The end is nigh;

pigs, nettles, and design at the end of the world

Joseph Curle

This document is bound with nettle yarn.

Embedded in the cover is a fragment of nettle wood.

The nettles were foraged on two trips, first to Bois de la Bâtie *in Geneva and then the village of Chancy, nearby*

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“I said it was hard to make a gripping tale of how we wrested the wild oats from their husks, I didn’t say it was impossible.”

Ursula K. Le Guin (1986)

“The modern human conceit won’t let a description be anything more than a decorative footnote.”

Anna Lowenhaupt Tsing (2015)

0.0, abstract

The concept of capitalism infecting our ability to imagine alternative ways of being is epitomised perhaps most famously in the quote "It's easier to imagine the end of the world than the end of capitalism." (Fisher 2009, 8) **Whilst this inhibition of our imagination has created a pervasive sense of ubiquity and *realism* that is difficult to escape, the growing climate crisis has underscored the urgent need to try.**

Ursula K. Le Guin, Anna Lowenhaupt Tsing and Arturo Escobar have expressed the need for other, subversive imaginaries and this paper seeks to bridge the gap between modern capitalism and those visions by examining present day signals—such as Kunlé Adeyemi's *African Water Cities* project and Atelier LUMA's *Pratiques de Design Bioregional* methodology—towards constructing an alternative material praxis.

Through critical analysis of and practical experimentation with the qualities of the identified signals, I will explore alternatives to the material

modes of modernity and describe what the practices and principles of a subversive future might be.

Consequently the paper aims to challenge the modernist status quo of the Global North with the intention of defining a critical and theoretical framework for design and worldmaking *attempts* in ways that are sustainable, regenerative, adaptative and optimistic.

Cross section

Film one

ALL ACTION TRAILER

At this point in the paper, please follow
the link below to access a short film.

bit.ly/allactiontrailer

Still from Mad Max 2: The Road Warrior *(1981)*

1.0, an end of a world

"I am not proposing a return to the Stone Age. My intent is not reactionary, nor even conservative, but simply subversive. It seems that the utopian imagination is trapped, like capitalism and industrialism and the human population, in a one-way future consisting only of growth. All I'm trying to do is figure out how to put a pig on the tracks."

— Ursula K. Le Guin (1989)

The tangle of extractive systems intensified by the first Industrial Revolution have reached a point of clear cultural, ecological and societal unsustainability, and as such necessitate an ending. That ending will either be those systems, or the cultures, ecologies and societies of Earth.

The old adage, "It's easier to imagine the end of the world than the end of capitalism" (Fisher 2009, 8) **speaks to a *trapped imagination,* in which the framework of modernity is the deterministic 'reality' and therefore all things must be imagined through its limiting lens.** (Ibid) **If this is the case, I assert that to imagine**

THE END OF THE WORLD **and to imagine a subversive alternative to late capitalism is one and the same.**

I acknowledge that we must look at *an* end of *a* world, as worlds have many times previously ended[01] (Morton 2013, 6-7) **and will end many times more. However, due to the current climate crisis[02] — which the first part of this paper will tie to the outcomes of the industrial *world* — we are currently concerned with, for the first time in human memory, a threat to end** "our ecological coexistence here on Earth." (Ibid, 7)

This is an ongoing disaster on a different scale to the end of a world.

But as the neoliberal capitalist mode made use of disaster to consolidate a global monopoly (Klein 2007, 6) **and infect our imaginations to such a degree, we might subvert its meaning and use the imaginary of** THE END OF THE WORLD **to attempt to materialise an alternative.**

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01 65 million years ago, 50% of all living species went extinct. ("Deep Impact and the Mass Extinction of Species 65 Million Years Ago,") 550 years ago, the landing of the *Santa Maria* began the end of lived worlds on the American continent. 60 years ago, the first atomic bomb test irradiated a layer of the Earth. (Morton 2013, 4)

All of these might be considered an end a world.

02 I recognise the climate crisis as a deeply intersectional problem, linked to every system of oppression.

This paper asks "what might design look like at THE END OF THE WORLD**?"**

In order to examine this, I will look at the cultural, ecological and societal effects of modernity on our trapped imaginative frameworks, then attempt to find a subversive mode within the designerly,[03] — of materiality — of artifice.[04]

In the words of Ursula K. Le Guin, this is an attempt to collect some pigs for the tracks.

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03 Design is implicit in the capitalist models of manufacture, sales and consumption (Franklin and Till 2018, 7) and therefore one I consider to be an impactful area for change.

04 Artefact, *noun.* "An object that has been made by a person, such as a tool or a decoration" ("Artefact") This is a word I'm going to use regularly throughout this paper, referring to anything that would not exist if not for human intervention. Importantly, this does not denote natural versus unnatural. Whilst a tree on its own might not be considered an artefact, timber certainly would be, despite being a 'natural' material. A garden might also be considered an artefact. A spider's web or a beaver's dam could be considered non-human artefacts.

There are three ways I'll use the word: *artefact,* singular; *artefacts,* plural; and *artifice,* the practice of making artefacts — a person engaged in this process might be called an artificer.

Appendix A

A STORY ABOUT NETTLES

Part one

As is sometimes the case as late summer turns gold into autumn, the sun is hanging low and petulant in the sky, giving the day the perpetual feel of early evening. Despite the long shadows, the day is warm and there's the first smell of the season's fresh alpine air complementing the snow-tipped mountains off in the distance.

Wearing a bright blue fleece and orange gloves, I'm up to my waist in a patch of nettles. I've stepped down from a boardwalk which runs along a river, a dark copse growing up on the French side and a sparse grazing field here in Switzerland. There's little to see of obvious interest; the thicket of nettles climbs up through a bramble bush, growing more dense until it drops sharply off into the Rhône. For the last fifteen minutes, I've been slow in making my way deeper into the patch, always stooping low to cut the stems as close to the base as I can reach. Other than some spindly ferns, not much grows under the cover of the leaves, just twisting thorns and the nettles fighting their way towards the sunshine. Underfoot, the ground is moist and boggy.

In the humid light, I lean in to trim a stalk. Sweat drips into my eye and I lose focus. It breaks free and whips me in the face. I wince at the sting.

The common nettle or *urtica dioica*—or locally *l'ortie*—is a bright green weed, up to 2 metres tall with velvety, serrated leaves reaching out at regular intervals.

It is best known for making adventurous children cry with its titular sting, which is perhaps unsurprising considering its scientific name is taken from the Latin *úrere,* 'to burn' and its English name from the Anglo-Saxon word *noedl,* meaning 'needle'. The sting is administered by trichomes that cover both the leaves and the stems of the plant, which when brushed against will break to reveal a needle that pierces the skin. When the stalk hits me in the face, it's not the first time that day that I've been strung. The cheap, knitted nylon work gloves have proven only somewhat effective protection and my arms are already red from habitually rolling up my sleeves in the heat, only to be stung again and hastily pushing them back down. The injection is a mélange of acetylcholine, formic acid, histamine, and serotonin and as anyone who's tromped along an overgrown path wearing shorts will know, it kicks like an ant bite and leaves an itchy rash for the rest of the day.

Nettles have a native range from Eastern Europe all the way to Western China, from North Africa up to Siberia. They're perennial, meaning they regrow in the same spot each year, and spread easily through both creeping rhizomes—a yellow root structure which is responsible for it springing up in 'patches'—and copious amounts of seed pods, which can germinate just days after maturity.

They're content to spread too. Their preferred spots include farmland, woodland, grassland, heathland,

moorland, wetlands and the coast. They do particularly well in damp, nitrogen rich soil and are often found growing around human disturbed areas, such as towns, gardens, fields, hedgerows, roadsides, wastelands, abandoned buildings and areas with high air pollution, which boosts nitrogen content.

Thanks to their ease of proliferation, unfussy ecological requirements and resulting difficulty to remove completely, the distinctive leaves and chartreuse flowers can now be found nearly worldwide.

An hour or two earlier, I'd sat on a bench by the river and eaten some bread and cheese from a backpack now bulging with nettle stalks. I pull off my gloves and rub my blurry eye, the sharp pain already turning prickly, 'hot in the first grade and dry in the second.'

The bag lays on the boardwalk behind me, the long stems poking out of the top in a gnarly bundle that kept catching on the branches overhead. Next to it a new pile is forming. I'm pushing aside the thorns and cutting just above the root. Pulling the body of the plant out of the tangle, I use my thumb and forefinger to strip the branches off in an awkward, unpracticed motion that's been improving over the course of the day. The leaves lay scattered around me with the seeds and flowers, ready to turn to mulch and fresh nettles next season. I throw the resulting thing—a fibrous stick about a metre long—over my shoulder and it lands roughly with the others.

That morning we'd arrived in the little village of Chancy, the Westernmost point in the Canton of Geneva and, by extension, Switzerland. At the edge of the place, there's a peculiar outer wall. It's a sunken cliff, rather than a raised barrier, next to a gutted tearoom and public toilet

with no paper which together mark a clear boundary. We'd climbed down one of a series of spacecraft-ish, corrugated metal stairs which jut out over the drop and lead like great spiderlegs into the hodgepodge of paths, allotments, fields, and liminal, rural spaces beyond. The steps bridged a grassy gutter, running the length of the cliff face; a ten metre deep slice in which the air smelled rich and loamy. At irregular heights and intervals, pipes extruded from the surface and water dripped gently to the earth below. In one spot where a small waterfall flowed, a bathtub had filled and grown over with ferns and moss.

Where the shady stretch of land met the wall, nettles grew calm in wide, low patches.

Pulling on my gloves, I began to fill my bag.

2.0, never tell me the odds, trapped imaginaries

> "There is that great proverb — that until the lions have their own historians, the history of the hunt will always glorify the hunter."
>
> — Chinua Achebe, *Paris Review* (1994)

2.1, Le Guin, cultural

Still from Plastic Bag *(2010)*

In *The Carrier Bag Theory of Fiction* (1986) **science fiction author Ursula K. Le Guin builds on the idea that the first cultural artefact created by humans was probably, rather than hammers or flint cutting tools,** ("Stone tools") **a bag.** (Fisher 1979, 80-90) **Simply, if you cannot carry anything then something** "as uncombative and unresourceful as an oat" **will escape you.** (Le Guin 1986, 166)

Harry becomes a wizard, Harry Potter and the Sorcerer's Stone *(2001)*

Luke in the gunners seat, Star Wars *(1977)*

Neo dodges bullets, The Matrix *(1999)*

Le Guin discusses how this concept relates to storytelling (and its effects) and uses it to challenge the *monomyth*, or the hero's journey (and *its* effects).

Monomyth[05]
"A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man."
(Campbell 1949, 28)

The hero's journey is held to be a mirror to fundamental human experience and psychology, suggesting that myths in this mode act to represent individual growth, self-discovery, and the human quest for meaning and purpose. (Ibid, 3-4) **The ubiquity of the framework can be seen in some of the most popular films of the last 50 years—*Star Wars*** (1977)**, *The Matrix*** (1999)**, *The Lord of the Rings*** (2001) **and *Harry Potter*** (2001)**—each of which can be framed within the monomyth[06]** ("What Is the Hero's Journey?").

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05 The word monomyth was coined by Joseph Campebell in 1949 but originated in James Joyce's *Finnegans Wake* (Joyce 1939, 581)

06 The monomyth was introduced to the Hollywood psyche by George Lucas in the 1970s ("The Hero's Journey Is Hollywood's McMyth") and consolidated later by producer Christopher Vogler's *A Practical Guide to The Hero With a Thousand Faces* in 1985, published just a year before Le Guin's *Carrier Bag Theory.*

The Dawn of Man, from 2001: A Space Odyssey *(1968)*

Le Guin rationalises *why* that might be and further problematizes what it does to those who are not considered the Hero in the story.

She compares the differing experiences of the Hunter and the Gatherer. The former—the violent action of Hero—might be more viscerally engaging than the mundanity of non-hero life—"how I wrested a wild-oat seed from its husk" (Le Guin 1986, 165)**—but with repeat spotlighting of *Hero*, the suggestion is that everything else should be** "pressed into service in the tale of the Hero." (Ibid, 166)

Le Guin names the hunter's story *the killer story* (Ibid, 168) **and argues that this creates a framework which dehumanises and excludes anything—in particular women[07]—which is not Hero; he who is**

"fully human,
bashing, sticking,
thrusting, killing." (Ibid, 167)

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07 For our reading of *The Carrier Bag Theory of Fiction,* I'd like to broaden Le Guin's definition to bring her ideas into a contemporary critical conversation, in order to not only include women but also other diverse groups which are historically ignored and excluded.

