shrunk over the past decades to refer mainly to new construction. This kind of design work will inevitably become rare in the future, which poses the question of what the best architecture of our time should be. Do we give up the modernist ideal of the creative genius or will an architect that questions the whole prevailing paradigm of construction become our contemporary hero?

9. The Death of the Starchitect – or the Birth?

Panu Savolainen

Panu Savolainen is an architect and historian, and a professor (tenure track) of architectural history and restoration at Aalto University. He specializes in older architectural heritage and historical theory.

What makes a successful architect and what do we mean by success in architecture? Who is a starchitect? The idea of an individual or team consisting of a handful of designers, landing competition prizes for flashy new buildings lives persistently in the minds of architecture students and those in the early phases of their careers. Architecture has been and largely still is considered to consist mostly of unique, entirely new works of art, in the spirit of the modernist paradigm, with the architect as the shining star. Awards, architectural competition programs, and media attention perpetuate this conventional model.

This powerful personification of the architectural creation into a single human individual is one of the cornerstones of modern architecture. Since the early days of humanity, the design of a building and its implementation has always involved leadership of some sort, but the idea of a building or city being so strongly personified with the designer emerged during the Renaissance and blossomed during the 1900s. As buildings became the artistic masterpieces of an individual, it meant that the supernatural or God, natural resources, and the authorship of the artisan faded into the background.

In the literary sciences, the critique of authorship known since the 1960s as the death of the author (*la mort de l'auteur*) is a thoroughly critiqued and debated theoretical discourse. The movement did influence architecture already then, being one of the phenomena to increase the appreciation for vernacular architecture. Its impact, however, did not significantly extend to the self-awareness of the architect and to the crowning glory of designership, the gold plating of which has shone brightly to this day.

As a single species is now threatening most of the biosphere with its actions, we must ask ourselves what kind of legacy we wish our time and profession to leave future generations. No other human activity as current construction causes equally irrevocable or non-disposable objects. Whether these objects become cherished cultural heritage, waste, or something in between is a question of values as well as of technical construction. Currently, it seems that the speed at which architecture turns into waste is accelerating. In East Helsinki, for instance, the lifespan of three buildings might fit into that of a human, at worst, and even monuments (*sic*) are occasionally crushed to fill out roadbeds. The ratio should be the opposite. To the extent that the problem is in the hands of the architect, it is solved by innovations in preservation, through design, but also by writing and discussion.

Advocates for preservation and protection, even within the architectural profession, were considered a strange marginal group only fifty years ago. The pamphlet, *Kenen Helsinki!* [Whose Helsinki], was considered a demerit in the application process for a professorship at the Department of Architecture at the Helsinki University of Technology. Critiquing new construction lay with a handful of pioneers. Today, the disapproval of widespread new construction is no longer the babble of a radical student faction, but the stuff of anniversary interviews of older architects. Hence, we need to seek new directions, ideas, and thoughts on what architecture is in a post-humanist and biodiversity-respecting era. The tide is turning within the profession, but other sectors of society still remain largely untouched by it.

In the twilight of the Anthropocene looms the death of a conventional starchitect – or at least he or she must shed the white coat and be reborn. And what clothes will the profession, now forced to redefine architecture, choose to wear?

A classic method for dismantling glorified personality cults is to elevate marginalized voices or those that history forgot. In the 1990s, French historian Alan Corbin published *Le monde retrouvé de Louis-François Pinagot, sur les traces d'un inconnu, 1798-1876*. The work represents the genre of everyday history, which had already surfaced in previous decades. Corbin, however, took this to the extreme: from local tax records he picked a name at random, about whom to write a biography. His finger chose clog maker Louis-François Pinagot, about whom barely any sources existed. Corbin reconstructed an entire world around Pinagot, elevating one coincidental individual to challenge the history of 19th century France written through the achievements of great men.

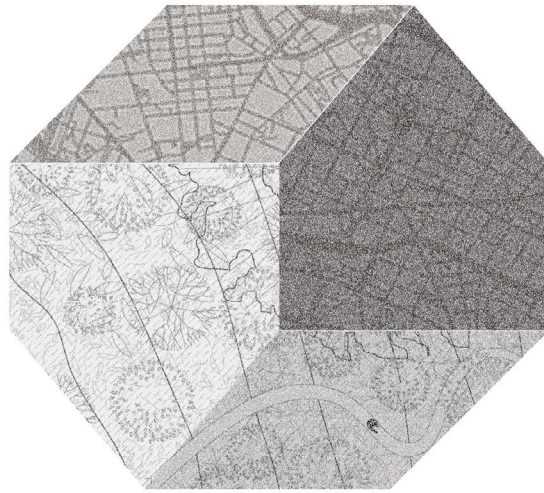
The rise of Pinagot, a clog maker forgotten by the world, to global fame is an intentionally ironic but also a humane way to write history. Corbin critiques – sharply, sometimes even snidely, but always between the lines – the writing of history focused on the achievements of great men. Concerning architecture, to elevate the designers of some lonely shack or primitive dwelling to the status of starchitect would be a hopelessly outdated way to go. The death and rebirth of the starchitect may extend to questions that fundamentally upend the concept of architecture and question its relevance. At the very least it will lead to a crumbling of the modernist architecture paradigm.

