The Sumbiopolis

Activists imagining the Symbiocene in contemporary urban environments

Figure 1 AI-generated (DALL-E 3 model) image with the prompt 'The Symbiocene illustrated with water paint'

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"There was a time when men imagined the Earth as the center of the universe. The stars, large and small, they believed were created merely for their delectation. It was their vain conception that a supreme being, weary of solitude, had manufactured a giant toy and put them into possession of it.

When, however, the human mind was illumined by the torch-light of science, it came to understand that the Earth was but one of a myriad of stars floating in infinite space, a mere speck of dust.

Man issued from the womb of Mother Earth, but he knew it not, nor recognized her, to whom he owed his life. In his egotism he sought an explanation of himself in the infinite, and out of his efforts there arose the dreary doctrine that he was not related to the Earth, that she was but a temporary resting place for his scornful feet and that she held nothing for him but temptation to degrade himself."

Emma Goldman and Max Baginski in 'Mother Earth' (1906)

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Before delving into this dissertation I would like to express my gratitude to a number of people, without whom this thesis would not have come to fruition.

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Again, thank you all. Also to the reader of this thesis, thank you for taking the time to read this dissertation that I have spent months on. I sincerely hope that this inquiry reflects the inspiration I felt when working on this subject as I convey the message of the Symbiocene.

Yours in sumbiophilia,

Spijker Mans

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Abstract

The current separation of culture and nature as two different realities validates the subjugation and subsequent degradation of nature for human gain (Mrozowski, 1999; Haila, 2000). Crutzen (2006) diagnoses the Anthropocene to reflect the period of humanity's impact on the environment resulting from this perpetuated separation which is now perceived as the catalyser of anthropogenic climate change (IPCC, 2023). The environmental philosopher Glenn Albrecht (2015) proposes an alternative epoch to the destructive Anthropocene: the Symbiocene, that envisions humans, nature, and technology conspiring to create a new balance in companionship and a mutually reinforcing relationship.

Different concepts relating to futuring (Hoffman et al., 2021) were combined and rooted in the more-than-human geographies to serve as a unique framework for imagining alternative ecocentric futures such as the Symbiocene (Sheikh, Foth and Mitchel, 2023; Fieuw et al., 2022). This act requires images to circulate, hence through the method of data-driven photo-elicitation, Symbiocene aspects in the contemporary urban environment were photographed by seven activists of XR Den Bosch and elaborated on in semi-structured interviews.

The activists envision the Symbiocene as an epoch where human exceptionalism is replaced by a mindset recognising humans as part of a larger system that must be nurtured for justice and harmony with the non-human world. Despite the negative outlook on climate change hindering progress, XR activists use the transformative power of hope to imagine and document their connections to the Symbiocene in everyday spaces. This visioning process helps shift the concept of the Sumbiopolis from an unimaginable urban environment to a preferable one, aiding the transition from the Anthropocene to the Symbiocene. A small number of homogenous respondents in terms of race and geographical location and potentially too large a scope of analysis leave room for further exploration of this topic by future researchers.

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Introduction

The Western conceptualisation of humanity's place on planet Earth in relation to non-human nature is shaped by Christian theology and the European enlightenment and it is characterised by the dualism of culture-nature: the belief that culture and nature - or humans and non-human nature/environment - are two different realities (Mrozowski, 1999; Haila, 2000). This line of thinking results in the (un)conscious virtual layering of species, with humans at the top of this hierarchy to look down upon the other non-human.

The more-than-human geographies critically reflect on this culture-nature dichotomy and acknowledge that the degradation of nature is ultimately the degradation of humans as these are not separate realities but rather coexist in complex interwoven ecosystems (Haraway, 2015). In line with this strand of geographies, Crutzen (2006) critically reflects on the period of humanity's impact on the environment resulting from the perpetuated separation and submission of nature in his diagnosis of the Anthropocene. This geological era in which human (anthropos) activity dominates the living and non-living environment. Nowadays, human exceptionalism still prevails and the Intergovernmental Panel on Climate Change (IPCC) warns humanity that global emissions of greenhouse gases have continued to rise as humanity's unsustainable resource consumption, land use, and energy usage have exceeded what the Earth can support. The sixth assessment report by IPCC (2023) states that: "*Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming...*" (p. 4)

The impact of climate change on the physical and social environment is becoming immense, both geographically and temporally, making it difficult to comprehend. Enormous wildfires spread uninhibitedly (Villegas & Vega, 2024), drought ensures the shortage of water for crops (Gleick, 2014), and human conflicts arise over water scarcity (Vesco, 2021; Milne, 2022; Gleick, 2014) while heavy precipitation in shorter periods results in flooding (Marengo & Espinoza, 2016). These widespread environmental changes in their most extreme forms take a heavy toll on life on Earth, as these hazards cause unprecedented ravages, often not complying with geographical borders.

The public imagination is heavily constructed with negative images looming over the future depicting environmental catastrophes (Oomen, Hoffman & Hajer, 2022) and, according to Hajer and Versteeg (2019), our limited imagination beyond these negative images hinders our ability to bring about change. The absence of alternative perspectives is concerning as it prevents the development of a positive outlook for the future, potentially fostering hopelessness.

The environmental philosopher Glenn Albrecht (2015) proposes an alternative to the destructive Anthropocene: the Symbiocene, derived from the Greek word 'sumbiosis', meaning 'living together', or 'companionship'. The Symbiocene is a geochronological epoch that envisions humans, nature, and technology conspiring to create a new balance in companionship and a mutually reinforcing relationship.

The combination of techniques or methods for imagining alternative futures and the more-than-human framework for geographies has seen little attention (Sheikh, Foth and Mitchel, 2023; Fieuw et al., 2022) resulting in the inability to imagine positive alternatives. Hence, explicit techniques to shape an alternative future with roots in more-than-human geographies are explored in this inquiry. In this case, the Symbiocene will be highlighted as the positive offspring that is investigated with the assistance of a method/technique called 'futuring', defined by Hoffman et al. as: "*attempts at shaping the space for action by identifying and circulating images of the future.*" (2021, p. 578)

The Symbiocene is still a relatively new emerging concept and the active verb of futuring can assist in futuring this alternative epoch in the urban environment. This act requires images to circulate, hence through the method of data-driven photo-elicitation, Symbiocene aspects in the contemporary urban environment were photographed by seven activists of Extinction Rebellion (XR) Den Bosch and elaborated on in semi-structured interviews.

The pressing need to shift the narrative away from the Anthropocene and anthropocentric thinking, a promising alternative like the Symbiocene and its Sumbiopolis, and the lack of grounded literature in bridging the present and future epochs from an ecocentric perspective resulted in the inquiry of the following research question:

How do activists of Extinction Rebellion imagine the Symbiocene in contemporary urban environments?

The research question is addressed through several sub-questions:

1. What does the Symbiocene mean to activists?
2. How is the Symbiocene imagined in the photographs?
3. What meanings or attachments do the photographs have to the XR activists?
4. How do these images ultimately assist in futuring the Sumbiopolis?

By answering the aforementioned (sub-)questions this research pioneers in collecting visual and verbal data in association with activists that explores the possibilities of futuring the Symbiocene and its Sumbiopolis in contemporary urban environments in a bottom-up manner. The outcome of this research shines a light on an alternative future that envisions humans turning away from the destructive Anthropocene and its distinctive division of culture and nature towards a symbiotic way of living. The Symbiocene works in line with Earth's boundaries partially by challenging human exceptionalism, hence further climate catastrophe would be avoided.

First of all, this dissertation commences with a theoretical framework and an accompanying overview of the literature on the culture-nature dichotomy and the responding more-than-human geographies to illustrate the role that geographers have played in critically analysing human's self-proclaimed justification and exploitation of nature. The literature continues with an overview of the concepts of futuring, the Techniques of futuring and the Voros Futures Cone to draw up the theoretical structure to the imagining of a potential future, which is then followed by an in-depth explanation of the Symbiocene and its corresponding Sumbiopolis. The inquiry secondly continues with an overview and substantiation of the selected methodologies of data-driven photo-elicitation and semi-structured follow-up interviews including the approach to qualitative data analysis. This section furthermore provides an overview of XR as a movement, the participants of the study and an elaboration of the positionality of the researcher within this body of work. Thirdly, the results section provides an in-depth overview of the outcome of the research which is categorised by. The fourth section discusses the most important shortcomings of the research while also proposing ideas for further research after which the fifth section of this dissertation concludes the most important findings and provides an answer to the research question. Lastly, the literature used and the appendices are enclosed.

Literature review

The culture-nature dichotomy

The Western conceptualisation of humanity's place on planet Earth in relation to non-human nature is characterised by the dualism of culture-nature: the belief that culture and nature - or humans and non-human nature/environment - are two different realities (Mrozowski, 1999; Haila, 2000).

This conceptualised separation has its origins in Christian theology and the European Enlightenment. Reading Genesis 1:26, "*man*" was blessed with *"dominion over the fish of the sea, and the fowl of the air, and over every living thing that moveth upon the earth"*. In this doctrine, God granted humans the privilege to subdue all other living beings for sustenance. This line of thinking results in the (un)conscious virtual layering of species, with humans at the top of this hierarchy to look down upon the other 'non-human' nature.

This Genesis-inspired rationale is somewhat rooted in Western society and was propelled during the Enlightenment. Human's perception of the universe was initially informed by the notion that it was living and organic with a female Earth at its centre (Haila, 2000). However, the European Enlightenment and the scientific revolution that characterised this period substituted this worldview under the influence of René Descartes' emphasis on human philosophy. This meant that (white, male, civilised) humans, as rational beings, could alter the progress of history through experimentation, analytical thinking, and empirical evidence. This epistemological turn that viewed the mind as the ultimate and only source of knowledge resulted in a worldview in which the universe came to be viewed as systematic and mechanic (Possamai, 2013), meaning it ought to be tested and controlled by humans.