In *Design Struggles* (2020), which looks to reimagine design for the 21st Century and address its problematic past, they use a definition of "life-defining aspects – gender, sexual orientation, race, ethnicity, religion, class, social background, physical or intellectual ability, and more" (Maris and Paim 2020, 11) to similar effect. This opening of the person-excluded definition brings Le Guin's ideas out of the limited view of second wave feminism into a more intersectional conversation. **Continued overleaf**

Anthropologist Anna Lowenhaupt Tsing builds on Le Guin's critique, suggesting an alternative, Gatherer story that "might pick up diverse things of meaning and value and gather them together, like a forager rather than a hunter waiting for the big kill." (Tsing 2015, 288) **Le Guin calls this other imaginary** "the nature, subject, words of the other story, the untold one, the life story." (Le Guin 1986, 168)

For both, the stories we tell shape our identities and create a foundational framework for operating in the world.

07 cont. This is needed particularly with Le Guin because she has been criticised for her own exclusion of marginalised voices.

Her contemporary, Samuel R. Delaney, a gay, black sci-fi author, published *Triton: An Ambiguous Heterotopia* (1976) in part as a dialogue with the questionable 'utopia' of Anarres, presented in Le Guin's *The Dispossessed: An Ambiguous Utopia* (1974). He directly critiques it by stating that, along with many other issues, Le Guin's portrayal of homosexual characters in her work, even in a society with an apparent "complete acceptance of homosexuality" (Delany 1977, 152) is reductionist and tokenistic.

2.2, Tsing, ecological

> "The Industrial Revolution was merely the beginning of a revolution as extreme and radical as ever inflamed the minds of sectarians, but the problems could be resolved given an unlimited amount of material commodities."
>
> — Karl Polanyi, *The Great Transformation* (1944)

If Le Guin's critique is situated within self-realisation, Tsing uses a similar query to speak about the effects the killer story has in the context of THE END OF THE WORLD.

She tells the story of two railroad magnates in competition to open the way for the industrialisation[08] of an old growth[09] ponderosa forest in Oregon.

It's 1910 and the mood of the time amongst the colonist population can be represented by the words of President Roosevelt, "We do not admire the man of timid peace. We admire the man who embodies victorious effort." (Roosevelt, 1899)

07 Industrialisation. "A period of change that transforms a society from agrarian to industrial, involving the reorganisation of an economy for the purpose of manufacturing." (Watson 2019, 17)

08 An 'old growth' forest is one which has been growing essentially without disturbance — at least at an industrial scale — since time immemorial ("Old-Growth Forest")

A timber mill, as seen on Twin Peaks *(1990)*

Ten years prior, in a historic defeat of nature, the flow of the Chicago River had been entirely reversed. ("Reversal of Fortune") **A year later, Carnegie sold his steel company for $480 million[10] as the** "foremost model of modern manufacturing and a beacon of capitalist production." ("Carnegie Steel Company")

It was a time of Great Men doing Great Things.

Together the railway-men connected the forest with the lumberyards of Portland and the logging initiative immediately picked up steam. Within a decade, Oregan became the biggest producer of timber on Earth ("The Timbre Industry Climax") **and as wood flowed out, money flooded in. This is not an atypical thing to have happened in the early 20th century. The Gilded Age[11] had passed and massive industrialisation and economic growth had been had in America, coming from** "a seemingly endless supply of natural 'capital'. Ore, timber, water, grain, cattle, coal, land." (Braungart and McDonough 2002, 21-22)

Tsing defines this story as the *story of progress;* "This is a story we know. It is the story of pioneers, progress, and the transformation of "empty" spaces into industrial resource fields." (Tsing 2015, 18)

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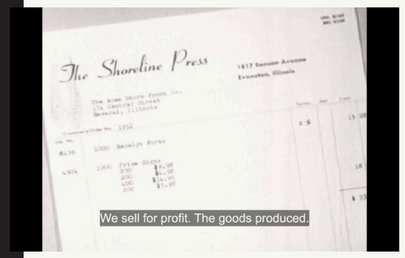
10 $15,545,482,105 — or 15.5 billion dollars — adjusted for inflation in 2023 ("Inflation Rate between 1910-2023")

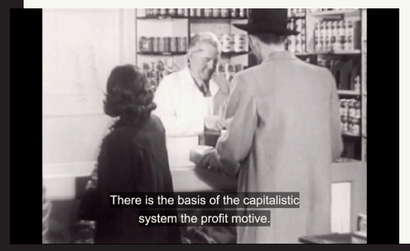
11 It was also defined by an incredible disparity between the haves and the have-nots; the *Gilded Age* name coming from a satirical book by Mark Twain (1873) which lampooned the corruption and inequity found in an unregulated American economy.

The *story of progress* is akin to Le Guin's *techno-heroic* story, resituating the hunter as the man of enlightenment[12] and modernity. It takes a similar base logic in that it questions the ubiquity of the "categories and assumptions of improvement" (Ibid, 20) **and the infectious nature the metanarrative of progress has on** "assumptions about what it means to be human." (Ibid, 21) **but where Le Guin points to the resulting *cultural* exclusion, Tsing looks more closely at the *environmental* effects.**

Logging jobs decreased along with mechanisation and the loss of prime timber. By 1989 most of the mills from the boom times had closed. "The eastern Cascades, once a hub of timber wealth, were now cutover forests and former mill towns overgrown by brush." (Ibid, 18) **It came as no surprise — environmentalists had long shown the logging operations were unsustainable;** "an ecosystem on the

12 Enlightenment. "A European intellectual movement of the late 17th and 18th centuries emphasising reason and intellectualism rather than tradition." (Watson 2019, 17)





Stills from the 1948 instructional film Capitalism, *in which a group of teenagers discuss just what 'capitalism' is*

verge of collapse." (Ibid) **We see here the consequences of this activity:** "Industrial transformation turned out to be a bubble of promise followed by lost livelihoods and damaged landscapes." (Ibid)

Put simply, the forests were in ruins.[13]

In the story we see the human attitude to nature. Tsing links the extractive impetus of industry operating through the tale of progress—seeing raw materials as being at the "infinite bequest from Nature to Man" (Ibid, 62)**—and modernity's view of nature as** "passive and mechanical," (Ibid, vii) **with the negative environmental outcomes that we are experiencing today.**

She goes on to connect this directly to the demands of capitalism,[14] a system which functions by finding reliable sources of exploitation. (Ibid, 62-63) **This is supported by philosopher Mark Fisher, who writes** "capital's 'need of a constantly expanding market', its 'growth fetish', means that capitalism is by its very nature opposed to any notion of sustainability." (Fisher 2009, 18)

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13 Tsing uses the term *ruin* to describe the aftermath of industrialisation in a place formerly rich with resources (Tsing 2015, 19) but writer Brian Thill, in his *Waste* (2015), states "The ruin is a thing of wonder and Romantic grandeur; it inspires poetry, whereas the derelict seems to cry out for burial or demolition." (Thill 2015, 7) I'll continue to use Tsing's wording, but the difference shows how language shapes our perception of reality.

14 Tsing defines capitalism as "a system for concentrating wealth, which makes possible new investments, which further concentrate wealth. The process is accumulation." (Tsing 2015, 62) and uses a classic, Fordism-style example of a factory owner paying their operatives less than the worth of the goods created, thus *accumulating* capital from the extra value, which they can go on to invest in other economic activities.

For Tsing, tales of progress are inextricably tied to the rhythms of extraction, consumption,[15] and depletion within an industrial-capitalist framework.[16]

Her second critique focuses on the limitations we impose on ourselves through this lens, "as long as we imagine that humans are made through progress, nonhumans are stuck within this imaginative framework too." (Tsing 2015, 21) **Not only do we limit ourselves through the assumption of *progress* as key to being human, but that in doing so we limit our thinking to purely within the anthropocentric paradigm. We ignore other, alternative modes of *world-making.***

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15 An essential product of this system is waste. Just as an infinite inflow of raw material is required to keep manufacturing, an infinite outflow of waste is required to accommodate an active market.

"Waste is every object, plus time." (Thill 2015, 8)

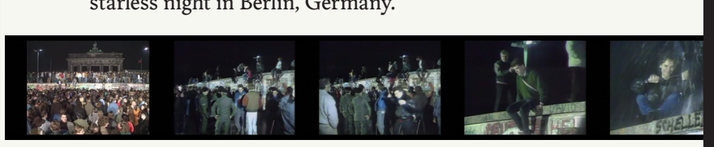
16 For an ultra-modern example, look at the *NewSpace* industry and in particular Jeffery Bezos's *Blue Origin* company, which is concerned with extraterritoriality in order to ensure further material resources for economic growth. ("Blue Origin") In his words, "The earth is finite, and if the world economy and population is to keep expanding, space is the only way to go." (Blue Origin 2019, 2:40)

2.3, Escobar, societal

In using the term *world-making,* Tsing's language is mirrored by Arturo Escobar, a Columbian-American anthropologist who has championed the term 'pluriverse', "a world in which diverse hopes can be sown, multiple opportunities can be cultivated, and a plurality of meaningful lives can be achieved by the richly different and caring people we are." ("Pluriverse")

The positivity of the language hides the subversive intent of the pluriverse concept.

Across the Atlantic from the ruins of Oregon, it's a starless night in Berlin, Germany.



A young man with a buzzcut and black jacket beats the pointed side of an axe against a wall.

His face is red with effort as he slams it again and again into the graffitied surface; a frantic chant coming from an unseen crowd.

Along the wall, people lit by floodlights climb up and pull each other over. Military men look on as night fades to grey morning.

A construction crew begins to tear sections of the wall away entirely. (“Archive Footage Captures Fall of Berlin Wall”)

This is the 1989 fall of the Berlin Wall (“Fall of Berlin Wall”) **and the end of really existing socialism.**[17] **It was the start of an effective global monopoly for free-market capitalism, which Francis Fukuyama famously called** “the end of history.” (Fukuyama 1989) **Whilst *an* end of *a* world, Fukuyama was not claiming there were no other philosophies left on Earth but that** “with Communism collapsing, there were no other ideas sufficiently powerful to constitute a head-to-head competitor.” (Klein 2007, 253)

The fallout of this was that capitalism became the assumed *deterministic* political and economic system, and as such it has become near impossible to even imagine a coherent alternative. (Fisher 2009, 2)

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17 Irwin Sibler discusses ‘really/actually existing socialism’ in his *Socialism: What Went Wrong?* (1994), which describes the socio-political-economic reality of communism in the 20th century; a juxtaposition between the theoretical collectivist ideas and the often authoritarian and bureaucratic governments of communist countries.

> “And when Alexander saw the breadth of his domain, he wept, for there were no more worlds to conquer.”
>
> — Hans Gruber, *Die Hard* (1988)

The hegemony of a single system is what the term pluriverse is counter to; it calls for worlds outside of monopoly, or even binary. It asserts that communism isn’t *the* way; capitalism isn’t *the* way; free-market, military-industrial complexes aren’t *the* way; and neither are anarcho-syndicalists on the Moon. The tension found in the coexistence, conversation, competition and collaboration between a myriad of different societal value-sets — interculturality — is core to the philosophy of the pluriverse. (Escobar 2018, 181)

It is, literally, a plurality of worlds.

Arthur : **So you made the earth?**

Slartibartfast : **Not me alone—but I did my part.**

Escobar engages design as a tool for how we might manifest this ethos through the artefacts which make up our worlds, not just at a system-level, but to realise this materially. (Ibid, 4) **He says** "all design creates a 'world-within-the-world' in which we are designed by what we design as subjects. We are all designers, and we are all designed." (Ibid, 133)

This *ontological*[18] core is present across Le Guin, Tsing and Escobar's work. It suggests that the imaginative framework—through which artefacts are designed and go on to create worlds —defines humans and our actions, and is itself influenced by the artefacts we thus create.[19]

Whether it's cultural, ecological or societal; all three point to the generative causality of our imaginative, narrative frameworks and seek to subvert the pervasive, persistent procedures of modernity.

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18 Ontology, *noun.* "Branch of metaphysics concerned with the nature and relations of being." ("Ontology") Here it refers to what exists in the world, how it comes to be and how it's connected.

19 Artefacts here referring not only to objects, but also the ways in which we construct societies and values

Stills from the 1950 promotional film Wheels of Progress *which tracks the American industrial distribution routes*

In 1986, Le Guin lacked a word for this current iteration of the modern which is critical to Tsing and Escobar: *anthropocene*.