Examining the origins of architecture and material and energy flows is the most radical way to approach the subject. The strong association between architecture and its designer disregards the many factors, animate and inanimate, to which we in fact owe the comfort and aesthetics we find ourselves surrounded by. Should we adopt a mindset, where we appreciate the natural processes that produce our construction materials, including living organisms such as trees, and give them similar authorship as the designer, a mindset typical to indigenous populations that have a respectful and sustainable relationship to resources? Another relevant question is whether we in fact need architecture. For most of history, humans survived without architecture. Humankind opened Pandora's box approximately ten thousand years BCE when permanent settlements were formed.

We may experience the end of architecture or at least architecture as we know it today. The “end of history” was foreseen three decades ago, based on the idea that all possible developments of humankind had already occurred. In terms of architecture, this is an interesting thought. Clay plaster, used by humans for millennia, has experienced a resurgence appearing in interior magazines and replacing glulam and plasterboard. Is there anything left to discover and above all why are newness and discovery particularly valuable to architecture? The question itself remains more important than its various answers, which will interest generations yet to be born more than they do us today.

¹ Helander, Wilhelm; Sundman, Mikael. 1970. *Kenen Helsinki*. [Whose Helsinki]. WSOY. Helsinki.

² Corbin, Alain. 1998. *Le monde retrouvé de Louis-François Pinagot, sur les traces d'un inconnu, 1798-1876*. Flammarion. Paris.



We are used to hearing that the climate potential of architecture lies in technical improvements that reduce emissions or require less natural resources to produce. These are, however, construction-related innovations that can be carried out even without the involvement of architects. As the collective guilt mounts over mankind's destruction of the planet, various fields of the arts are turning to posthumanism. Architecture has been slow to follow suit but is coming around to this way of thinking as well. Can environmentally conscious posthumanist architecture rebuild the connection between the cultural significance of construction and its physical manifestation?

10. Aesthetic Experience and Agency of Environmental Architecture – Could Beauty Save the World?

Maiju Suomi

In her design work and research Maiju Suomi examines how architecture can contribute to dismantling the dichotomy between nature and culture. Suomi is pursuing an artistic PhD on the topic in the Empirica research group in the Department of Design at Aalto University, Helsinki. In her work as a teacher at the Department of Architecture at Aalto, she endeavors to foster the perception of architecture as a medium of societal debate and change.

Living as a member of the human community in the 2020s amidst a complex environmental crisis requires continuous ethical consideration. Each day we receive more information on the devastating impact our species has on the life-sustaining processes of our planet. The climate crisis, loss of biodiversity, and deforestation cut to the core of our existence and simultaneously threaten the necessities of life for millions of other species. We must rethink our position as part of a living Earth. Research on biology and ecology draws a picture of how entwined our existence is to living organisms and inorganic things. Our well-being is directly reliant on the balance of our planet's ecosystems. Are we missing the link between knowledge, ethical consideration, and the practice of ethical behavior?

In this text, I examine the potential architecture has to take part in the environmental discussion through its aesthetic expression. In architecture, environmental questions have mainly been dealt with pragmatically, concerning quantifiable aspects of buildings. The focus has been on the consumption of materials and energy. Mediating new thoughts and meanings through spatial experiences has been left aside. As we search for a sustainable way of life on our planet, societal change must reach a deeper level than that of making our current processes more efficient. We must re-evaluate our priorities and world views. Architecture as a form of cultural expression provides a medium for this endeavor.

As art forms go, architecture is in a unique position, as it is simultaneously a concrete element in the

environment of our daily lives, as well as a meaning-laden cultural structure. We inhabit architecture. It shelters us from the forces of nature and molds our environment to suit our needs. It also characterizes our connection to the surrounding reality - and therein lies its transformative power. The built environment shapes our relationship with the world. Architecture can consolidate dominant values or bring forth a new perception of our place in the living organism that is our planet.

Professor of Architecture Susannah Hagan¹, among other critical voices, has argued for a more integrated approach to environmental architecture operating both in the realms of technology and art. We need technical research and practical applications which allow us to minimize the environmental impacts of building in practice. This alone is not enough, however. To have societal influence, architecture must be capable of communicating on a cultural level through its aesthetics. Environmental architecture must simultaneously be an environmental act as well as its symbolic representation.