The 'modern' reasoning of Europeans of the Enlightenment fed a discourse that morally justified the dispossession of land, people, and culture by extolling the benefits of civilising the 'savages' (Harris, 2004). This justification resulted in a hierarchy with powerful, orderly, rational, and entitled humans ruling over the 'other' (meaning: non-white, non-male, and uncivilised) that had to be tamed, controlled, cultivated, and perfected (Mrozowski, 1999; Merchant, 2010).

In particular, claiming land as a result of colonist practices constituted an increase in the abstraction of reference to nature. This was exemplified by the mapping of demarcated pieces of land on paper, which were now objectified and readily exchangeable or allocable, thus becoming an object of trade or commodity for the coloniser. The mapping of land made assimilating unique sites, objects or phenomena under a more generic category possible (Castree, 2003) as illustrated by colonists portraying mapped land as empty where sites of indigenous people held place to conceptualise a new Eurocentric space (Harris, 2004).

Despite nature having no intrinsic or universal term apart from a convention of meaning and values of particular cultures and times (Peterson, 1999), the European colonisers justified the hegemony over nature by modern civilisation, resulting in the social construction of nature as a uniform object that subsequently shaped the culture-nature dichotomy through abstraction and categorisation (Mrozowski, 1999). In her book, *Feminism and the Mastery*, Val Plumwood (1993) underlines that the culture-nature dichotomy serves to justify the subjugation and exploitation of nature by culture. She does so by tracing the dualisms of culture/nature, man/woman, master/slave, and human/non-human to identify the upholding of the perceived superior and independent (left term) to the inferior (right term) (Plumwood, 2003; Elvey, 2006). The binary use of the terms affirms the belief that culture and nature are opposite and can be viewed as separate realities.

Human exceptionalism and the objectification of nature have been perpetuated since and are reflected in political structures and academic discourses of contemporary Western, primarily capitalistic societies (Choi, 2016). Capitalism increasingly refashions natural products as products of human labour, as Karl Marx observed halfway through the 20th century during the height of the European Industrial Revolution, in the way that plants and animals were selectively bred to increase commercial value (Whatmore,

2013). Nature is reasoned as an exploitable and tinkerable resource and is, or can become, a commodity. This commodification reveals itself through the selling of physical (transformed) products like food, water or materials (e.g. pottery and buildings) but it also manifests in the sale of experiences, such as ecotourism destinations that charge entrance fees (Liverman, 2004).

An issue with assigning a monetary value to nature is that money is often regarded as an objectified expression of a product's intrinsic worth (Fourcade, 2011). However, in the context of the fast fashion industry, the costs of unjust spatially distributed environmental or social degradation are often not included in this price (Bick et al., 2018). The materials used to manufacture clothing require significant quantities of water, and the manufacturing process is often done in appalling working conditions, with workers earning extremely low wages. Nature and culture are not expressed with adequate monetary value and the assignment of a financial valuation in effect decouples the commodity from the exploiter and the customer through abstraction. The labourers and the environment that are degraded remain mostly out of sight, and the payment of a sum of money that is redeemed serves to obscure this. The culture-nature dichotomy thus becomes evident when the sale of nature/natural products is justified for the generation of money despite the environmental and social degradation being part of the consequences.

Crutzen (2006) critically reflects on the period of humanity's impact on the environment resulting from the perpetuated separation and submission of nature in his diagnosis of the Anthropocene. This coined epoch is the current geological era in which human (anthropos) activity dominates the living and non-living environment, leaving an increasingly lasting imprint on planet Earth that may well have a comparable impact as a geological force that has shaped previous geological periods[1]. This immense impact of humans on the environment in the Anthropocene is exemplified by the global emissions of greenhouse gases that have continued to rise as humanity's unsustainable resource consumption, land use, and energy usage have exceeded what the Earth can support. The window of opportunity to enable climate-resilient development is narrowing (IPCC, 2023) as humans are destabilising the foundations of life on earth - be it geographically and temporally disproportionately (Raupach et al., 2007; Chancel, 2022; IPCC, 2023). Human response to the diagnosis of the Anthropocene and its damages has prompted reworkings of the culture-nature dualism but these reworkings are largely motivated by concerns for humanity's future, rendering the Anthropocene thoroughly anthropocentric (Rademacher, 2015).

There is, however, growing awareness of the dangers of unsustainable extractivist practices for the environment and global climate that feeds the critical discourse on human's relationship with nature. As posited by Whatmore (2013), the field of Geography is unique in its concerns about the relationship between culture and nature compared to other disciplines which is more clearly explained by Liverman (2004) who asserts that Geographers have the skills to provide more nuanced and regionally detailed analysis of the causes and consequences of environmental change, due to their ability to think and link the global with the local, assess vulnerability, and reveal power structures.

Human exceptionalism thus marks the relationship between the human and non-human which fuels the domination of the former over the latter, which is one of the catalysers of anthropogenic climate change. A significant and influential posthuman strand within the geographies that focuses on the relationship between culture and nature as heathens' opposition to Cartesianism is the more-than-human geographies, outlined in the following section.

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[1] In early 2024, the proposal to take up the Anthropocene in the Geological Time Scale was rejected by the International Commission on Stratigraphy (IUGS, 2024). Despite the formal rejection of this geological term it may remain a widely used concept in different scientific disciplines or more informal domains to raise ethical concerns regarding the culture-nature binary notion (Leiss, 2022).

More-than-human geographies

More-than-human geographies are an attempt at unsettling the privileged place of humans as the rational subject of knowledge about - and practices of - nature. It aims to allow for a better understanding of the relations between nature and society (Whatmore, 2006; Chagani, 2014). In this sense, humans are not the central driving force in the material world as they share their agency with material agents that they have no control over.

The more-than-human concept, popularised by the eco-phenomenologist David Abram (1996, from Souza Júnior, 2021), aims to overcome the binary notion of culture-nature by connecting culture and nature as an encompassed web of interdependencies that share terrestrial spheres. Different disciplines took on the concept and unleashed their theoretical perspectives such as post-humanism, eco-feminism, and post-phenomenologies, which subsequently inspired geographers to work on the temporal and geographical aspects of the more-than-human world (Souza Júnior, 2021).

A prominent theory that inspired more-than-human geographies is Bruno Latour's (2007) Actor-Network-Theory (ANT). ANT has informed a hybrid ontology by which the human-constructed hierarchy of human and non-human actors is flattened to decentralise the human. Objects might be inanimate, but without the non-human, humans could not exist, as the particular formation of a network is the effect or outcome of the continuous constitution of the two (Choi, 2016).

Latour's theory assists in understanding how environmental degradation by humans is ultimately the degradation of humans. This is because humans share networks - and thus agency - with other (living) things/beings such as trees that provide oxygen, habitat for life, and environmental stability. These actors and networks that interconnect with other systems like agriculture provide the conditions necessary for human life to thrive.

Donna Haraway (2003, as cited in Chagani, 2014) argues that ANT – reuniting humans and non-humans - assimilates all actors under a common umbrella, resulting only in partial connections between actors that occur across irreducible differences. In other words, viewing the non-human as alike to us detracts from the vital differences present, which is potentially harmful: treating a lion's cub as a human baby, or vice versa, induces its intricacies regarding behaviour. This critique led to the emergence of more-than-human approaches to Geography, where the non-human is understood as having agency in relation to other things and beings, without detracting vital differences between them.

More-than-human geographies aim to explore these dimensions of agency by acknowledging the value of other living beings through an 'ecocentric' approach. Ecocentrism, as defined by Gray, Whyte and Curry *"...sees the ecosphere – comprising all Earth's ecosystems, atmosphere, water and land – as the matrix which birthed all life and as life's sole source of sustenance."* They elaborate that ecocentrism: *"…is a worldview that recognizes intrinsic value in ecosystems and the biological and physical elements that they comprise, as well as in the ecological processes that spatially and temporally connect them."* (2018, p. 130) In line with this reasoning of systemically linked processes, Haraway (2015) posits that the collapse of a(n) (eco)system results in the collapse of another system, and yet another.

The acknowledged interconnectedness from the posthumanist perspective of more-than-human geographies including its ecocentric approach can be considered the antithesis of anthropocentrism. Figure 2 depicts the 'Ego-Eco' diagram by S. Lehmann (2010, as cited in Lehmann, 2023) with on the left, humans, specifically man, in an exalted position in the hierarchy relative to the 'other' which is labelled as 'ego'. On the right side of the image, humans are incorporated into the ecosystem of all biotic and abiotic non-humans. It resembles an ecocentric (eco) approach as opposed to an egocentric (ego) one, which is characterising for the Anthropocene. Ecocentrism underlines the antithesis as it recognises the vulnerability of all life forms (including humans) and the interconnectedness between life which raises awareness of the pressing need to move beyond the human-centred (egocentric) epoch of the Anthropocene (Karpouzou, 2016; Isevskj, 2023).
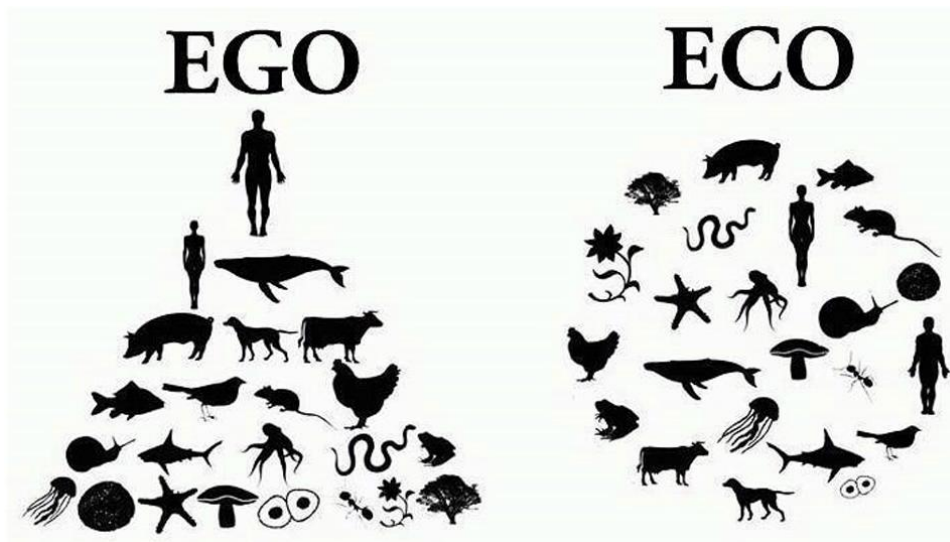
Figure 2 The 'Ego-Eco' diagram by Lehmann depicting how humans are part of the ecosystem, not apart or above it (as cited in Lehmann, 2023)

The more-than-human framework is widely used in cultural geography, for example, in examining: how youngsters who dwell and play in the city are part of human-material interactions (Pyyry & Tani, 2019), in what way the diverse meanings, values and daily practices associated with nature are understood to shape local ecology, knowledge, and environments (Gibbs, 2009), how plants are closely entangled as agents with humans to challenge human exceptionalism (Pitt, 2015; Phillips & Atchison, 2020), and in researching how people with an Autistic Spectrum Disorder relate emotionally to 'natural' things and places besides human interaction to challenge often clinical and dominant understandings of autism (Davidson & Smith, 2009).