"The current geological age, where human activity has been the dominant influence on the climate and the environment." (Watson 2019, 397)

Tsing correlates the beginning of this age with the advent of modern capitalism, arguing that the activities of industrial-capitalism—extraction, mass production, mass consumption, waste[20]—have led to the anthropocene and the associated ecological effects.[21] (Tsing 2015, 19)

Escobar places it's beginning with the patriarchal system[22] (Escobar 2018, 222) **and in doing so highlights both the connection with Le Guin's theory and the complex tangle between different world-making artefacts.**

Regardless of origin point, Escobar states that the foundational destructive action is the breaking down of life's "constitutive relationality," (Ibid)

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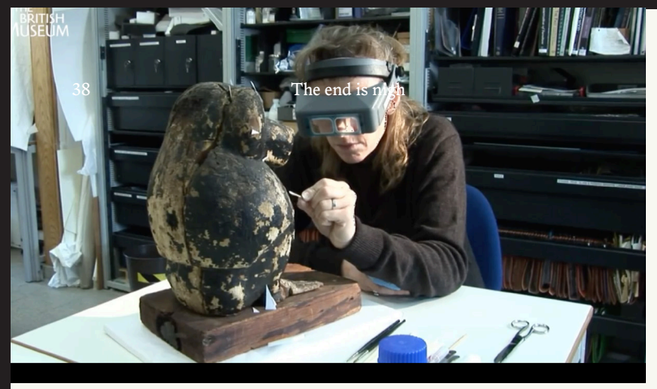
20 "It is to acknowledge that growth, the engine of capitalism, is entirely dependent on the reliable and ruthlessly efficient generation of waste." Justin McGuirk, *Waste Age* (2021)

21 This is a view shared by philosopher Timothy Morton, who is even more specific: the anthropocene first started with the invention of James Watts' steam engine. (Morton 2013, 4)

22 A prevalent system of female oppression resulting in "male-dominated societies" ("Who Made You King of Everything?")



Ancient Egyptian baboon deity being conserved at the British Museum for The Book of the Dead, *an exhibiton sponsored by BP plc*

the doing of which leaves the world contextless and reduced to commodities.

Tsing calls this act "alienation," **where in** "capitalist logics of commodification, things are torn from their life-worlds to become objects of exchange." (Tsing 2015, 121)

Fisher refers to it as a *system of equivalence,* "which can assign all cultural objects, whether they are religious iconography, pornography, or Das Kapital, a monetary value.

"Walk around the British Museum, where you see objects torn from their lifeworlds and assembled as if on the deck of some Predator spacecraft, and you have a powerful image of this process at work." (Fisher 2009, 4)

For all of the discussed, this process of commodification by objectification—diminishing relationality and removing context to create units of trade—is the fundamental violence at the heart of these systems. By measuring the Earth in this way, "with humancentric, short-term metrics, rather than biocentric, long-term ones" (Julia Lohmann, in Franklin and Till 2018, 49) **it is arguably inevitable that humanity's prevailing relationship with the non-human[23] is an abusive one.[24]**

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23 This includes people who are systemically dehumanised.

24 Designer Julia Lohmann quotes the environmentalist Aldo Leopold, "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." (Leopold 1970, viii)

Stills from Duck and Cover *(1951)*

"Everyone, deep in their hearts, is waiting for the end of the world to come."
— Haruki Murakami, *IQ84* (2009)

That world will either change now or, like a hungry ouroboros,[25] inevitably consume itself.

This is our THE END OF THE WORLD.

So the question becomes, what might the process of artifice look like beyond these imaginaries of modernity? How can design change with THE END OF THE WORLD?

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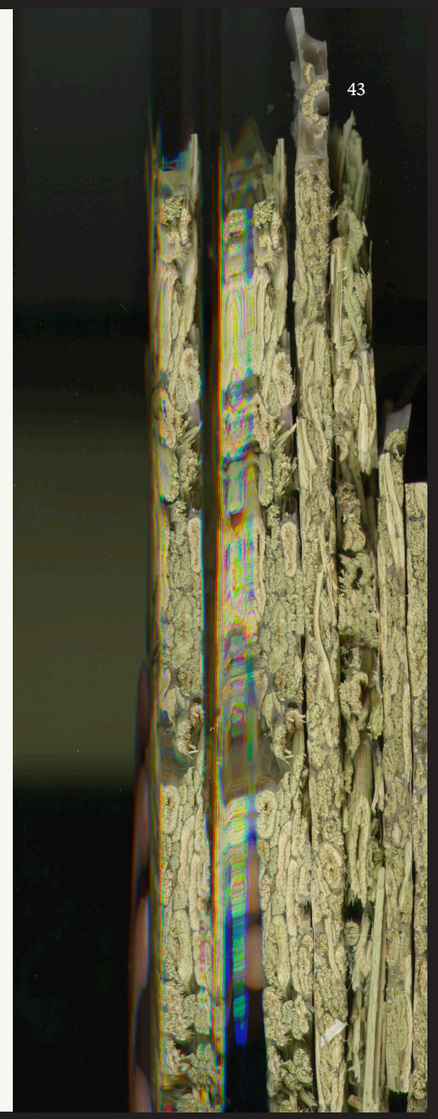
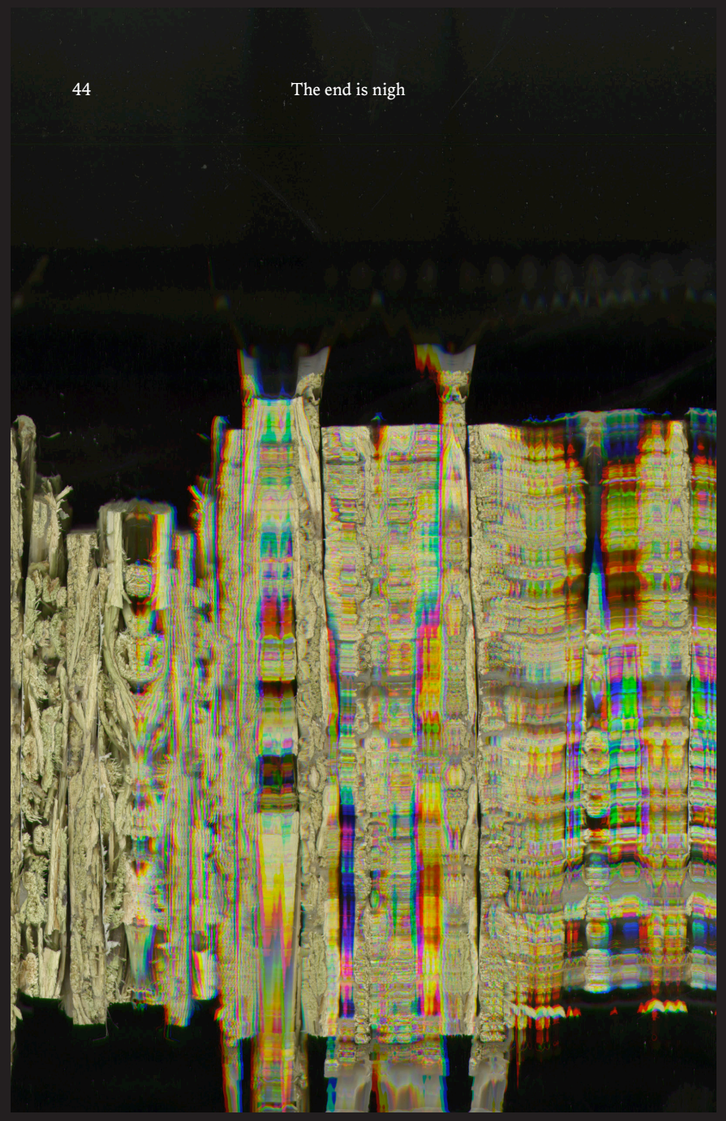
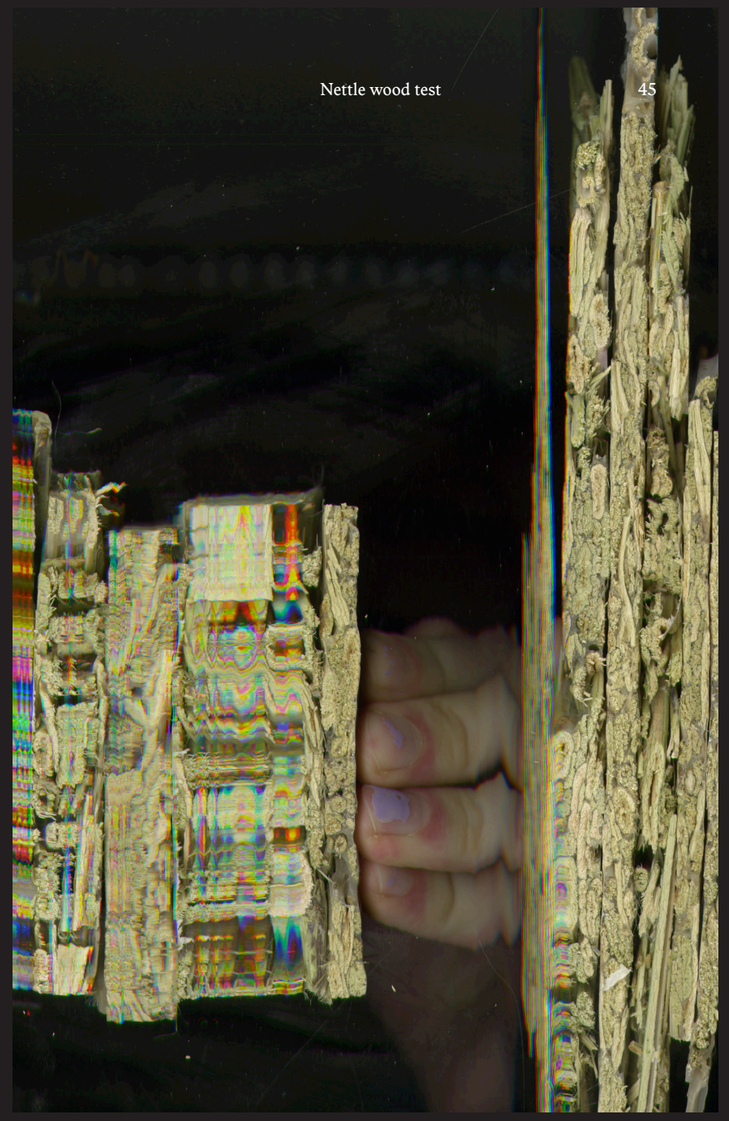
25 Ouroboros. *Noun.* "Emblematic serpent of ancient Egypt and Greece represented with its tail in its mouth, continually devouring itself and being reborn from itself. A gnostic and alchemical symbol, Ouroboros expresses the unity of all things, material and spiritual, which never disappear but perpetually change form in an eternal cycle of destruction and re-creation." ("Ouroboros")

Nettle wood testing



The end is nigh





Appendix A

A STORY ABOUT NETTLES

Part two

As the tram slows and someone walks by, their coat is caught on the bundle of stems emerging from my rucksack. Off balance and as though trying to swat a fly, they wave their hands at the unseen thing suddenly tugging on their hood. It unsticks with a satisfying *whip.* They turn with a disapproving scowl. Shrugging weakly and smiling in apology, I try to adjust the placement of the sack so it won't inconvenience anyone else. My boots have left muddy prints across the plastic floor, my fleece is spotted with bits of bracken and my orange gloves hang loosely from a torn pocket. Squeezing the bag between my knees, I carry my gatherings back to Geneva.

* * *

There's a tiny, pink shrimp on the floor of the studio. Two weeks have passed since foraging for a bag full of sticks and the threat of Autumn-proper is looming greater with each rainy squall. I'd gotten back to my

apartment with a sizable sheaf, which I washed off with cold water in the bathtub.

Nettles are made of five bits. They have creeping roots, leaves and seed pods; all of which I'd left behind to either compost or propagate. The remaining two parts are bast fibres and woody pith, which are the components of the stem. These are glued together with pectin, the stuff that makes jam sticky, with the fibres coating the core — the same bast fibres are found in hemp and flax, which is used to make linen.

I'd taken my bundle down to the Rhône, which runs through the centre of Geneva; the same glacial river that finds Chancy downstream. I knew about a snug spot near *La Barje,* a summer buvette, behind some bushes where passersby can't easily see. It's a rockpool of sorts, a void between the erosion defence and a path, through which water flows. Into it, I sunk my nettles and tied them with a yellow cord. I left a polite note asking for them to be left alone.