The relationship between ecological objectives and beauty, as the multisensory spatial experiences and narrative qualities of the built environment, has been complicated. Aesthetics have been seen as a separate layer to be added on top of the hard core of sustainable, resource-conscious architecture. Sensorial qualities are a luxury, something we cannot afford amidst the struggle for survival. But is it not beauty that can disarm us, and help convey new thoughts in ways that simple facts cannot? Aesthetic

experiences can speak to us on an emotional level, leaving a trace and inviting us to re-evaluate that which we previously knew for certain.

Political theorist and philosopher Jane Bennett² builds a bridge between ethics, aesthetics, and politics. She emphasizes the relevance of human emotional states for ethical re-evaluation. She specifically refers to a state of enchantment, an openness to the unusual, a mix between delight and disturbance. Bennett argues that the animating force of an emotional experience may lead the way for ethical thinking to turn into ethical action. Architecture has the power to lead us into surprising new experiences in the middle of our everyday environment. What if we utilized this potential to create new ways to experience the relationship between nature and our culture? Knowledge alone cannot make us question our way of life. We need new cultural tools with which to examine our relationship with the environment. Narratives, images, and spaces can move us to change the world.

Searching for the Form of Environmental Architecture

What can we base the aesthetic expression of environmental architecture on? Here I will examine different principles of identification and design, which can help us approach form-giving in environmentally conscious architecture.

Architecture alone cannot create societal change, but it can foster change by making it visible in our shared environment. Susannah Hagan³ calls for architecture which operates both on the level of the quantitative and the experiential. Environmental architecture needs to express aesthetically its operational goals to improve the state of natural environments. This does not lead to a specific style but rather to an attitude which can take countless physical forms.

Architecture is always born in relation to place and its natural and cultural characteristics. Contextual design is one of the main principles of environmental architecture according to both Hagan⁴ and architect

Lance Hosey⁵. A thorough understanding of a projects' context creates a basis for design choices that both conserve energy and materials, and allow for a site-specific identity to emerge. Through adapting to its environments, architecture creates cultural diversity. Experientially attaching a building to its context roots it in place and its perpetual state of change. We are not separate; our dwellings are born in connection to their surroundings.

A reciprocal relationship with nature also acts as a basis for the functions of a building. Hagan⁶ notes that the function of architecture must be based on symbiosis with natural processes. A building forms a dynamic structural and functional system which in turn is related to other systems also in flux. Design must seek to nurture these relationships, not harm them.

In the principles of ecologically sustainable design Hosey⁷ highlights conservation of resources and energy. How do we utilize natural resources as efficiently as possible to meet our spatial needs? Our societies must learn to create welfare for all with ever fewer resources. As designers, we must rethink both spatial needs and ways to meet them. Our material consumption needs to recognize scarcity and rely on reuse and recycling. If, after careful consideration, we decide to build something new, the building must serve its users for several lifetimes.

How can we ascertain the longevity of a building? We often look at this through material and functional durability, forgetting the cultural aspects. What keeps a building in use over generations? Lance Hosey points out the connection between pleasure and caretaking. We only care for that which we love. Our built environment should thus produce well-being and feel meaningful across generations. But what kind of places bring joy to human beings? I wonder if many of the environments we build today increase well-being. Is it even very high on the list of values guiding contemporary design? Both Hosey and architectural critic Sarah Williams Goldhagen⁸ examine perspectives psychology and neuroscience provide for environmental design. The form, light, colors, sounds, and textures of our spaces deeply affect our worldly experiences. Our multisensory,

partly unconscious experience of our environment colors our mental state and thinking more than we have understood. In a world of dwindling resources, it is natural to think that each building should promote well-being, for humans but also for other species. While environmental architectural discourse already extends to the aesthetics, the sensory experiences, and their power for cultural expression, it is still very human-centered.

The theme of environmentally conscious architecture is not new as such. The relationship to place and the natural forces which define space, as well as conserving resources, bear the imprints of vernacular architecture and the ways indigenous peoples inhabit their environment. Western architecture and the ontology it is based on have just forgotten these principles and been fooled into regarding themselves as separate from nature. Now we can reconnect.

Binding Together Culture and Nature

Western culture has dealt with humans' relationship to nature as a dualism. We perceive ourselves outside of, or rather above nature. The late environmental philosopher and ecofeminist Val Plumwood⁹ bases the ecological crisis on the divide between humans and nature dominating Western thinking. Dualism as a defining principle justifies both masculine control and control over nature. Rationality separates man from animal, knowledge from emotion, mind from body. The latter is always subordinate and instrumental to the first. To reach the core drivers behind the environmental crisis, we must weave our existence back into connection with nature. I will now examine theoretical deconstructions of this dualism and reflect what it implies for our view of architecture.