In particular, Luo and Gao (2022) illustrate the culture-nature binary from a more-than-human perspective. They do so by conducting an ethnographic analysis following conservationists who provide distant care for elephants by educating buyers who are part of the illegal trade of elephant tusks between Kenya and China. The status symbol of owning tusks in Chinese culture in addition to a lack of physical encounters possibly ethically justifies, or abstracts the knowledge about, the killing of elephants. This also applies to Kenyans who actively hunt and trade the husks, who must place an elephant's life below their own to prioritise financial gain from commerce.

The example presented by Luo & Gao reveals intricate ethical matters in terms of cultural boundaries for the Chinese, as well as the economic sustenance of Kenyans at the expense of the lives of non-humans. The more-than-human approach taken here is not merely about our relation to other species; it also includes the treatment of human 'others' and their relation to the environment as conservationists attempt to spread awareness about the implications of the tusk trade. Luo & Gao (2022) argue that cohabiting with differences assists in a better understanding of the political and ethical sensibilities of others which they call 'relational ethics'.

As previously stated, many people in Western society seem abstracted from the social and environmental consequences prompted by the products they purchase through financial valuation. The inquiry by Luo and Gao (2022) indicates that this abstraction also holds true for geographical or temporal distance or cultural differences, which can result in less empathic relationships between the parties involved. Concurrently, the global COVID-19 pandemic, which isolated many individuals in hyper-local settings, brought nature into closer proximity with urbanites resulting from an increase in viewings of animals 'reclaiming' spaces and a rise in interest in "backyard biodiversity", both of which had the capability to support human-animal empathic relationships (Searle et al., 2021). However, the temporal distance and its influence on the empathic relationship – as illustrated by Luo and Gao (2022) and Searle et al. (2021)

- present a particularly pessimistic theoretical outlook for the future. Should empathic relationships become increasingly challenging to establish with greater temporal differences, it is unlikely that the culture-nature binary will be challenged when addressing the challenges posed by climate change in the future.

Oomen, Hoffman and Hajer (2022) underpin the pessimistic outlook for the future by asserting that the public imagination is heavily constructed with negative images looming over the future depicting environmental catastrophes. In addition, Hajer and Versteeg (2019) endorse that our limited imagination – unable to imagine positive alternatives - impedes our ability to bring about change. Amitav Ghosh (2017), in his book 'The Great Derangement' clarifies the negative depiction of the future as follows: "…*the climate crisis is also a crisis of culture, and thus of the imagination.*" This absence of alternative perspectives is concerning as it prevents the development of a positive outlook for the future, potentially fostering hopelessness.

Thus, a lack of possible empathic relationships and the struggle for positive future alternatives seem to play a role in the obstruction of a shift in the discourse on the culture-nature dichotomy. However, some attempts to explore a future gutted from its culture-nature conception are made using the more-than-human framework. For instance, including more-than-human perspectives in visioning practices is examined in regional studies (Sheikh, Foth & Mitchell, 2023) and spatial and environmental planning (Metzger, 2019), and so is the role of trees in understanding the future urban environment as a co-production of humans and non-humans (Philips & Atchison, 2020).

That being said, Sheikh, Foth and Mitchell (2023) acknowledge that visioning practices and foresight using the more-than-human framework have not seen much literature as a newly emerging concept. This is underlined by Fieuw et al. (2022) who note that further research is needed to provide imaginative case studies for adoption by industry and governments.

Lorimer (2010) and Dowling et al. (2017) provide an analysis on the limited amount of visioning practices in the more-than-human geography studies as they suggest that the approach still lacks methodology that does not rely solely on textual manifestations and theory as opposed to alternative methods in praxis that stimulate innovation and experimentation. This primarily textual theoretical approach most likely results in a lack of connection between the sciences and people not in science: more-than-human geographies appear mostly top-down and institutionalised rather than imagined by the co-inhabitants (human/nonhuman) of Earth in question.

Innovations in research methods like photography are exemplified by Lorimer (2010) as she uses moving imagery (clips) showing elephants in different scenarios and embodied experiences. The clips provide a different lens focusing on more embodied experiences to witness the practical, sensual, and affective dimensions between the human and non-human. These non-textual analyses assist in configuring the everyday geographies, pieces of knowledge and sensibilities of diverse publics (Lorimer, 2010) which attempts to erase the culture-nature binary and replace it with a more in-depth multisensory understanding of the more-than-human. If culture truly wants to get closer to understanding nature and living in kinship with nature, humans must find ways to explore and understand different dimensions beyond the Cartesian '*Cogito ergo sum*' that characterised the Enlightenment.

This argument does not attempt to discredit research within the more-than-human geography spheres. Rather, it aims to assist in understanding how more-than-human geography seems to inadequately tackle the climate crisis - or *hyperobject* as Morton (2013) describes it, emphasising the immense and unimaginable changes these global processes bring about - with its uncanny challenges and impacts on today's and tomorrow's society.

It appears that the techniques or methods for imagining alternative futures in combination with the more-than-human framework for geographies have seen little attention. Hence, techniques to shape an alternative future and rooting this in more-than-human geographies are explored in this inquiry. In this

case, the Symbiocene, an alternative epoch to the Anthropocene, will be highlighted as the positive offspring that is investigated with the assistance of a technique called 'futuring', which is outlined in the following section.

Futuring and the Voros Futures Cone

To provide structure to the imagining of the 'to come', the concept of 'futuring' is introduced by Hoffman et al., defined as: "*attempts at shaping the space for action by identifying and circulating images of the future*" (2021, p. 578). This is in turn supported by the techniques of futuring, described as: "*practices bringing together actors around one or more imagined futures and through which actors come to share particular orientations for action*" (Hajer & Peltzer, 2018, p. 222). Futuring is thus an active verb while Techniques of Futuring (ToF) focus on the process and practices by which the actors engage in futuring such as the organisation of interaction, the specific tools and the process of emerging imaginaries.

An example of ToF related to this inquiry is the A12 blockades from 2022 onward where activists of XR organise the interactions and staging that target specific actors. In this case, the A12, a road that passes the Ministry of Economic Affairs and Climate, is the staging where the organised interaction is a demonstration and one of the targeted actors is the the corresponding ministry. In other words, XR sets the scene by choosing the location and the medium of interaction to reach a specific group of actors that have power over the issue being addressed. As a movement, the activists attempt to shape the future through organised public action as they attempt to destabilise shared notions of the future (Hajer & Pelzer, 2018) that continue to support fossil fuel industries with subsidies.

Identifying, constructing and circulating images of the future to shape the space for action can take many additional forms besides public action, such as virtual-reality videogames (Raessens, 2024), film (Rahayu, 2023) placemaking (Fitzgerald, 2020), and climate modelling (IPCC, 2023) to name a few. Creative writing – also referred to as speculative fiction (Karpouzou, 2016) – is another way to engage in futuring, demonstrated by Claire Stanford (2019) in the short story 'Neither Above Nor Below', which follows the story of a boy named Hasan, a resident of the future city of Jakarta. The city has sunk due to the effects of climate change but has found a way to coexist with the rising tides. The story won the writing contest by 'The Nature Of Cities' in which the stories of people and nature in cities of the future would be explored (The Nature Of Cities, 2019). The story sparks the imagination of the reader or listener with a detailed narrative of the potential future, thereby becoming more tangible. This example of an act of futuring highlights the possibilities for stimulating the imagination.and thereby potentially shaping the space for action if this imagined future provokes feelings that move people.

The Futures Cone, introduced by Voros (2017), displayed in Figure 3, depicts an individual's subjective view of ideas regarding the future in the present moment and illustrates how the range of potentially imaginable futures increases over time. The cone is a metaphor for a vision of the future, depicting a spotlight: bright in the centre and gradually darker toward the edges. The outer 'limits' of the cone are portrayed as porous by a dashed line, as the limits are impossible to define (Cork et al., 2023) and just because a future cannot be imagined, does not mean it cannot occur (Voros, 2017).

By combining the act of futuring and the Voros Futures Cone, the subjective view towards (im)possible futures ought to change when information or images regarding the future are circulated, potentially paving the way for a self-fulfilling prophecy to attempt to break the limiting barriers introduced by the Anthropocene. The Symbiocene as a possible future, although presumably preposterous or unimaginable (crossing the porous limits of the Futures Cone) at this point, has the potential to shift towards being a preferable future by circulating images of the Symbiocene in the present, thereby bridging the gap between now, the Anthropocene, and the possible future, the Symbiocene.