The process of *retting* uses water to break down the cellulose holding the stems together by leaving them submerged for up to three weeks, which rots just the adhesive and leaves the fibre and pith intact. By the time they were out again, the sunny days were few and far between, but after a morning of drying them on the grass in Parc Saint-Jean, I carried my musty haul to the studio.

There's an invasive species in Lac Léman, which flows out into the Rhône, called the killer shrimp. My bundle of nettles either acted as an impromptu habitat or a fishing net; after leaving the stems to dry for a few more days, I gathered them up.

Amongst the dust, leaves and other detritus was a single shrimp, cooked in the heat from the window.

Stills from Wall of Salt *(2021) by Atelier LUMA*

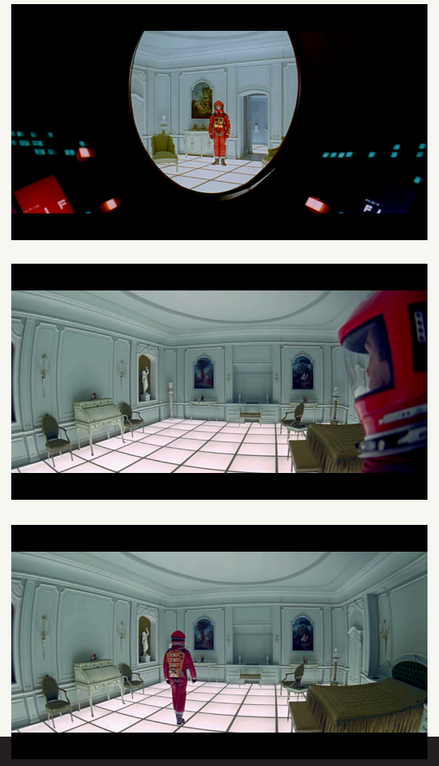
3.0, bioregional

> "You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete."
>
> — Buckminster Fuller (Quinn 1999, 137)

Amongst a clear sky stretching from horizon to horizon, two women are bent double over foamy white rocks. Wearing fishing waders, they're standing up to their knees in one of the many salt ponds amongst a brackish, wild marshland.

The water is reddish and opaque. Together they pull a curving, net-like object from under the pool and begin to examine the cuboid crystals forming across its surface. (LUMA Live 2021)

Commodification



If the extraction and alienation of subjects from their lifeworlds, and following commodification into objects, is one of the central mechanics driving THE END OF THE WORLD, then perhaps a way to subvert this is to reshape the beginning of the interaction. How can we find the raw materials required to make through design without engaging in destructive, extractive practices?

This is a question of *sustainability* or what early agriculturalists called the 'law of return', that what is taken from the earth is properly repaid and therefore able to be taken again. (Braungart and McDonough 2002, 2) **This symbiotic mode includes not just a source ecology, but society too — the notion of sustainability comes from the *Seventh Generation Principle* of the Iroquois people, which considers the consequences of actions as they might affect the seventh generation after you.** (Watson 2019, 26)

One project working on sustainability with acknowledgement of this ecological-societal matrix is Atelier LUMA's[26] *Pratiques de Design Bioregional.*

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26 Atelier LUMA is based at the arts centre of *Parc des Ateliers,* a stone's throw from the salt pans of the Camargue, from which rises an undulating metal tower designed by Frank Gehry. The centre in turn belongs to the LUMA Foundation which is the brainchild of Maja Hoffmann, Swiss billionaire heiress to the Roche pharmaceutical company. ("Luma Arles Review") This highlights the intersectional difficulty in the tangle of different systems of privilege, economy, history and hegemony; with *wicked* problems, a project which aims to positively impact one part of this matrix will often problematise itself within another part.

The project is a process for the identifying and utilising of undervalued resources situated within individual cultural-environmental ecosystems, or bioregions. (Atelier LUMA 2023, 27) **These resources are broadly defined[27] but the case I will draw from here is situated with the use of virgin material — salt — and the novel application of a traditional skillset — salt farming.[28] The methodology within the approach aims to provide a framework of investigation to ask** "what resources are available, and how can we use them in a way that makes environmental and social systems stronger?" (Ibid, 20)

27 Atelier LUMA keeps this notion of resources very loosely defined, claiming they could be anything from "agricultural byproducts to artisanal skill sets passed down over generations." (Atelier LUMA 2023, 27) Throughout their publication they showcase projects working on waste-streams, local-traditional craft, using invasive species, amongst others; however all are focused on making use of *something* which was previously underused in a specific bioregion.

28 I enjoy that the salt farmers of Aigues-Mortes identify as farmers as opposed to miners. (LUMA Live 2021, 00:24) The process they use is known as *solar evaporation* and is considered a mining technique. ("How Salt Works") However, even in the cited article about salt mining, the language uniquely refers to this technique as "harvesting" rather than mining, as it does with *deep-shaft mining* and *solution mining,* suggesting a tacit understanding of the difference in sustainability. To harvest as a farmer is a different story to mining, removing, extracting as a miner — it evokes a pre-industrial history.

It works via four, intertwined and semi-linear phases: (Ibid)

1, *trouver,* find
Immersion in a bioregion to understand the cultural and environmental ecosystems, seeking undervalued resources[29]

2, *connecter,* connect
Experimentation and activation of underutilised resources, aiming to suit the use case to the bioregion's specific identity and needs

3, *impliquer,* engage
Sustainably integrating the novel resource use into the local stakeholder network, including policy and and financial planning

4, *partager,* share
Ongoing knowledge sharing infrastructure to ensure longevity and proliferation, as well as impact analysis of the project

29 Of note here in terms of the complexity of the wicked problem is LUMA designers taking a position of privilege to ascribe value to some vernacular processes and not others. Whilst the outcomes aim to be positive, the privilege of making that decision comes from historical inequity and from a perspective outside the lifeworlds of the process, which might be considered a form of appropriation.

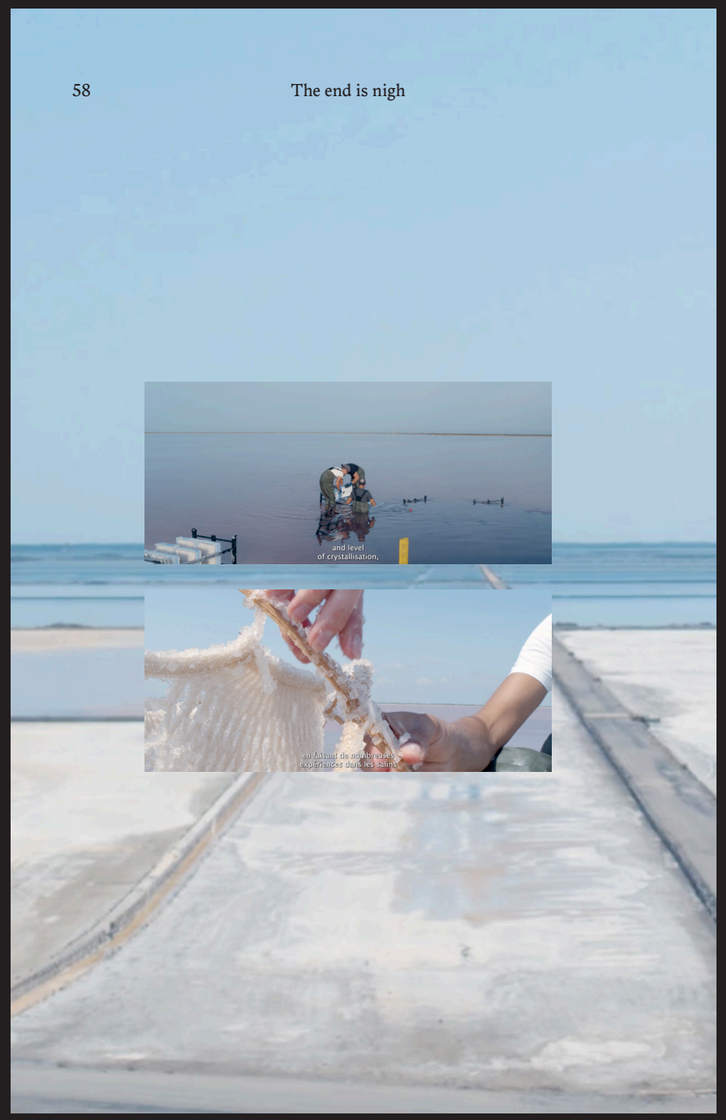
Salt brick mosque in Khewra salt mine

A two hour cycle west of Arles, the Aigues-Mortes salt farms were identified as a site to make use of this approach due to the presence of an abundant resource with a narrow use case and declining demand from the primary chemical and agriculture users. (Ibid, 105) **We can see the use of the Seventh Generation Principle here as the selection is made not just for purposes of material abundance, but because of the threatened traditional knowledge of the Camargue people; if this knowledge and practice is to exist into the future, an intervention of some description is required.**

LUMA designers worked with the *saliniers* to understand the properties of the salt material—e.g. a corrosive effect and different styles of crystallisation—and aimed to work out how to *control* the growth of the crystals for an architectural application. They produced a 'farming' method for 'rearing' salt wall panels, which are naturally fire resistant, and later antibacterial door handles. (Ibid, 121)

LUMA are not the first people to design with salt—we can all picture the pink glow of a Himalayan salt lamp—nor the first to do within a specific territory—the vernacular, salt brick mosque in Khewra Salt Mine is one example—but through their research they are effectively able to minimise the objectification of the virgin material and of the historical custodians of that material.

The material is 'used', but in a way that maintains the context of its properties and regionality, its lifeworld, throughout production and utilisation, down to its very aesthetic. It is also readily 'returned' when it is no longer needed, soluble back to the marsh



it came from. An object is created while maintaining the subject of the salt throughout the lifecycle; a *sustainable* design.

They describe the process as "growing objects, rather than manufacturing them" (LUMA Live, 06:16) **which, alongside images of rows of metal cases being diligently worked on by the salt farmers, is slightly mawkish. However it does call into question the blurry line between what is grown, or farmed, and what is manufactured — and why it matters.**

I would reframe this as the difference between what is crafted vs. what is manufactured, as the difference is not one of inherent method of making but of scale.[30]

The success of this project as a subversive experiment in sustainability sits in direct tension with the aims LUMA discusses as "the creation of a complete production cycle, from manufacturing to transportation to new markets" (Atelier LUMA 2023, 109) **which scales the work in terms of industrialisation and capital. Whilst this could be expressed in terms of *eco-efficiency*** [31] **which, whilst laudable in minimising effects of industrial excess, still remains trapped within its destructive systemic and imaginative confines.**
(Braungart and McDonough 2002, 54, 58)

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30 You can farm at a *sustenance* scale and an industrial scale, the same can be true for growing trees and for making chairs. The difference is in scale, along with the economies accessed and conceits required in the changes to that scale.

31 "The pursuit of long-term profits by incorporating activities that respect the carrying capacity of the earth." (United Nations 2009, 1)

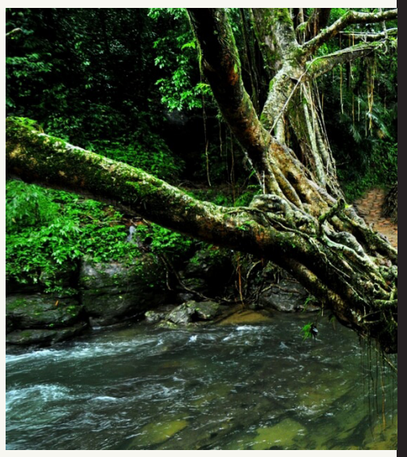
The 'grown' salt panels

To scale production of the panels is to industrialise the ecology of the saltmarsh, something which Tsing claims inherently commodifies in order to fit the confines of mechanisation and exchange at market value. (Tsing 2015, 40)

We might say the first two stages of the bioregional approach, which focus on the rich understanding of a place and its people, are what led to the successes of the project in terms of *sustainability.* Whereas the second two stages, which focus on the *realism* of production for that material, are what infects that success with the introduction of the progress story.

"How does it scale?"
"How does it grow?"
"How does it progress?"

LUMA is doing something right however: to engage in artifice whilst retaining the cultural and material lifeworlds of the inputs of that process and in the afterlife and an artefact thus produced. In order to try and build on that, I will pick up a similar process which originated outside the limited imaginary of Western-style modernity.



4.0, TEK

Emerging from the dense cover of the canopy, a woman with a wicker bag walks across a bridge. The gush of a river sounds below as she makes her way amongst the thick, twisted roots of the rubber plant, stretching out in front of her. A boy waits impatiently on the other side, fidgeting on the latticed structure.