Multispecies feminist theorist, Donna Haraway¹⁰ explores the naturecultures of multiple species, where cultural and natural domains are intrinsically entwined. We are shaped by other species. Our existence is part of a shared complex web of living and dying. Haraway bids us to "stay with the problem" and find ways to inhabit a wounded Earth together with nonhuman things. We cannot grasp easy

solutions like reliance on fast technological advancement or divine intervention. We must instead accept our dependency on our planet's welfare and take responsibility for our actions as part of global systems. Staying with the trouble can happen through storytelling, play, and working towards building new possible futures. Haraway invites us to create new forms of culture to examine the collaborative shaping of our existence.

In "Vibrant Matter", Jane Bennett¹¹ presents principles for new materialism and the concept of vital materiality. We are accustomed to thinking of material as immobile, passive, an instrument to be used by living creatures, but Bennett introduces the mutability and active agency of matter. Living matter connects humans and other species, organic and inorganic creatures, and leads to entwined existence, where things have agency regardless of their humanity. This equalizes our relation to nonhuman matter and helps us transcend human-centered thinking. Nature and caring for it is no longer separate from us, outside, around us - we become part of a whole.

Science and technology scholar Maria Puig de la Bellacasa¹² connects feminist critical thinking on care with more than human ontologies and ecological practices such as permaculture. She explores the ethical ramifications of broadening our conception of care as something that only humans do into a living web of care in which all of the natural world takes part. Caring enfolds everything we do to sustain life and its diversity in connection with the more than human world. How does the world care for us? We would not have homes or nourishment if other species did not in countless ways help to sustain our life. Can we take responsibility for our role in this system?

Western dualism, our imagined separation from nature, manifests in our relationship to architecture in many ways. We are accustomed to thinking of the line drawn by architecture between humans and nature as clear and impassable. We control internal conditions and shut out otherness. We build ourselves safe and comfortable spaces that the threatening unfamiliarity of nature cannot touch. What kind of shapes would architecture take if we made space for

nature, matter, our body, emotion, the animals in us, and others? Posthumanism and new materialism provide a theoretic background for architecture that entwines instead of ripping apart.

The thought of separation keeps us distant from a community that transcends humanity. It enables resource thinking - nature as raw material, the conception, use, and discarding of which has no consequence. If we heed the call to reframe the narrative of our relation to other species, matter, and life-sustaining processes, what kind of realities do we create? Control founded on dualism shifts and becomes reciprocal, requiring the redefinition of how we see ourselves and others. How can we represent this paradigm shift through the medium of architecture?

Finally

There is space for beauty. Beauty is a downright necessity. Why fight with one arm bound, if we could speak to people through aesthetic experiences? Environmentally conscious architecture cannot afford to ignore its power of cultural expression as part of societal discourse.

What form that expression takes depends on individual perspectives and priorities. We need a multitude of voices to find a way to speak of the environmental crisis through architecture. We must face the challenge of building alternate realities. They will communicate to others that change is possible.

¹ Hagan, S. 2001. *Taking Shape: A New Contract between Architecture and Nature*. Architectural Press. ja Hagan, S. 2008. *Five Reasons to Adopt Environmental Design*. In: Saunders, W. (ed.), *Landscape and Building for Sustainability: A Harvard Design Magazine Reader*. University of Minneapolis Press.

² Bennett, J. 2001. *The Enchantment of modern world*. Princeton University Press.

³ Hagan, S. 2001. *Taking Shape: A New Contract between Architecture and Nature*. Architectural Press.

⁴ *ibid.*

⁵ Hosey, L. 2012. *The Shape of Green: aesthetics, ecology, and design*. Island Press.

⁶ Hagan, S. 2001. *Taking Shape: A New Contract between Architecture and Nature*. Architectural Press.

⁷ Hosey, L. 2012. *The Shape of Green: aesthetics, ecology, and design*. Island Press.

⁸ Goldhagen, S. 2017. *Welcome to Your World: How the Built Environment Shapes Our Lives*. Harper Collins Publishers.

⁹ Plumwood, V. 1993. *Feminism and the Mastery of Nature*. Routledge.

¹⁰ Haraway, D. 2016. *Staying with the trouble: Making kin in the chtulucene*. Duke University Press.

¹¹ Bennett, J. 2010. *Vibrant matter: a political ecology of things*. Duke University Press.

¹² Puig de la Bellacasa, M. 2017. *Matters of care: Speculative ethics in more than human worlds*. University of Minnesota Press.