It should be noted that this cone emphasizes possibilities beyond the present moment, neglecting the influence of an individual's life trajectory in imagining a future such as experiences from the past to the

present, located within economic, societal, and political structures. This inquiry is focused on the iterative process of bridging the present with the future, hence an individual's past is not extensively analytically considered (for further variations on The Futures Cone, see Gall et al., 2022).
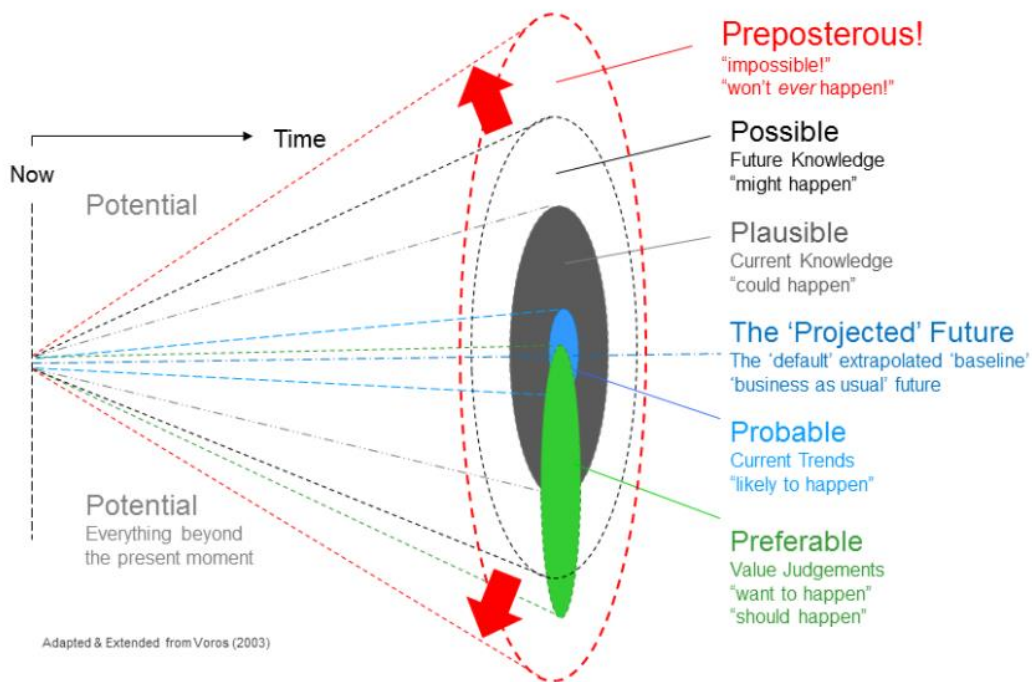

Figure 3. The Futures Cone incorporating the subjective judgments about ideas regarding the future in the present moment (Voros, 2017).

Circulating images of a possible future is not an attempt to convince individuals or society of a single ultimate future or to force certain ideologies as this would work contradictory. Instead, the purpose is to shape the space for action towards a collectively held preferable future, of which the Symbiocene is a possible one.

Shifting the potential subjective vision towards the Symbiocene and its Sumbiopolis from more negative associations - or none at all - towards a preferable future by circulating images in the present bridges difficult-to-imagine crevices or gaps between now and the future. In this case, futuring is an exercise in identifying what to preserve from the present Anthropocene to the future Symbiocene and thereby clearing a blurred distant future.

Symbiocene

The new geochronological epoch that envisions humans, nature, and technology conspiring to create a new balance in companionship and a mutually reinforcing relationship, introduced by Glenn Albrecht (2015), has been created to achieve a complete change in the biophysical and emotional foundation of society from the ecocidal (ecocide) - acts resulting in severe and either widespread or long-term damage to the environment (Ecocide Law, 2021) - to the symbiotic (symbiosis) – the mutually beneficial interaction between organisms (Vocabulary.com, n.d.).

The symbiosis between species comes close to a process of negotiation - 'making kin' as Haraway (2015) would formulate - as opposed to fuelling domination to survive. Mutual dependence between species leads to the survival of the most symbiotic, rather than the strongest. In this context, Darwinian reasoning rationalising natural selection does not age well for humans. The perception of the human species as transcending nature has resulted in anthropogenic climate change which exacerbates extreme scenarios, putting ecosystems at risk of losing their equilibrium which is essential for an ecosystem's self-regulation (Montani, 2007) and survival. Achieving the greatest potential of living things through

symbiosis is possibly the sum of beneficial relationships as Stuiver (2022) suggests, but could ultimately result in synergy (Wood, 2007).

Previously, the Capitalocene and Plantationoscene have been coined to describe the age of capital (Moore, 2014) and the role of the plantation in propelling colonial exploration and sustaining a racialised elite (Wolford, 2021) respectfully. However, these labels for the current epoch merely highlight human destruction instead of providing a fruitful future alternative like the Symbiocene does (Bayes, 2023).

The limited available research regarding the Symbiocene is scattered through many disciplines like eco-arts (Fitzgerald, 2019), poetry (Ferrando, 2023), ecological sustainability (Eaton, 2020), and mental (Upward, Usher & Saunders, 2023), public and environmental health (Robinson & Breed, 2019). Poetic writings and art installations visualise the Symbiocene and create spaces where humans can experience this harmonious alternative epoch characterized by symbiosis. Most papers written on the Symbiocene advocate for, or romanticise a transition towards the Symbiocene whilst the theoretical or empirical foundation for this transition is currently lacking in much of the scientific literature, which merely leaves room for imagination and speculation that potentially benefits from being accompanied by reproducible forms of data and frameworks such as the combination of futuring and imagery. That being said, the romanticising of, and advocating for a transition towards the Symbiocene in different imaginative forms is of uttermost importance in paving the way for this potential future, as has been elaborated on in the preceding section of 'Futuring and the Voros Futures Cone'.

Besides the Symbiocene being a relatively new concept, two major challenges possibly influence the literature on the Symbiocene in different ways. First, the Symbiocene encompasses every aspect of physical and mental spaces on Earth and is thus part - or the whole - of a global transformation on an environmental, climatological, technical, political, economic, spiritual, linguistic, and biological level, to name a few. The total transformative capacity that the Symbiocene holds is likely to transform social infrastructures for all spheres of life. In addition, this transformative capacity on a planetary scale arguably transcends our current thinking and envisioning as humans (Ghosh, 2017), which relates to the next challenge.

Second, the temporal dimension of the Symbiocene is not merely one of historical context that shapes the present but is also constituted through contemporary visions of a possible future. These visions are often corporate and focused on unequal and/or unjust socio-technical innovations and governance (Williams & Woodson, 2019) which is then reproduced by funded academic research projects, in opposition to stimulating a more open debate (Hajer & Versteeg, 2019). The Symbiocene does not necessarily fit in the picture of the status quo, which potentially decreases the possibilities of conducting research or commencing in other projects that assist in futuring this alternative epoch.

Although the Symbiocene is a planetary concept, the new epoch may require a training ground to develop and flourish to its full nurturing and regenerative potential. Furthermore, an in-depth analysis and tangible vision for the Symbiocene are needed in which the 'sumbiopolis' - coined by Albrecht (2019), referring to the Greek word sumbiosis, linked with polis (city) – will provide a more manageable scope that is outlined in the next section.

Sumbiopolis

Urbanisation is a global trend - with over half of the world's population currently residing in an urban environment, which is expected to increase to 68% by 2050 (United Nations, 2018). Because of an increasing urban population and density, the urban environment can benefit from geographically focused mitigation actions (Crippa et al., 2021), thus studying the urban environment as a possible breeding ground or habitat for the Symbiocene is intriguing.

That is to say, globally generalizing cities is not without risks and causal relationships between the emission of greenhouse gasses and living in a rural or urban area are difficult to isolate (Andrews, 2008).

The latter implication becomes important when researchers attempt to quantify certain thresholds for environmental requirements of the Sumbiopolis.

In addition, the urban environment has seen little attention in ecological studies even though there is great potential for biodiversity in cities. This potential is due to the multitude of habitat niches and unique climate conditions that come from relatively high nitrogen levels compared to rural areas, the urban heat island effect, and precipitation differences from rural areas (Roggema et al., 2024). These unique urban conditions are paired with intricacies such as elderly people suffering from the urban heat island effect. Using nature-based solutions for urban design potentially amplifies biodiversity, fostering a more symbiotic relationship between humans and nature and redefining the role of the urban environment from habitat for humans to habitat for all life.

Contemporary cities are centres (or hubs) of relative proximity that provide capital, culture, and knowledge while globally interconnected through the exchange of these resources[2]. This interconnectedness and exchange of resources comes with (reciprocal) dependency on other regions. Local environmental degradation caused by global processes causes instability in this dependency (Mulder, 2016), pressing the need for a more stable Sumbiopolis in times of increased environmental and climatologic turmoil to provide the necessities for symbiotic life to thrive.

Urban expansion and increased density often result in the displacement of nature, with loss of soil and water, and subsequently the diminishing of biodiversity as a consequence (Stuiver, 2022). As previously mentioned, the degradation of ecosystems is ultimately the degradation of humans, with an increase in mental health issues like depression (Sharma & Patel, 2023) and autoimmune and non-communicable diseases (Bruno et al., 2022). Moreover, the loss of surface area of greenery means fewer possibilities for water retention and fewer cooling effects that diminish the Urban Heat Island Effect (Frumkin, 2002). Urban resilience in this sense is highly related to the health of the connected ecosystems.

Ultimately, living in a Symbiocene city like the Sumbiopolis would mean building symbiotic urban communities that contribute to stable and healthy living environments for all life. Resilience, robustness, and flexibility are already inherent to biodiversity (Thompson et al., 2009) thus creating ideal circumstances for symbiotic life to thrive results in urban resilience to better withstand ecological crises and catastrophes whilst not perpetuating the causes of these catastrophes in the first place.