She doesn't seem to be in any hurry.

If Atelier LUMA's *Pratiques de design bioregional* struggles to embed the successes of sustainability due to a need to preserve the innovations through scalability and pedagogical sharing, then we might look for a process with a similar foundation, but with the potential to subvert rather than reinforce the progress imaginary.

I will describe such a process as *regenerative* because the additional element of subversion of the status quo conceivably allows us not just to minimise the damage of a current system but to foster a conversely positive alternative; do more good, rather than less bad. (Braungart and McDonough 2002, 2)

In an interview about indigenous technologies in relation to the climate crisis, anthropologist-designer, Julia Watson tells of a form of neoliberalism and colonialism in design. It seeks to dislocate solutions from their local context in order to apply them wholesale globally, which she challenges by claiming "hyper-local solutions are likely to be more socially and environmentally equitable than our universal solutions." (Watson, in Design Museum 2021, 180)

She argues for migrating a technology between matching biomes, which is our similar foundation, but whereas the bioregional approach seeks to create a bridge between humans and nature, (Atelier LUMA 2023, 21) **Watson describes the indigenous communities she works with defining themselves as nature.** (Watson, in Design Museum 2021, 180)

They are not separate.
There is no need for a bridge.
This distinction leads to different outcomes.

***Traditional Ecological Knowledge,* or TEK, is the name given to the** "cumulative body of multigeneration knowledge, practices and beliefs which are handed down through generations by traditional songs, origin stories and everyday life" **in indigenous communities around the globe. Watson suggests technologies designed and maintained through this TEK framework are naturally sustainable, rather than exploitative, and also symbiotic between species by incorporating biodiversity as a core building block.** (Watson 2019, 20)

TEK is easier understood through the *Knowledge-Practice-Belief Complex,* coined by ecologist Fikret Berkes,[32] which maintains that it builds in a number of layers. (Ibid)

Layer 1, foundation
A deep local knowledge of animals, plants, fungus, soils, weather and landscapes in a specific region or territory

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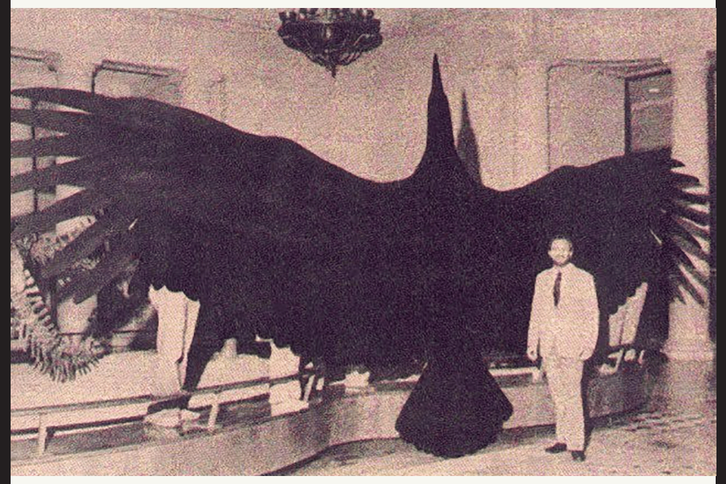
32 I acknowledge the problems of presenting indigenous cultures through the scientific lens of a modern academic and his theory, within the words of an Australian design writer. Whilst both might be considered experts with lived experience of the communities they write about, their theories around indigenous knowledge aren't driven by the communities whose knowledge is being theorised on. Again this highlights the *wickedness* of the problems as attempts are made to understand and address the tangle.

Layer 2, resource management
Intervention in the local environmental, with knowledge, practices, tools and techniques which utilise the understanding of the ecological processes

Layer 3, community organisation
Cooperation, coordination and the development of the governance required to maintain the resource management techniques

Layer 4, worldview
A cultural, societal and mythological basis for maintaining the developed methods and practices

Watson uses the example of the *animikii,* or thunderbird, a sacred creature in the Anishinaabe nation, which shoots lightning bolts from its eyes. These bolts start fires, which renew the land from the harshness of winter. "While appearing to destroy the land, these fires, known as Beenesay Eshkotay, begin the process of ecosystem rejuvenation by allowing underground roots to survive whilst also stimulating new growth. The purposefully lit Pishashkooseewuhseekaag, which translates to 'spring burning of the marshes,' imitates the actions of the mythological thunderbird" (Ibid, 23) **Here we can see across the layers of the complex. A spiritual belief in the mythical creature is supported by story and ceremony —** "ways we remember to remember" (Ibid) **—**



Western lenses often interpret mythical creatures into the framing of a cryptid, *or unsubstantiated animal; another method of (il)legitimacy through commoditification*

the enactment of which requires the cooperation of a whole group of people, whose actions fulfil a material purpose which can only have been designed through the lived experience of generations.

The artefact here is multidimensional and amorphous, but is essentially a strategy of land management supported by myth.

Materially, the purposeful and targeted burning of forest is 'cultural burning,' an indigenous method of ecological stewardship which plays a key role in the health and biodiversity of an area. It's the reason behind Tsing's story[33] of the old growth ponderosa pine forest in Oregon, which grew back as unruly[34] lodgepole.

"It was missing fire." (Tsing 2015, 196)

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33 Even in the wording << *Tsings' story* >> the value of these indigenous processes is again being ascribed by Watson and Tsing in their inclusion into the academic and design discourse. Whilst they both link this value to an ecological frame, the fact this top-down, archival—or collector—process is what leads to things being 'taken seriously', as Watson points to herself, (Watson, in Design Museum 2021, 183) is very much within the structures of Enlightenment inequity.

34 Unruly as in comparatively difficult to commodify — lodgepole grows thin in dense blocks, which are ironically highly flammable due to the mixing of live, dead and dying trees. When the US Forest Service took control of the forests from the native people, they enacted a policy of *fire exclusion.* Without the periodical burning of the forests, the lodgepole were allowed to grow much older than they did in the cultural burning system, which in turn blocked the regrowth of the ponderosa pines the service was originally drawn to. Without the pine's return, the forestry service was left with an unappetising, or 'ruined', industrial landscape. (Tsing 2015, 30)

Rather than being scaled and shared widely,[35] the *worldview* serves the opposite purpose, to embed the practice into the cultural memory of a people who identify themselves as part of a specific ecology. Environmental scientist Kai Lee describes this as an *eternal* conception of self within place, rather than the historical conception that progress thinking encourages (Braungart and McDonough 2002, 78) **— to think of yourself non-linearly as having always been and always being of a place, rather than a hero in** "the myth-making of modernity" **where humanity attempts to triumphantly free itself from its "**material dependence on the planet." (Ghosh 2021, 19)

This mythic layer is pivotal because it is in direct conflict with the realism inherent to a capitalist perspective. As Fisher points out, the erasure of the symbolic by the "conversion of practices and rituals into merely aesthetic objects" (Fisher 2009, 4) **is a key strategy in the assimilation of everything into the system of equivalence; the commodification which has gotten humanity to to point where** THE END OF THE WORLD **is preferable to the end of our** "ecological coexistence here on Earth." (Morton 2013, 7)

I would claim that the reintegration of the mythic as an embodiment of an eternal conception

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35 It's a standing question as to whether some indigenous communities are interested in sharing this knowledge at all; in the wake of colonialism and imperialism, there is—quite fairly—little incentive to trust Global North designers from worlds of oppression to not appropriate, misuse or commodify it. (Watson, in Design Museum 2021, 183)

of self in place (territory, bioregion, Earth) is one strategy for a *regenerative* model of artifice.

For how we integrate this into the urgency implicit in the THE END OF THE WORLD **scenario, I want to gather another facet into the conceptual bag to better understand how this praxis can be materialised in active *adaptation* in the face of threat.**

The replicator in Star Trek *is one image of humanity having freed itself from material dependence*

Appendix B

THE FOUNDING OF GANVIE

It was unseasonably warm and you were half awake when the raid came. You heard hurried footsteps and whispers coming from the dense vegetation which surrounded your small village. Maybe a dozen or so people, you wondered, semi-dreaming, sounds carrying in the heavy night air. When the first scream was muffled, somewhere not so far off to your right, you bolted upright.

You weren't shocked, but your heart kicked up into your throat and you felt the sweat go cold on your brow. By the time you'd woken your small household and rushed them, empty handed, out of the low doorway, the scene outside was chaos. People ran each which way, some carrying sacks stuffed hastily with possessions. Others carried people—your tribe—bound in rough rope.

In the two centuries since the Portuguese had invaded, scowling men in blue coats with guns, these raids had grown more frequent. It was never the aliens themselves, but rather the Fon tribe who stalked in under the cover of darkness, or razed a whole village out of nowhere. They'd made a bargain with these otherworldly

powers, who rarely left the safety of their fortifications; trading our lives for artefacts from elsewhere.

It's months later and you're standing in a pirogue on a shallow lake.

The lake's name is Nokoué.

Along with four others, you're driving a huge stake of dark red wood under the surface and deep into the muddy bed. It's the last of a few dozen, marking a rectangular grid emerging to head-height from the water. You came here after the leader of your Tonfinu tribe, King Adodohue, took the form of a great egret and flew in search of safety. In the lake he met a terrible demon, sacred to the Fon people, and she told him that the Fon would not dare to enter her waters. But your king was not afraid and knew that the demon meant you no harm. From your hiding places throughout the region, across the savannah and past the baobab trees, your people found their way here.

Arranging long bamboo poles across the grid you've built, a small dwelling begins to take shape.

You are the water men now; and you survived.

You'll call this place "Ganvie."

5.0, African water cities

The city of Ganvie, Benin

THE END OF THE WORLD has come for many people, many times before. One such example is Ganvie, a city of eleven villages in Benin, Western Africa, which translates directly as "we survived." (Watson 2019, 354)

It was built about four hundred years ago when the Tonfinu people were being abducted into slavery by the Portuguese. The invaders did not do this themselves, instead paying a powerful tribe, the Fon, to take the Tonfinu captive.

Nearby was Lake Nokoué, which the Fon believed was inhabited by a sacred demon and as such would not go there. The myth goes that King Abodohue of the Tonfinu took the form of a great Egret and flew to find safety in the lake, where his people followed and built their homes on slits, knowing that the Fon tribe would not enter after them. ("Venice of Africa")

The acadja *surrounding the city*

Since their colonial dispossession, survival and mythical resettlement, they have taken on the identity of the *men of water* (Watson 2019, 351) **and built a home on the lake with a bioregional architecture and aquaculture.**[36]

The buildings—including a post office, hospital, bank and bars, hotels and restaurants—are made from local red ebony wood, which resists rot, ("Ganvie, Africa's Largest Lake Village") **and are freestanding in the open lake, navigated between via canoes and small motorboats. When the Ganvie people settled the lake they brought their pastoral knowledge with them, which when applied here led to the innovative herding of a fish 'flock'.**

The buildings are surrounded on all sides by an artificial reef, made from brush, which was intentionally propagated and replicates habitats similar to that of mangrove forests. This biomimicry provides substrata which actively increase the biodiversity of the lake; bringing insects, birds and fish normally found only at the shore. Thousands of bamboo fishing paddocks, called *acadja*, encircle sections of the cultivated reef and feed the city. (Watson 2019, 355)

Myth is used actively in the origin story of Ganvie to sustain a new, aquatic world[37]—*men of the land* transformed into *men of the water*—

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36 This is not a pun on agriculture — aquaculture is the "the rearing of certain marine and freshwater organisms to supplement the natural supply." ("Aquaculture")

37 The power of this myth is on display also in how it was used defensively, the Tonfinu used it to protect themselves from their aggressor by subversively incorporating the Fon's myth into their own worldview.

which, in identifying with, created a space for the development of *regenerative* artefacts; both in architecture and agriculture. However we can see here this is not simply an eternal conception of self, but rather a *disrupted-eternal;* when the world they were of was ended, a new mythology was used ontologically to foster a new world.

This is what I am referring to as *adaptative.* Not simply the mechanics of altering something to be better suited to changing conditions, adaptive,[38] but the shifting of a disrupted mythological worldview to incorporate new expressions of artifice in line with an ever changing foundation in the knowledge-practice-belief complex. In doing so the Tonfinu's survival of their THE END OF THE WORLD did not come at the sacrifice or exploitation of another world; in fact it continued to work within the *regenerative* mode.