'The Symbiotic City', authored by Stuiver (2022) is a comprehensive bundle of theories and visions regarding a Symbiotic urban environment, written through a socio-ecological perspective. To illustrate, in the second chapter, she defines a clear ecocentric framework for application in cities based on the foundation, networks and human practices as building blocks of symbiotic environments. In chapter three she sets out to find practical and strategic solutions to envision a symbiotic city by constructing imaginary storylines of a region in the Netherlands and Washington DC in 2050. Furthermore, the book touches upon various related themes such as food, nature and citizens.

However, the visions constructed by Stuiver and co-authors remain scientific theoretical and top-down as their inquiry merely theorises possibilities and scenarios for the Symbiotic city as opposed to constructing visions based on participant-driven data. This scientific approach possibly renders the visions abstract for citizens, which does not assist in bringing alternative futures closer but rather does the contrary, namely imposing these practices and visions instead of stimulating involvement. The ideas regarding the symbiotic city are a sum of theories applied to a fruitful imaginary storyline for Western society but lack a phased timeline and guidance for implementation and come short in considering the people concerned.

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[2] The definition of cities is constantly contested and the provided definition here is constructed from a human, Western, and capitalistic perspective that centres social processes as constructing a city. See Sayer (1984), Amin & Thrift (2002), and Marcotullio & Solecki (2013) for further extensively substantiated definitions.

The critique stresses the necessity of intermediate steps towards constructing a future that is currently distant. Constructing visions involves identifying current challenges and making solutions feasible, tangible, and comprehensible, as discussed in the 'Futuring and the Voros cone' section. Imposing abstract plans on citizens who may already be struggling with issues such as housing shortages and rising food prices is unlikely to result in a constructive outcome and may hinder mutual understanding[3]. However, the critical remark does not imply that these visions lack value, as they are crucial in comprehending the role of biodiversity, ecology and symbiosis in the urban environment that lay a theoretical foundation for further development of the Symbiotic city.

The previously described examples of creative writing and other methods of engaging with futuring can ground visions of the future beyond the dominant formal domains in which they typically circulate. These formal domains are, for example, politics and science, which are not inclusive to comprehend for all individuals. Different mediums such as readings, artwork, photography, video, and other forms of imagery assist in futuring the Symbiocene and its Sumbiopolis in a more inclusive manner as different mediums enable reaching different target groups. In praxis, this could mean that in addition to publishing scientific reports, a short film is constructed to visualise the matter.

Efforts to specifically define the symbiotic city are made in Western academic spheres, as highlighted in the work of Stuiver et al., thus two contemporary forms of Symbiocene living from the Global South are highlighted to complement the Western conceptualisation of the Symbiocene and its Sumbiopolis.

Contemporary Symbiocene forms of living in the Global South

Nowadays, numerous living forms could be considered closely related to the Symbiocene and Sumbiopolis ways of living. One such example, displayed in Figure 4, is the living root bridges of Meghalaya, located in northeast India. To this day, the state of Meghalaya still knows many indigenous tribes. One of these tribes is the Khasi who, for decades, have constructed the bridges by planting and 'guiding' the rubber fig trees for the root systems to be strengthened over time (Watson, 2019).

Ultimately, instead of chopping down the trees to build a bridge, they grow stronger and more resilient, even withstanding the heavy monsoon season with accompanying floods, all whilst supporting biodiversity and protecting the surrounding land from erosion. Humans, actively supporting life, and nature actively providing safe passage, are living in symbiosis.

Another example is the 'Ecole Flottante' (Floating School), situated in Makoko, Nigeria, designed by NLÉ Architects led by Kunle Adeyemi, displayed in Figure 5. Makoko is an informal settlement located in Lagos that, like other informal settlements in heavily urbanised coastal cities, is exposed to environmental risks, making it a vulnerable urban community (Adeyemi & Disu, 2012).

The school is constructed using locally sourced or recycled timber, bamboo, and fabrics, with minimal use of cement or glass, resulting in low-carbon intensity (Adeyemi & Disu, 2012). The design approach of Ecole Flottante is environmentally responsive and challenges the current notion of building solely on land (Okeke et al., 2019). Sadly, the building collapsed not long after its opening (Mega, 2022) and issues with water pollution emerged as there was no proper sanitation and garbage disposal (Garcia et al., 2021) due to it being an informal settlement with very few (state-provided) resources.

Challenging the preconception of merely building on land, using local resources, and adapting to the local climate and topographical features represents advancements towards an approach centred around symbiosis. These elements are visible in the provided examples of the Ecole Flottante and Meghalaya's

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[3] Citizens already struggling might be reluctant to participate in collective debates. However, forging and imposing plans in a democratic society without an initial participatory element creates injustices between the state and its inhabitants and reproduces state bias. See Fainstein (2010) for in-depth theories on justice in urban planning and decision-making in neoliberal contexts.

living root bridges, which were created out of pure necessity due to environmental dangers in the case of Ecole Flottante.

Despite several forms of Traditional Ecological Knowledge (TEK) (Watson, 2019) that can be applied in city building and architecture, much is still uncertain about the symbiotic future of the urban environment. TEK teaches about local conditions and ways to design in cooperation with nature, as opposed to dominating and degenerating. However, translation to contemporary urban environments requires respecting indigenous practices and forms of knowledge to learn from them, rather than cloning to other parts of the world, also because these practices are localized and are often not effective in other contexts.

Figure 4. A living root bridge, constructed by the Khasi people at Mawlynnon village, India. Photograph by Amos Chapple (Gamolina, 2022)
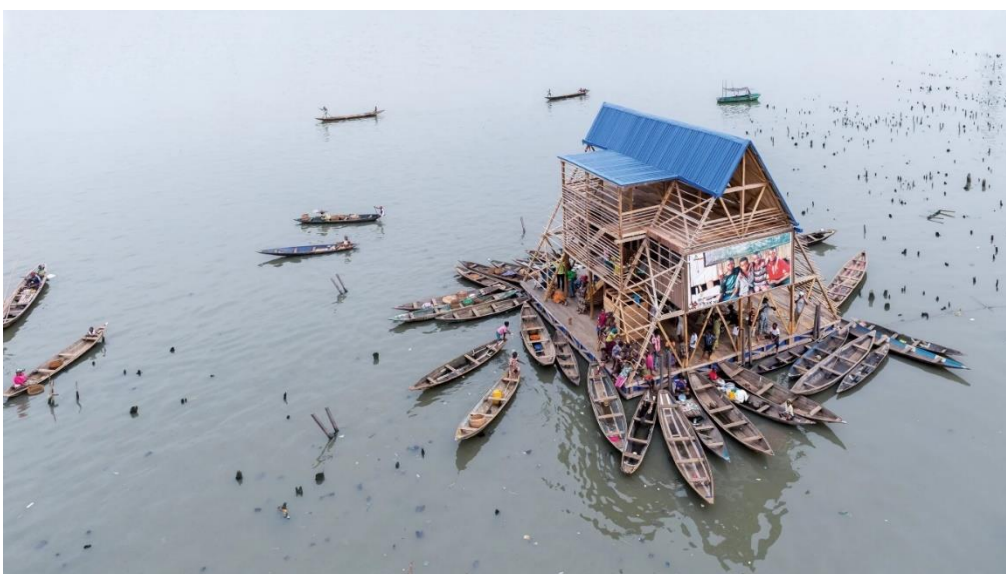

Figure 5. Makoko Floating School, Nigeria (NLÉ, 2011).

Numerous inspiring (scientific) examples use symbiosis as a central theme for the future vision of Earth but tend to lack an empirical foundation and are possibly hindered by socio-technological visions of innovation that currently dominate the academic and corporate worlds. The lack of (empirical) data and frameworks for envisioning a Symbiocene stresses the importance of this research topic for urban geographers and other disciplines to envision an alternative future that is not the destructive Anthropocene. This inquiry seeks to append to the extensive work of Stuiver and colleagues, the conception of the Symbiocene as coined by Albrecht (2015), and the accompanying work of the more-than-human geographies and futuring. This will be attempted by filling a gap in the current lack of bottom-up approaches in shaping the Symbiocene through the collection of visual and verbal data from activists of Extinction Rebellion (XR) that showcases how activists act in futuring the Symbiocene in contemporary urban environments. The qualitative research methods of photography and interviews will be employed to assist in futuring the Sumbiopolis, as will be elaborated on in the methodology section. Before diving into the methodologies, the conceptual framework is illustrated to depict the expected relationship between variables outlined in the subsequent section.

Conceptual framework

Figure 6 visualises how the photographs, substantiated with verbal elaboration and analysis, provide a glance at the Sumbiopolis as imagined by activists of XR, which in turn feeds images of the Sumbiopolis. The Sumbiopolis, shaping imaginaries, is visualized in the conceptual framework with a dotted line because, although being a crucial part of futuring and the projections of the Voros Futures Cone, it is not an empirical part of this research. It merely illustrates the role of photography and imaginaries in the cycle of shaping the Sumbiopolis within this inquiry.
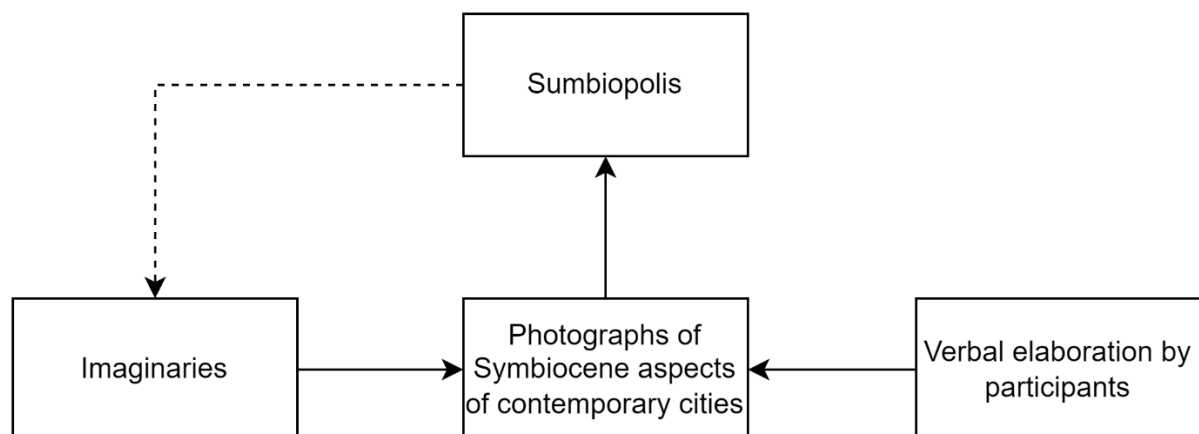

Figure 6. Conceptual framework illustrating the expected relationship between variables.

Methodology

To provide an answer to the proposed research questions in the introduction, the methods of data-driven photo-elicitation and semi-structured follow-up interviews have been used that will be elaborated on in this section. Before elaborating on these methods, the substantiation of selecting Extinction Rebellion (XR) as a movement including the reflection on who the participants from Den Bosch are and how they were recruited is described after which the positionality of the researcher in this inquiry and the ethical implications of working with activists are outlined.

Extinction Rebellion: the movement and the activists

XR is an international movement that commits to a liveable and just planet, two aspects that are in danger due to the consequences of human-induced climate change. Throughout 2023 and 2024, XR in the Netherlands gained mass media attention with the A12 blockades that demanded the Dutch government end fossil fuel subsidies. Because of these public actions, the second parliament has agreed to research the possibilities of phasing out fossil subsidies (Ministerie van Financiën, 2023), highlighting the influence of this movement in creating social pressure with civil disobedience.

Although the Symbiocene is a new epoch for all biotic and abiotic beings, activists from XR Den Bosch have specifically been chosen for this exploratory phase of the Sumbiopolis. XR activists are already (unconsciously) practising the act of futuring and are capable of envisioning various future scenarios aimed at addressing the climate crisis. Their stance towards climate justice and calls for systemic change to humanities' current exploiting and destructive way of living are breeding grounds for alternative ecocentric futures.

At the start of the research, the researcher asked the coordinator of the group meetings if it was possible to put an item on the agenda to address the research project. During this meeting a description was given of the research and what participation entails, after which a message was sent to the XR Den Bosch group chat in Signal to announce it once more, specifically to the people who had not attended the meeting and to (in writing) repeat the message for the attendees. This resulted in three activists showing interest and wanting to gain more information about the project and their roles. Two weeks later during an informal potluck dinner – where attendees bring food to share - several activists of XR Den Bosch who sent a (private) message expressing they were interested were approached. Informal talks with people often revealed more interest as activists expressed uncertainty about what the project entails exactly. This was subsequently cleared up to the best of the researcher's ability after which participants were recruited for the project. The latter process of approaching activists in different settings resulted in seven activists participating in the research project.

The seven participants have been given pseudonyms and exact ages or other details about their lives are not shared in addition to being anonymised. This is because the activists are often publicly active on politically charged topics hence anonymity is of great importance. Table 1 shows the pseudonyms of the participants in the rows and their gender, approximate age, years of activity with XR at the time of interviewing, and amount of days taking photographs in the columns. The latter column does not mean they have actively photographed this whole period but rather that the interview was conducted later than the initial time given due to time constraints.

Although not much can be said about one's specific background, generally, the activists of XR Den Bosch are predominantly white with a great mix of female, male and neuter genders of various ages. The representation of different genders is not reflected in the participants of the research but age and years active are more accurately reflected. The average age of the respondents is significantly higher than the researchers' but that did not seem to hinder any efforts of the research process.

The ages of participants range from under 20 to just over 60 years with two activists identifying as female and the others as male. All but one are native Dutch and have different educational backgrounds – although the participants were generally highly educated - and current occupations, such as a job in

the social domain or driver (deliberately generically expressed). Some activists recently joined XR while others have been active for nearly three years, creating a diverse pool of activist knowledge. Several participants would explicitly express themselves as very rebellious or more cooperative with/against authorities and the longer they would be active for XR the more rebellious some would become. The participants were initially given three weeks to take photographs in the urban environment, after which the interview would be conducted. Generally, this was the case but in some instances, the amount of time differed, which will be elaborated on in the upcoming 'Data-driven photo-elicitation' section.

Pseudonym	Identified gender	Approx. Age	Years active with XR	Days taking photographs until the interview
Alice	Female	20	< half a year	23
Livy	Female	50	> three years	20
Olim	Male	25	< a year	17
Maetzu	Male	45	> three years	24
Erich	Male	20	> a year	24
Leonardo	Male	40	< three years	44
Frank	Male	65	< a year	46

Table 1 Research participants' pseudonyms (rows), gender, age, amount of years active with XR and amount of days taking photographs until the interview (columns).

Being an activist: positionality

Historically, in the positivist tradition, insider perspectives were considered 'biased' as researchers were perceived as unable to distance themselves to 'objectively' conduct the research from their position (Chavez, 2008). Nowadays feminist and critical geographies particularly emphasise the importance of reflecting upon one's positionality in research. Reflexivity as a practice recognises that knowledge is never objective as it is situated in the contact in which it was produced, hence a complete understanding of truth is impossible (Rose, 1997). Therefore, it is of great importance to attempt to grasp the different power dynamics and relationships that are in place, specifically in which various identities influence and shape contact with participants and therefore the research processes and outcomes (Rose, 1997; Hopkins, 2007).

Taylor (2011) personally reflects on the effects of being an 'intimate insider', which she coins as doing research in a close-knit group including friends. This intimate insider perspective partially holds true for this inquiry as the researcher is part of the movement and therefore has a (previously established) connection with the activists of XR Den Bosch. Taylor (2011), being a social scientist in a queer cultural environment, reflects that being the insider has facilitated her work as a researcher but also resulted in friction or confusion in her role as a researcher relative to her friends. This intricacy resulted from the shifting power dynamics in different settings, such as work or leisure, and encounters, like interviewing or hanging out, which intertwine. Taylor's account of the insider perspective reflects the philosophy by Rose (1997) as Taylor states that the *"fragmentations of self in this instance are multiple and the ethical negotiations are complex, but … the benefits of conducting research from an intimate insider position can be great."* (Taylor, 2011, p.19). Within this inquiry, the researcher attempted to manage the insider position as a constant negotiation of power, identities and relationships but that sometimes resulted in an overstimulating experience of attempting to grasp social clues, wanting to remember details about their experiences and reflect on them to potentially build trust and performing the tasks as a social researcher. At times this distracted the researcher from the interview and possibly resulted in missing clues or potential opportunities to dive deeper into the conversation.

Three participants have been acquaintances of the researcher since the researcher joined XR at the end of 2022. Being active for XR is often coupled with protesting in various forms and every other week there are gatherings where the activists come together in person besides the online group chats. The researcher felt that seeing fellow activists every so often created a certain bond and participating in

protests with them tightened those bonds on a different, usually more intimate level as activists rely on each other for mental and physical support. Smithey (2009) acknowledges the collective identity that people participating in social movements tend to share as they often depart from shared beliefs or the drive for change.

Despite some longer-lasting previously established connections, the other four research participants do not have a history with the researcher, as they are either new to XR or the researcher has not had the opportunity to meet the new activists due to inactivity. That being said, the researcher and participant depart from a partially shared view of norms and values that XR holds. There exists also a mutual understanding of what being an activist is like. The similarities in worldview and activism positively shaped the research process as the researcher is more familiar with the norms and values of participants and the movement than an outsider would be, hence rapport was established more easily. Another possible influence on the 'smooth' establishment of rapport was that before and during the research, the participants and researcher established real-life contact during XR's meetings which meant that the interview did not serve as an introduction to the other person, which can at times result in a more reserved, introverted, awkward or other constrained interaction. The advantages of being an insider were particularly helpful for the research as participants were asked to put in a significant amount of time and work, namely approximately three weeks of engaging with the Symbiocene through thinking, taking photographs and an interview. The implications

Irrespective of the two different subgroups of participants in terms of pre-established connections, the researcher did not experience or discern any distinction in the settings during the meetings or other contact. There are simply too many personal characteristics that influence interpersonal contact. The relationships between the individual participants and the researcher vary considerably thus making it challenging to pinpoint what implications generally arise for the produced results. Rose (1997) underlines that one's position in research is never completely understood and that research encounters and procedures shall always be subdued by the influence of positions and contexts.

Despite the researcher's affiliation with XR, engaging in collaboration with a collective of climate activists entails considering ethical implications that are not circumvented by the insider perspective.

Ethical considerations

In addition to personal characteristics that might make a person more vulnerable to e.g. racism, ableism or homophobia, engaging in activism often means exposing oneself to, for example (institutional) violence or exclusion in settings such as work, family or friendships who do not support the choice to join a movement (Costa & Coimbra, 2024). This is reflected in the aforementioned mass media traction that XR receives, which does not always result in positive publicity. Activists have reported to the researcher that, for example during disruptive actions in Nijmegen (against the opening of a new gas power station) and Maastricht Aachen Airport (against the arrival of an increasing number of private jets during the TEFAF art fair), protesters experienced verbal and physical violence from bystanders and police.

Because of negative publicity or possible fear of framing, members of XR can be more tentative about participating in (institutionalised) projects such as academic research. As the researcher is part of XR Den Bosch, a level of trust has been established hence research with the people of XR is possible, revealing a unique perspective on a rather difficult-to-reach community. That is to say that this trust is not to be mistreated. As mentioned earlier, detailed information about the participants is not shared to minimise the potential for recognition of the activists. In addition, the researcher reports on individual experiences: activists might be affiliated with XR but they report on their own terms and thereby do not speak on behalf of XR as a movement.