It is important not to romanticise places like Ganvie. The collection of villages was originally built as a direct reaction to something horrific taking place; the colonisation of eternal lands and the enslavement of the people of those lands — by ancestors of the same European Enlightenment tradition which this paper is situated in. The disruption in the phrase *disrupted-eternal* points directly at that horror and the transformation of worldview is because of it. The end of a world in this case is not analogous, it was a terrible violence inflicted on the native people of Benin.

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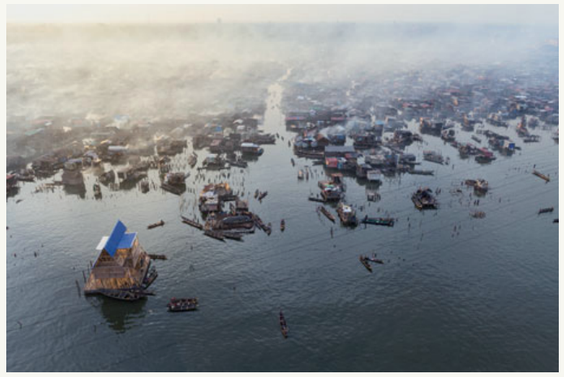
38 Although being adaptive in this more traditional sense will be important too as environmental conditions worsen.

I cannot make this point strongly enough that to draw design inspiration from the outcomes of such a thing is very dark and comes with a host of complex problems. I have tried to not enter into doing so lightly.

Academically one might point to the settlement of the Fon's sacred land as being amongst the problematics noted throughout these chapters but, to collapse my privilege of critical distance for a moment, it is my opinion that I cannot hold up that critique. Writer Amitav Ghosh asks us to empathise with the question "how must it feel to find yourself face-to-face with someone who has made it clear that he has the power to bring your world to an end, and has every intention of doing so?" (Ghosh 2021, 6) **and in that context I cannot criticise this act of anticolonial resistance.**

The people of Ganvie survived the end of their world and have formed an identity around doing so. I feel one way to empathise with the cultural worldview and city's approach to disaster is for it to inform the use of *adaptation* in order to attempt to nurture preferable, anti-oppressive futures.



The floating school prototype

In a 2022 interview, Nigerian architect Kunlé Adeyemi said that "humanity is going to become somewhat more aquatic" (Adeyemi, in Antonelli and Rawsthorn 2022, 128) **and that our relationship with water will need to change — from fighting it, to living with it. He is clear that there are a variety of forms of 'water', from wetlands to the coast to marshes, and that each will need their own approach.**

A two day hike from Lake Nokoué lays the Nigerian city of Lagos, built on the western bank of Lagos Lagoon. At the edge of the city are the informal water communities of Makoko.

Adeyemi observed the makeshift, stilt buildings of Makoko and realised they were likely to be more resilient to the increasing levels of flooding in the city. He worked with the the community—albeit with controversy[39]—to develop a plan for a structure that would improve on their building system to adapt to changing conditions.

They built a prototype, the *Makoko Floating School*. It is a large wooden prism, three stories tall, made of wooden beams and held aloft on reclaimed barrels, which rises and falls with the lagoon. Accessible only by boat, it aimed to "address the community's social and physical needs in view of the impact of climate change and a rapidly urbanizing African context." (Adeyemi 2016, 1) **and was used as a space for**

39 Residents were frustrated at the time it took to develop, and were concerned about the capacity and safety of the school. It eventually sank in a storm, although the prototype had already been decommissioned by that time. ("This Floating School Was a Design Nerd's Dream")

The African Water Cities *vision*

play, workshops, film screenings and, of course, a school. (Ibid, 16) **It was designed to make use of regional materials, which could shift depending on the context it might made in,[40] and was built with the collaboration between Makoko youth and community groups, alongside local carpenters.** (Ibid, 1)

The prototype has gone on to inform the development of the *African Water Cities Project*, a natively African architectural system, which is now being extrapolated to imagine how cities might adapt in the face of increasing extreme weather events.

This project is by no means a perfect realisation of the adaptative principle as laid out above. Its integration of the mythic into the innovation of artifice to suit changing knowledge is missing entirely and the scaling project, with flat-pack systems "highly engineered to European codes," (Adeyemi, in Antonelli and Rawsthorn 2022, 132) **exists well within the imaginary of industrialisation — as does the hegemonic *design decides vernacular-thing is of value* origin story.**

Nevertheless, I find it an inspiring attempt to move the baseline in the right direction. It is within the foundational ethos of bioregionalism with regards to the ecology-society matrix, which considers not just the lifeworld of a material but also the cultural context in which the production and usage will take

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40 Ganvie, Makoko and the *African Water Cities* project all involve the colonisation and urbanisation of previously uninhabited places, with their own ecosystems which inevitably face disruption (positive or negative). As I've pointed out throughout this section, the attempt to untangle one part of the mesh of problematics can lead to other parts being problematised.

place — seen in the engagement with the community and their architectural approach, as well as their carpentry skills. Shifting architectural materiality in the face of disaster—in this case floods—is also clearly present in the innovation for a new ecological context, although I would certainly place it as adaptive rather than adaptative due to its reactionary rather than regenerative mode.

Moreover, it is easy to pick apart why a project is not perfect. The imagining of a contemporary city infrastructure through the critical framework being gathered here is incredibly complex and of course individual projects will struggle to reach system escape-velocity immediately.

When we are dealing with imagining preferable futures, speculative designer Anab Jain, asks us to remain "open and willing to embrace the uncertainty and discomfort that such an act can bring," and, by doing so, we can find optimism and a path towards action. (Jain 2017, 13:55)

Optimism might be the most powerful thing here.

The *realism* implicit in responses such as 'it took too long and sank' and 'it is not subversive enough' are quite the same imagination killer which "presents itself as a shield protecting us from the perils posed by belief itself" and in turn creates a state where hope is a "dangerous illusion." (Fisher 2009, 5)

We simply cannot succumb to that depressive, inert state.

Optimism, an unrelenting hopefulness, creates the space in which our attempts to find a way through THE END OF THE WORLD are rendered worthwhile even in their many faults.

It is looking from an empathetic, critical closeness, rather than a cold, academic distance.

In doing the doing, we step into that uncertainty and, amongst the complex tangle between ideology and practicality, can begin to find our way through.

Appendix A

A STORY ABOUT NETTLES

Part three

To process the nettles into fibre, some very basic tools are required. I begin by, with a blunt knife, cutting the stem lengthways and splitting it open. Beginning at the top and using my thumb, I press the stem over my index finger. The outer layer—still silvery green due to my inexpert retting not having dissolved all the chlorophyll—is flexible and remains unbroken as the bark-like centre snaps. As I go, I peel the pith away from the fibres. Working my way through the bundle, I put the grassy locks to one side and let the pith accumulate in a metal pan.

Once I've collected what I feel to be a decent quantity of the fibre, I bunch it into a ball and push it into a hackling board, a simple block of plywood with a number of long nails extruding, point up. I've made the board by drilling holes into the wood and hammering the nails through at regular intervals. First I use a course board, where the nails are sparse, entangling the fibres and then pulling them out with a fork. As I do so, the remaining matter holding them together is broken down,

transforming the locks into something closer to rough, dirty wool. After a while I move on to the fine board, with small, dense nails and repeat the process, each time the fibre becoming more fine.

When I have a good fistfull, I go on to card the fibres. This involves rubbing them between curved sheets of tiny needles, for which I use two old hair brushes, that seem to do the job adequately. Dust particles coat my lap as the stems finally become pale green clumps of wadding.

Sat on the studio floor, I hold a handful of silver-green cotton candy in my left hand and a drop-spindle in the other. The small wire hook at the spindle's tip, which I'd bent roughly into shape, gently grabs at the wadding, until I make an uncertain purchase. Slowly moving the weight of the from the nettle fibre to my right hand and rotating the makeshift tool between thumb and forefinger, a wispy thread begins to emerge. It takes a few tries to draw it to any real length without snapping, but eventually I begin to see the form take shape. I let all the weight go. The spindle hangs in the air, suspended for a moment before falling to the ground. Cursing, I pick it up and have another go. There's a knack to it, feeling the quality of the twine and the tightness of the spin. Too tight it snaps, too loose it pulls apart. After an hour of the spindle pathetically falling into my lap, I manage to find a way. Another hour passes before I'm able to wind some incredibly naive yarn around the handle of the spindle; bits of pith sticking out between the fluffy threads. My yarn is still green—which whilst charming in its provenance shows the poor quality of my work—good nettle fibre is brown, having removed all but the pure fibre. I like it being green; a telltale sign that it's been made with my own hands.

Film two

FORAGING FOR NETTLES

At this point in the paper, please follow the link below to access a short film.

bit.ly/foragingfornettles

6.0, an attempt, field work,[41] framework

"You do it because the doing of it is the thing. The doing is the thing. The talking and worrying and thinking is not the thing."
— Amy Poehler, *Yes Please* (2014)

I am going to take the lens of critical closeness and attempt to use it to examine the four qualities identified in the preceding chapters through practical fieldwork:

sustainable
regenerative
adaptative
optimistic

These will act as the guiding principles in our framework, with the idea of subverting the future consisting only of growth.

The attempt I am making here is to create an artefact — from harvesting of raw materials to

41 This chapter will be an analysis of the field work in the context of the qualities outlined in the previous chapters — for a fuller context, please refer to *Appendix a, nettle story*

completed object — by defining these principles more clearly and engaging in artifice within the bounds of the framework.

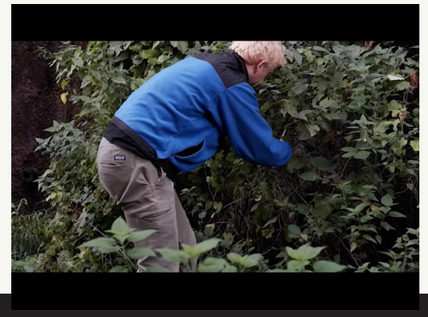
In doing so, I am asking
how might we find a pig for the tracks?

6.1, sustainable

To make use of a material with respect to the Seventh Generation Principle, by attempting to use the material in a way which maintains its ecological-societal lifeworld, so the material remains *subject,* even within an object artefact. In this way the 'law of return' can be met, with the object simply returnable to the source ecology.

The initial steps of both the bioregional design approach and the knowledge-practice-belief complex begin with a knowledge of an ecological system or biome. For myself, this place is where I live, the Canton of Geneva.[42] With the knowledge I have, I can recognise one under appreciated 'resource'—the

42 My existence in Geneva is certainly urban and Watson is often asked of TEK, "how would I ever use this in New York?" (Watson, in Design Museum 2021, 183) but this question feels like a symptom of a *trapped* imagination. I prefer Morton's notion that inside the Anthropocene, the gap between geology and humanity collapses into *weirdness*; the structures crossing at the *uncertain boundaries* of the city, (Morton 2016, 7-12) and we might essentially treat Geneva as a biome alike to any other.



stinging nettle — which can be harvested for their bast fibres, similar to flax and linen.[43]

When foraging for nettles, providing the roots aren't destroyed, the native plant will continue to grow back year on year and when harvested the seeds are inevitably shaken loose and spread; which is no bad thing, considering they're well known for promoting biodiversity — particularly by attracting butterflies. At the non-industrial scale, my concern for the seventh generation would be that the nettles might have overtaken the whole of Geneva in a *The Day of Triffids* (1951) style *sting*surrection,[44] rather than being exhausted by my picking.

There is no rich history of nettle fibre cultural practice in Geneva. In general, the use of nettles for their fibres and medicinal properties goes back for millenia ("Why You Should Embrace Stinging Nettles") **and could**

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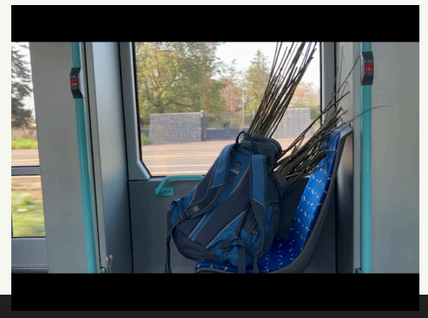
43 In London, I've previously attempted to create materials from nettles to mild success. Combining ground nettle leaves with glycerin and concentrated gelatin produces a pourable, shiny nettle 'plastic' — the leaves acting to strengthen and colour the material — or with sodium alginate, glycerin and water to make a clay, which can be sanded and sculpted into various forms. All these ingredients can be refined with low-tech tools and are accessible in many bioregions, apart from sodium alginate which is made from seaweed native to only a handful of places globally—although the UK is one of them—and requires a heavier chemical refinement. ("How Alginate Is Made Tutorial") Whilst these methods are biodegradable, which is certainly preferable, I'd argue they make an object of the nettle, rather than retaining its subject status within a lifeworld and are far removed from any traditional methodology. This was why the fibres felt more appropriate.

44 In John Wyndham's post-apocalypse novel, a meteorite causes most of the human population to go blind. An aggressive, mobile plant called the *triffid* opportunistically overruns the world with their deadly stings.



be considered broadly as TEK, but other than evidence of folk use in Switzerland dating back to Neolithic times, ("Urtica Dioica L", A.Vogel) **they do not have much cultural relevance here.**

Does that mean my attempt isn't sustainable?

I'm not so sure. There is simply no societal value to be at risk of exploitation. Whilst I was out foraging various people stopped to chat. Most didn't know you could harvest nettles for anything other than soup. I don't know who owns these nettles — culturally, rather than in the property sense.

For this attempt, I think it is again a question of scale. For now the city has been content to let this native plant grow in patches, out of the way, and not give it much thought. This has led to a readily available, underutilised 'resource' which providing I do not exploit can be taken sustainably.

But in taking it sustainably, like LUMA in the salt fields, it does nothing directly to provide an opportunity for regeneration.

6.2, regenerative

Engagement in any mode of artifice which is directly counter to extractive systems.
One permutation might be the integration of the mythic into a mode of artifice to foster an *eternal* conception of self, which is counter to the realist-progress narrative of modernity.
Scavenging might be another mode, which is counter to the 'raw-material to waste' linear process of industrial capitalism.

Processing the nettles into usable material involves soaking the stems in flowing water for several weeks, a process known as *retting,*[45] for which I was able to use the river Rhône — the same water system which fed the growth of many of the nettles I harvested and will eventually feed the saltmarshes of Aigues-Mortes. As the nettles naturally rot in the water, bacteria return nutrients to the river, much like the leaves left to mulch on the foraging site return to the soil. Despite the inefficiency in the process, this circularity is crucial in embodying an *eternal* conception of self as the hyper-locality keeps the nutrients virtuously within our source ecology.

There's nothing industrial about this. No chemicals are added which aren't just there in the water; I'm not moving the nettles beyond the biome; I'm carrying to and fro myself. Is the non-industrialised

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45 Retting loosens the fibres by allowing a controlled amount of decay to break down the natural sugars binding the fibres to the core of the plant ("Retting")

inherently counter to an exploitative system? Or just simply non-participatory?

During processing, I accidentally caught several invasive *killer shrimp*[46] in the nettle sheafs.

The removal of a dozen shrimp from an ecosystem is not likely to make any real impact, but as I'm reflecting it's interesting to me because this is an attempt. The critical closeness here is an exercise in research, it is not a commitment to an ecological symbiosis in this place. It is temporary by definition.

If I was truly e*ternal* here then perhaps some impact might be made on the shrimp population; as Ganvie's reefs attracted insects and fish, perhaps the nettles would filter out the shrimp. Maybe we'd see an increase in biodiversity as disruptive predators were slowly taken from the Rhône. Without the mythic element, the worldview, I am not really able to do more than go through the material actions of *regeneration.* It will always remain research *on,* as opposed to participation *in.* This is similar to the floating school, with actions stemming from climate emergency driven research rather than cultural ceremony.

But maybe this is okay. A first step towards something, rather than a terminus.

To reach an *adaptative* mode, some sort of Le Guin's *life story* would be needed to ground the decision making and ontological world-making of design in changing conditions.

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46 Growing only up to three centimetres long, the killer shrimp isn't a predatory threat to humans, but they're known for aggressive feeding habits and killing large numbers of surplus organisms without eating them, which disrupts food chains for native fish. ("Killer Shrimp")

Lowther Castle rewilding project

6.3, adaptative

> A flexible, mythological *worldview* that maintains a non-exploitative, ontological mode of artifice which can incorporate dramatic changes in its ecological foundations.

The mythic is not something that can be easily tossed into the mix.

As Oregon's ponderosa forests may take centuries to return after logging, modernity's "massive desacralisation of culture" (Fisher 2009, 6) **cannot be rewilded instantaneously. But we can look at what grew in the ruins beforehand to influence how we keep going.**

In *The Folk-lore of Plants*, (Dyer 1889) **the nettle is reported as having the mythical attributes of, amongst others:**

1. in Tyrol, shielding from lightning strikes when burned on a fire during a storm;
2. in Ireland, a mark of the devil, worn in his apron;
3. driving away evil spirits;
4. is referenced in Shakespears' *Henry V* as a imbuing it's protective qualities on strawberries when grown together;
5. warding a nettle wearer against fear in times of danger;
6. and a general "association with lightning, witchcraft, demonology" (Ibid, 53, 75, 78, 280, 313)

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47 The feminist connotations of witchcraft reclaimed as a word and practice in defiance of patriarchy are recognised here ("Modern Witchcraft")

The princess picks nettles in The Wild Swans

It's further associated as a charm against the arrows of elves and sorcery of fairies, as well as with the Norse trickster Loki, who uses it to craft a magical fishing net. ("The folklore of nettles") **Most famous might be the use of nettles in Hans Christian Anderson's story *The Wild Swans*** (Anderson 1838-41) **in which a young princess must gather nettles from a graveyard at night, to spin and knit them into coats for her brothers, in order to break the curse of an evil stepmother.[48]**

Considering this paper overtly problematises the modernist industrial imaginary, casting it into the mythic realm as an evil spirit to be driven away, or the sorcery of fairies, or a curse to be broken is perhaps *weirdly*[49] appropriate as a direct confrontation of its *realism*. In fact, that integration of myth as a subversion is one way I have previously marked something *regenerative* within a *sustainable* mode, or directly opposed to the killer story.

When we are dealing with adaptation in the context of with THE END OF THE WORLD, the need for open mindedness at the possible protective qualities

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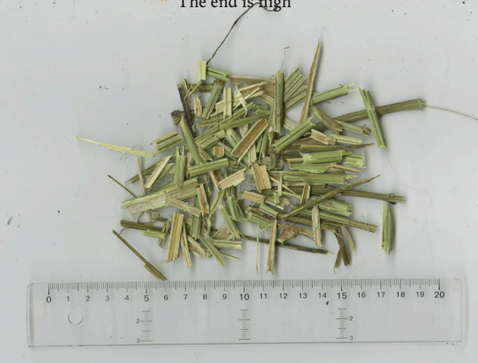
48 I'd speculate that the foundational ecological knowledge these properties originated from would be that fibre is notable for being particularly strong. ("Urtica Dioica L.", Kew Gardens)

49 In *Dark Ecology: For a Logic of Coexistence* (2016), the 'weird' is a key theme, meaning the interconnectedness and interdependence of various entities and systems. (Morton 2016, 5) Embracing this weirdness is crucial for understanding and addressing ecological issues because it disrupts our familiar modes of thought and prompts us to acknowledge the strange connections between diverse elements in the natural world.



Nettle pith is broken up and pressed into nettle wood

nettles can magically imbue on the wearer is part of fostering a mythic, ontological form of worldmaking.

The fibres are processed by hand, on simple tools which I made from wood and nails. Afterwards, you're left with small bundles of silvery, green fibre, similar in consistency to raw cotton. Leftover is the 'pith', or the woody core of the stem.

The fibres can be spun on a drop spindle in order to create a yarn, which I then wove on a loom to produce a rough fabric.

The pith could be thrown back to the earth to decompose, although I chose to press it with a binder to create a sort-of nettle wood OSB material. Ideally this binder would have been a bioresin[51] — used by many biomaterial production processes, such as James Shaw's *Well Proven Chair,* (Franklin and Till 2018, 25) **which makes use of a bioresin with waste wood shavings. For prototyping purposes I used accessible PVA glue, itself a conceit to doing the doing from within the system of industry.**

In this way it might be said that the nettle is transformed into useful raw material, but whilst maintaining the aesthetic and intrinsic life-properties of the subject; a flexible tissue of protective nettle fibre, and a board with the structure of the nettles wood-like centre.

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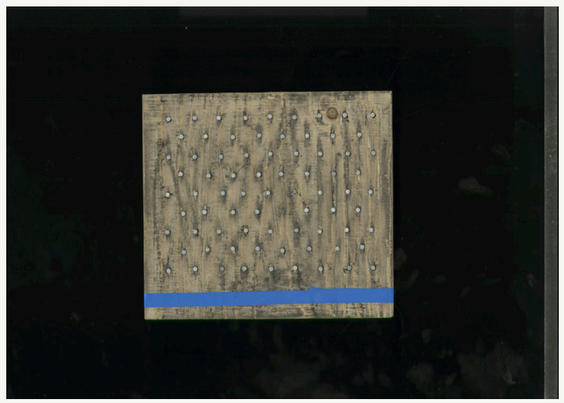
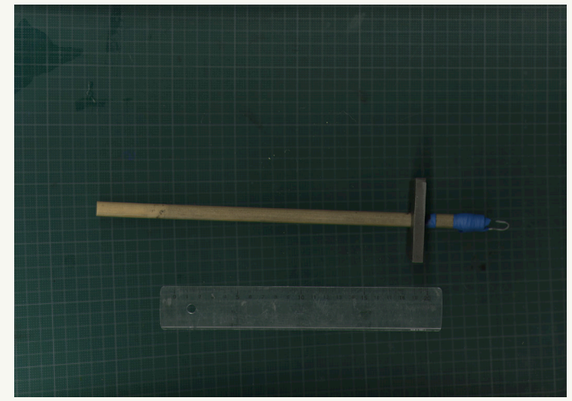
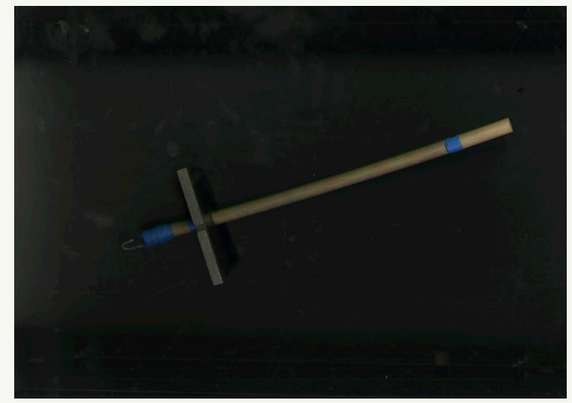
48 A bioresin is a plant based thermo-plastic derived from non-petroleum sources ("What is bioresin?")