The closer connections with the activists, as described in the previous section, assisted in building rapport but presumably also generated a willingness to participate. In this sense, if it was the case that a

participant was 'doing the researcher a favour', a certain unavoidable power dynamic arises, possibly fuelled by expectations or a feeling of coercion that the researcher unknowingly imposes. That being said, within XR there is primarily a strong sense of sharing according to one's bearing capacity which ultimately could have led activists to participate. If at all the participants were doing the researcher a favour, there is a possibility that they felt balanced in their work as most activists noted that their participation inspired them and opened a new positive outlook on the world for themselves. This remains, however, a difficult-to-navigate ethical concern.

The rights, dignity, and welfare of the participants are to be ensured to protect the participants and enhance research integrity, openness and quality. Participants partake in the research under verbal informed consent and they have the right to withdraw themselves from participation at any given time, which they were reminded of before - emphasised in appendices 1 and 2 - and during research activities by verbal communication. In addition, participants were told that they were given access to the transcripts upon request and, if desired, had the agency to remove or alter certain parts without giving a substantial reason.

After being informed about the research project, the assignment and their rights, the participants set out to collect photos of Symbiocene aspects in contemporary urban environments through the method of data-driven photo-elicitation, outlined in the following section.

Data-driven photo-elicitation

In a previous section on the Symbiocene within this dissertation, examples of creative writing and other methods of engaging in futuring have been outlined as possible ways of grounding visions of the future beyond the dominant formal domains in which they typically circulate. Visual methods add to methodologies beyond words and numbers, increasing the absorbency of information for people with less fluent literacy or as a way of including the voices of marginalised groups in research (Cluley et al., 2021). Different mediums of communication enable reaching different target groups, nowadays, there is an ubiquity in the way in which people worldwide have access to – and know how to swiftly operate – a photographic device making it an accessible way of conducting research. Geography is an inherently visual discipline as reflected in the use of a wide variety of materials such as maps, plans, satellite imagery, and graphs (Oldrup & Carstensen, 2012). Despite Geography's roots in visual methods, Lorimer (2010) and Dowling and colleagues (2017) underpin a lack of visual methods in the more-than-human geographies, stating that research in this strand is too reliant on textual manifestations. This is a limiting factor in stimulating more visioning practices and diminishes the potential for futuring the Symbiocene and its Sumbiopolis as this act requires images to circulate.

In order to engage in the act of futuring the Symbiocene, images have been collected using the method of data-driven photo-elicitation. This method creatively empowers participants, provides tangible and rich data, and reduces differences in power, class and knowledge (Van Auken et al., 2010; Fiore, 2021). This bottom-up approach highlighted the participant's perspective as the camera's lens is the extension of the participant's eye.

Symbiocene aspects in the contemporary urban environment were photographed by the seven activists of Extinction Rebellion (XR) Den Bosch which assists in stimulating the imagination of the Sumbiopolis, through which this city in the alternative future epoch of the Symbiocene becomes more tangible and ideally more preferable as opposed to preposterous, as displayed in, and elaborated on, the 'Futuring and the Voros Futures Cone' section.

Employing data-driven photo-elicitation meant being aware of the camera not being a neutral medium. Photography is performative and the participants might want to impress the researcher with the aestheticization of the pictures or use the photographs to put different unrelated topics on the agenda through framing (Fiore, 2021). The researcher's task was to be aware of any shortcomings and to guide the participants on the topic without disempowering them.

The participants received information about the Symbiocene and the Sumbiopolis, excerpted in Appendix 1 (English) and 2 (Dutch), to provide information about the role of symbiosis in this alternative future epoch. The activists were then requested to take photographs of Symbiocene elements in any contemporary urban environment that could be incorporated into this alternative future. The participants went out to photograph these elements with their mobile phones which did not result in any difficulties, quite the contrary, participants noted that when they would encounter something worth taking a picture of, they would always be able to do so as their camera was in their pockets.

Participants were not restricted to the geographical area of Den Bosch as their lives could play out anywhere. Additionally, other urban environments are equally relevant to research in terms of similarities and differences. The definition of the urban environment was not strictly defined as conceptions of the city, connected to the Sumbiopolis, are equally valuable to incorporate in the analysis. This meant that the participants' conception of the urban is not questioned, only analysed which could provide useful information about the current state of the Symbiocene concerning the city.

Despite the inspiring ways in which the Symbiocene triggered participants, taking photographs was expressed by most participants as 'difficult' and someone even expressed it not being possible. The prerequisite of taking pictures in the urban environment provoked even stronger difficulties in their experiences. Eventually, despite the initial difficulties, some activists expressed that they adjusted their expectations by lowering the bar a bit, which seemed to have helped in the ability to take pictures. The difficulties that arose for participants when taking pictures are rather difficult to predict as the researcher is often more familiar with the research topic. The expressed difficulties might reflect the amount of imaginative power asked of participants as the bridge between the present and the future alternative epoch is so large that it is difficult for participants to imagine this future. However, eventually after adjusting their expectations, the participants all managed to take pictures and extensively elaborate on them in the semi-structured interviews. Their difficult imaginative work resulted in a collection of Sumbiopolis images which were reflected on in semi-structured follow-up interviews, highlighted in the next section.

Semi-structured follow-up interviews

The photographs taken by the participants were collected and reflected on in semi-structured interviews. The photographs were used not only as a visual representation of certain aspects but acted as an emotional-sensory mnemonic for the participant who recalls feelings of being there (Shortt & Warren, 2012), rendering additional reflection useful to 'thicken' the data. Interviews thus provided a verbal elaboration on the pictures taken by the participants, as the story behind the photos is just as valuable as the photo itself and might reveal more information than mere interpretation by the researcher that the participants might not have intended to communicate.

The use of semi-structured interviews – as opposed to fully open or structured interviews - assisted in the empowerment of the participants as it allowed for a deeper dive into aspects they had found to be important within the participation process all whilst the researcher merely mediated the interview to empower the participant. In other words, the participant provides the answers as they take the researcher along through their experiences while the researcher does not lose sight of the research purposes.

The location of the interviews was initially the Willem Twee Poppodium, a semi-public flex working environment in Den Bosch. Participants were given the option of conducting the interview elsewhere if they preferred, which resulted in one interview being conducted at their home and one interview held at the specific site where the participant took some of the pictures. The former was exceptional as time played a large role for the participant. The researcher has a long-standing connection with the participant in question thus it was perceived as a safe space. Interviewing at one of the sites where pictures had been taken formed a unique experience as both the participant and the researcher could submerge themselves in the place during the interview even more so than by merely looking at the photograph. The idea came from the participant herself and she asked for approval of the location beforehand.

Although it was an interesting experience, this was not reproduced for the other interviews as the implications of doing this were still unclear.

Almost all the questions set beforehand related to the experiences, feelings and personal decisions of the participants to stimulate the imagination as opposed to bringing up practical implications. The interviews were held in a one-on-one setting as it was expected that the participants would feel more open to sharing personal experiences and emotions attached to their pictures in comparison to focus groups where they may have been more tentative about reflecting emotionally. This assumption came at the expense of possible synergy regarding ideas between participants resulting from open group dialogue.

During the interview, some participants seemed to submerge themselves in the Symbiocene whilst talking about their pictures, sharing positive thoughts and feelings and generally being in awe about what they had found. That being said, the self-assurance of individual participants varies a lot. Some people acknowledged that they are not experts on the matter or they expressed some discomfort in taking photographs due to not being a good photographer or due to the quality of the picture. The researcher attempted to mediate in these instances by acknowledging that there were no requirements or standards that the participants had to strive for.

The interview is an organised interaction during which the participant and researcher collectively view the pictures taken by the participant. Using the semi-structured layout of the interview questions as a tool to extract the information in the images attempts to bring the participant and the researcher closer to a shared perception of the content of the image. For the participant, in addition to taking photographs, and for the researcher this results in shifting the Symbiocene as an alternative desirable future within the Voros Futures Cone either to the less or more imaginable, depending on the individuals' experience.

The photographs played a crucial role in the participants' conceptualisation of 'reality' whilst the interviews were held to stimulate further reflection about feelings, attachments or narratives that shaped the participants' view on the Symbiocene. The analysis of the qualitative data retrieved from the application of the aforementioned methods is outlined in the following section.

Qualitative data analysis

The researcher ordered and analysed the data collected through data-driven photo-elicitation and semi-structured interviews. These methods allowed the participants to express their conceptualisation of the Symbiocene not merely through text but with the assistance of photography.

The semi-structured interview layout with the participants' pictures as a central theme is not a mere tool for extracting the information but is in some way also part of the analysis as themes, artefacts, perceptions or contradictions of the photos were collaboratively identified. The exploratory phase of the Sumbiopolis attempted to stimulate creativity by not shaping the different concepts or themes such as the Symbiocene much further than its definition, hence label categories were not set beforehand to refrain from constraining participants.

In addition, the photographs were separately analysed by the researcher to identify patterns that relate more to the research's identified literature themes and to grasp the visual depiction of the Symbiocene. This entailed mining through the photos and loosely identifying aspects of the picture. However, this analysis was subject to a constant reminder of the interview, rendering additional analysis highly uncritical as it was constantly steered in line with the information that the participant had provided. The analysis of the pictures conducted by the researcher was thus not formally/systematically outlined and merely served as a way to scrutinize the images in order to identify and address certain topics and familiarise oneself with the data.