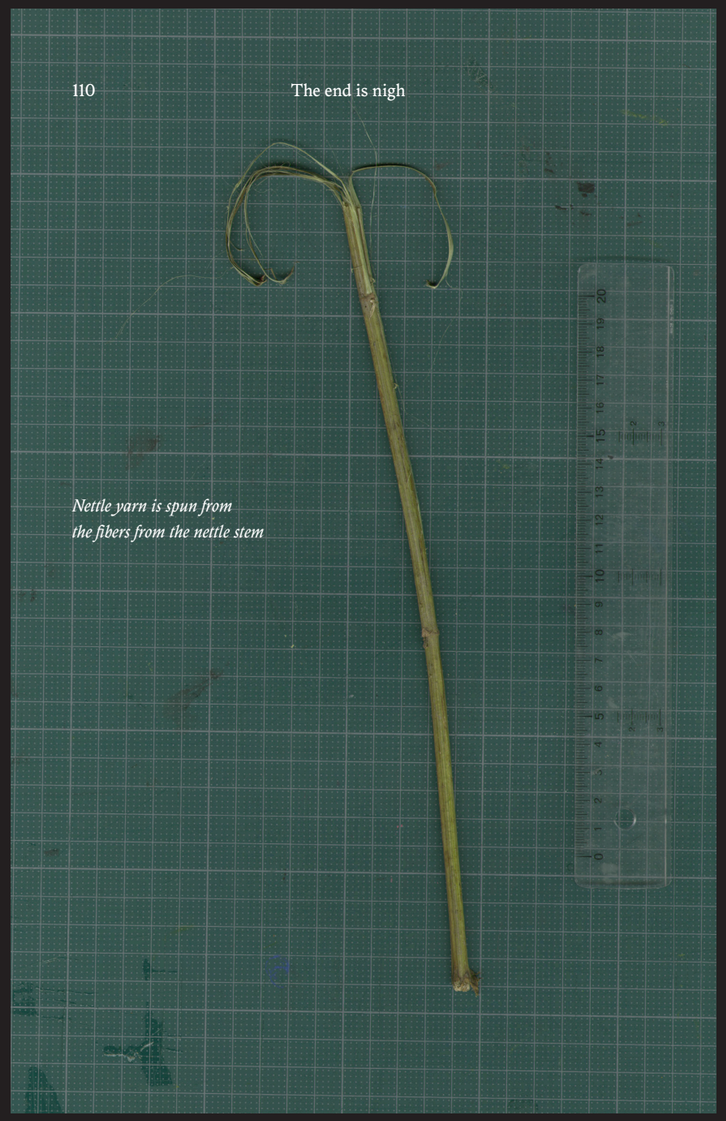


Simple hand tools —hackling boards

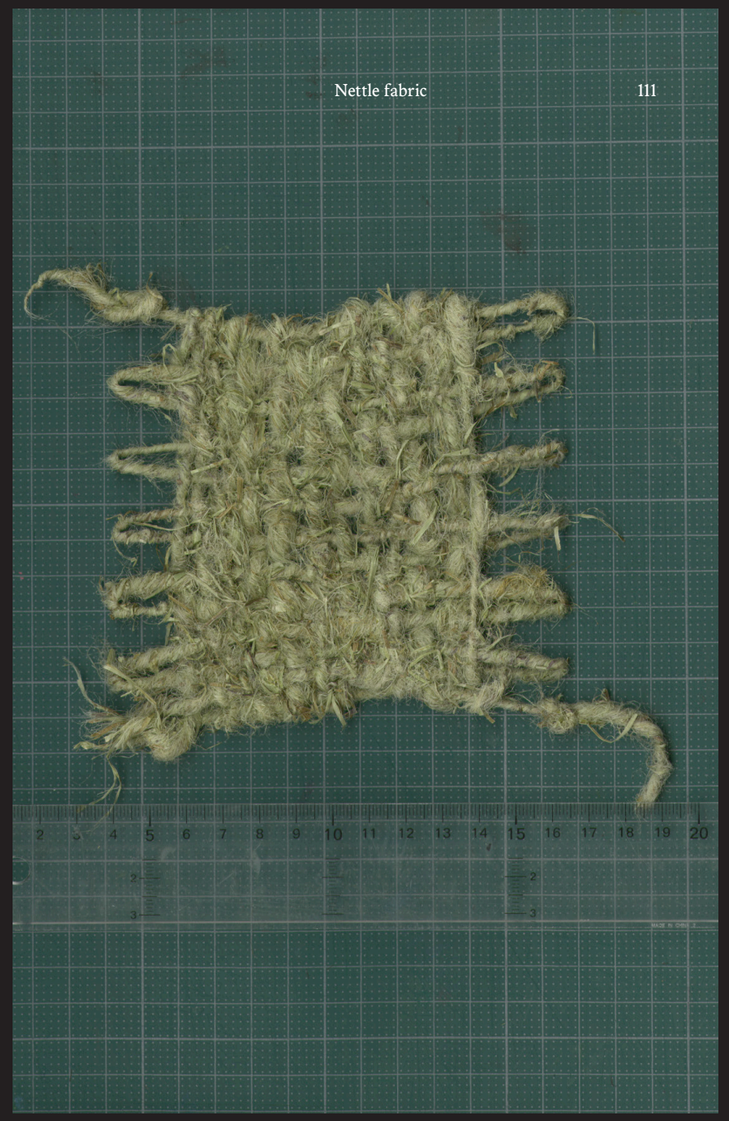
Simple hand tools — a drop spindle







Nettle yarn is spun from
the fibers from the nettle stem



The end is nigh

Nettle Coat, *Alice Maher (1995)*

'Boots of Springhill Jack',
from Elder Scrolls IV: Oblivion *(2006)*

In folklore, the mythical properties are granted to the wearer of the nettle and as such the question of what wearable object to fashion was both whimsical and practical.

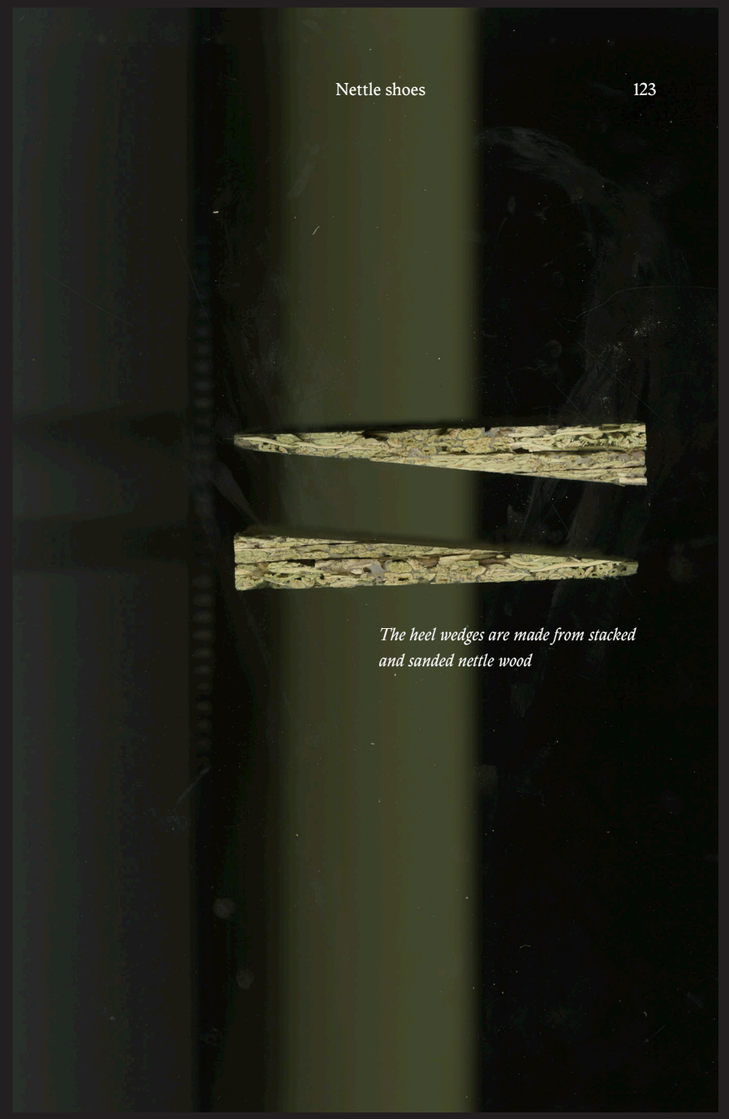
From The *Elves and the Shoemaker* to *Puss in Boots* ("Why Do So Many Fairy Tales Feature Magical Shoes?") **to Spring-heeled Jack,** ("Spring Heeled Jack") **shoes (and the shoemaker) feature in fairy tales as ready talismans for both curses and boons.**

Beyond this, as THE END OF THE WORLD **shifts our ability to rely on industrial modes of production, these heavily industrialised but essential objects** ("Global Shoe Waste") **will become more valuable. In *Parable of Sower,* Octavia Butler describes a world which has fallen into ecological disaster and whose civilization is slipping into chaos. In this violent world, shoes are as valuable—and expensive—as a gun.** (Butler 1993, 208)

Along with some green leather, scavenged from the *poubelles* of Chêne-Bougeries, I made a pair of boots from nettle yarn, weave, knit and pith, which will ward me from fear in times of danger.

The ‘upper’ portion of the shoe is made of nettle weave, knit and scavenged leather — bound together with nettle yarn

The nettle shoes before
the nettle wood soles are added



The heel wedges are made from stacked and sanded nettle wood

The nettle wood soles are attached the nettle fabric upper with a traditional 'welt' technique

6.4, optimistic, conclusion

> To remain open to embracing that the tangle of systems this framework seeks to oppose is highly complex and that no single attempt can remain free from its influence, but the attempt is worthwhile in the cumulative effort to imagine other ways of being.

Whilst this paper avoids realism in the philosophical, deterministic sense, the critical closeness I am trying to employ in this final chapter means engaging in a level of empathy and conscientiousness with what I am working on and in. This research has highlighted to me the dense, twisted thornbush that are the mechanisms and systems which underpin industrial design and production.

Early design-doomsayer Papanek's line, "there are professions more harmful than industrial design, but only a very few of them" (Papanek 1948, 14) **has never felt more true.**

Amongst the cases in the second half of the paper, each tries to address some part of the tangle and in doing so is itself problematised somewhere else in the mesh. Even my fieldwork required the privilege of a huge amount of time — and industrial adhesives — to attempt make the mythic-prototype shoes.I feel that it is important to acknowledge these things because context is, in some ways, the entire point of my thesis: the removal of context is key to the commodification process which subsumes all things into the "motley painting of everything that ever was" (Fisher 2009, 56) **and traps our collective imaginary so effectively.**

But I think it also illustrates what a wicked problem we currently face and the need to remain hopeful in our attempts. Are these shoes a definitive rebuttal to late capitalism's cultural, ecological and societal effects?

On their own, no. Of course not.

But the final principle of the framework that I have sought to outline in this paper is *optimism.* That we must believe the attempt contributes itself to the effort of pushing the needle ever so slightly closer to untangling what we, as designers, need to be doing in order to pursue "an ethical praxis of world making." (Escobar 2018, 21)

To return to Ursula K. Le Guin for the last moment, in one of her final speeches before she died, she said,

"I think hard times are coming when we will be wanting the voices of writers who can see alternatives to how we live now. And can see through our fear stricken society and obsessive technologies to other ways of being. And even imagine some real grounds for hope. We will need writers who can remember freedom. Poets, visionaries; the realists of a larger reality.

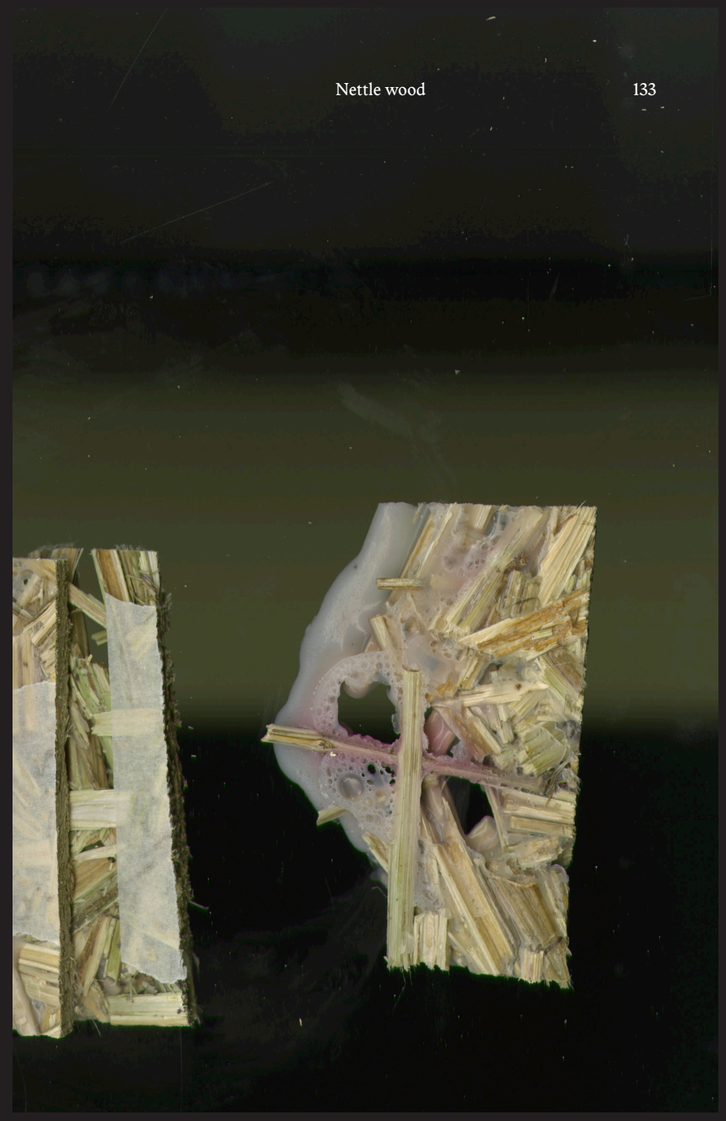
"We live in capitalism. Its power seems inescapable. So did the divine right of kings. Any human power can be resisted and changed by human beings." (Le Guin 2014)

Those hard times are now and if we want those real grounds for hope, then attempts will need to be made — must be made. In best effort, they must be picked up and put in the bag, where they'll find harmony and chaos with the other attempts.

But slowly the bag will fill,
and slowly we will find our way through.

To flourish at THE END OF THE WORLD.

The end is nigh



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