All seven interviews were recorded and transcribed to, once more, familiarise oneself with the data after the interview. As mentioned before, the semi-structured approach to the interviewing resulted in a great

degree of flexibility in questioning and zooming in on certain topics by the researcher and the participant which results in unique data units for analysis. Analysing the semi-structured interviews entailed searching for themes/topics that reveal patterns of meaning in the textual and visual data, which Braun and Clarke (2021) identify as Reflexive Thematic Analysis (TA). Following transcription, coding is used as a way to reduce, organise and analyse vast amounts of qualitative data (Hay & Cope, 2021), which in this case concerned the interview's transcript. The coding was conducted digitally using NVIVO 14. Initially, the open (or descriptive) coding entailed coding textual data literally as expressed by the participant. Subsequently, these codes were generalised to fit different open codes in an overlapping code. Finally, themes were identified under which different overlapping codes could be subsumed to analyse the opinions, contradictions, feelings and explanations related to the codes.

This section outlined XR as a movement, gave an overview of the participants involved, reflected on the researcher's positionality and related ethical implications and gave an overview of the methods and type of analysis used for this study. The application of all the latter yielded a set of results that will be presented in the next section.

Results

Four subquestions have been formulated in order to provide an answer to the proposed research question: "*How do activists of Extinction Rebellion imagine the Symbiocene in contemporary urban environments?*" This section first addresses the question of what the Symbiocene means to activists. It continues by addressing how the Symbiocene is imagined in the photographs taken by the activists, to then outline what meanings or attachments these photographs have to the participants of XR. Finally, an analysis is presented on how these images ultimately assist in futuring the Sumbiopolis.

The seven participants are unique in their way of engaging with the movement. Apart from one activist, they participate in public actions – either high-risk or low-risk of being arrested - and some even take on a coordinating/organising role before, during and after the demonstration. Different activities are pursued by the activists such as engaging with the art circle, giving various trainings, and organising workshops and events.

Many participants expressed joining XR because in their eyes, too little – or too slow - progress is made regarding the reduction of human-induced climate change by politics (legislation) and companies (corporate social responsibility). In contrast, they felt that XR demands radical action that can catalyse change. While not just pointing fingers at others, participants report attempting to live as climate-friendly as possible but personally felt like their impact felt marginal as opposed to organising themselves and identifying with a group of like-minded people who are committed to accomplishing systemic change to humanity's current destructive way of living. This desire for stimulating change to shape a more liveable future once more reflects the suitability of XR activists in futuring an alternative epoch as they are constantly envisioning alternatives and translating these alternatives into tangible action. What then, does the alternative epoch of the Symbiocene mean to activists? This question is addressed in the following section. Hereafter, the manner in which activists imagine the Symbiocene through photography is explored, subsequently followed by the meanings and attachments that the activists have to the photograph. Finally, it is identified how the images ultimately assist in futuring the Sumbiopolis.

Activists' meaning attributed to the Symbiocene

In order to grasp how activists of XR imagine the Symbiocene in contemporary urban environments, the meaning that activists give to the Symbiocene is to be pinpointed to not only refer to physical artefacts or attributes depicted in the images (which is addressed more extensively in the 'imagining the Symbiocene through photography' section) but also to make sense of the associations, senses or relationships they imagine in this alternative epoch. A number of findings have been identified that shape the activists' definition and the attached meanings to the Symbiocene which often diverge from

the current dominant perception of the Anthropocene and is reflected in the way the culture-nature binary generally prevails. Furthermore, results indicate that the Symbiocene is perceived as a hopeful alternative to the culture-nature binary in the way humans and nature can coexist, however, the role of technology is debated in this alternative epoch.

Activists' resistance of culture-nature

The culture-nature binary is often implicitly and sometimes explicitly mentioned in interviews when discussing the Symbiocene. Humanities self-justified hegemony over nature was mentioned by a female XR activist when asked to describe the Symbiocene, as she replied: *"Actually as the most natural way for living beings to live together, but without exploitation, without taking advantage."* (Livy, age 50). The emphasis on exploitation and advantage highlights her ideas about the current interaction that humans have with other living beings in which humans dominate. The Symbiocene would, for her, be a future in which this hegemony would not prevail.

The belief that culture and nature are two different realities (Mrozowksi 1999; Haila, 2000) is implicitly analysed by another respondent. He thinks we are in some way already living in the Symbiocene but that there is a great lack of acknowledgement, which results in not taking care of our symbiotic relationships with nature, hence our environment is slowly degenerating and so are we. He elaborates that *"...humans are part of a system. Instead of humans being able to create a system, humans are actually the guests here and can learn from plants and animals…"* (Olim, age 25). His response suggests that humans have separated themselves from nature in trying to create a human-centred system but in the long run this will harm humans as much as it does the more-than-human (Haraway, 2015). The subjugation of nature is also emphasised by almost all other participants who underpin that humans place themselves at the centre and think they can control everything. Even the hormonal cycle of women as *"…a natural characteristic of people […] is being suppressed..."* (Livy, female, age 50). Maetzu elaborates that in his eyes the right way to break the belief that humans are at the centre of the world is *"...by becoming much more aware of how small a part we actually really are in the end."*

One particular component of the culture-nature dichotomy is the constant 'shaping' of nature. The literature on the culture-nature dichotomy emphasises control and subjugation and the respondents additionally found specific examples of how humans control their surrounding (living) environment.
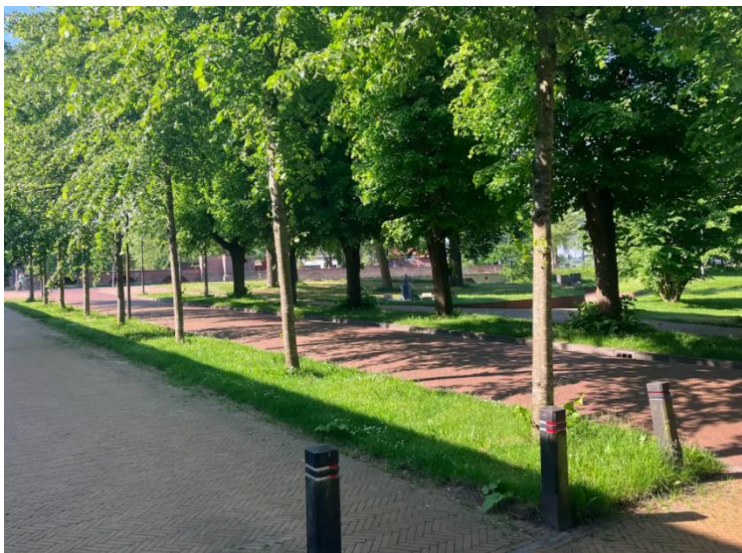

Figure 7 is a picture taken by Olim (male, age 25) which depicts sharply defined and straight edges of where the grass and pavement meet as well as the equal spacing between trees. The activist referred to this phenomenon as something from the 1800s, such as the Palace of Versailles, in the way this greenery is shaped into a more conventional, efficient and sleek design, catering to the human eye and reinforcing *"...our specific idea of what a park should look like."* (Olim, male, age 25)

Figure 7 Photo taken by Olim showing sharply defined and straight edges in a park in Den Bosch (Male, age 25)

Figure 8 displays a screenshot of an Instagram post in which can be seen how workers in Shanghai are taking a break on a tiered lawn. Livy (female, age 50), with a grin on her face, cynically narrates how she finds it 'fascinating' that natural behaviour, namely sitting under a tree in the shade, has to be tightly

A tiered design lawn in Shanghai, with shady trees overhead, a favorite for office workers to take lunch breaks.

Figure 8 Screenshot of an Instagram post depicting workers in Shanghai taking a break on a tiered lawn (image source unknown, screenshot taken by Livy, female, age 50).

regulated and encapsulated. The same sharp, straight edges and the equal spacing between trees are visible in Figure 4, which reinforces the bordering, controlling and reinforcement of the conceptions humans have of what non-human nature/the environment should look and feel like.

One of the key issues with aestheticization arises for greater biodiversity; homogenous cultures resulting from shortcut grass and ploughing earth beneath e.g. bushes and planting the same species of trees do not assist in creating diversity in the different species that can thrive, with a subsequent loss of biodiversity and thereby resilience, robustness, and flexibility (Thompson et al., 2009). The aestheticization of the environment is a concept that reinforces itself and the culture-nature binary at large. Several respondents observed that allowing nature to reclaim urban spaces through the process of rewilding could gradually shift the prevailing discourse that prioritises the aesthetic value of greenery in the city. They suggested that a shift could occur from the traditional American lawn or Versailles to an appreciation for what is now regarded as 'wilderness' as a way to increase biodiversity.

In contrast with the culture-nature binary of the Anthropocene, activists expressed that the Symbiocene gives them a great deal of hope. They extract meaning from the Symbiocene as it provides them with an alternative outlook that is sustainable in the long term, as Leonardo (male, age 40) expressed in line with one of the demands that XR has, related to a just climate transition for all, including future generations. The Symbiocene also provides hope as, according to Livy (female, age 50), it is an alternative that does not centre around the needs of humanity, which is difficult in the world and system in which we currently live. Maetzu (male, age 45) agrees as he reasons that: *"I find that very interesting to think about not just to be against things, but also to look at how can we imagine positive futures where people and nature, yeah well, go hand in hand also more with technology and nature."*

The absence of alternative perspectives that Oomen, Hoffman and Hajer (2022) and Ghosh (2017) describe as a result of a negatively constructed future is concerning as, according to Hajer and Versteeg (2019), it prevents the development of a positive outlook for the future and decreases the ability to bring about change, potentially fostering hopelessness.

The activists are people who would typically end up in a negative spiral, as Maetzu just described in narrating that he finds interest in not merely opposing things and which Erich acknowledges in addressing that he tends to descend into negativity because he believes there is so much negative news. However, the Symbiocene appears to deliver them a sense of hope. On the one hand, the analysis of negatively constructed futures is validated by the activists, but on the other hand, an alternative future, that is partially to be defined by the activists themselves, still results in these described feelings of hope when imagining an alternative future such as the Symbiocene.

That being said, the imaginary 'bubble' burst when participants were asked whether they think the Symbiocene as an alternative epoch is achievable as frowns and scoffing set the tone, often followed by what seemed an unfortunate sigh. This hit of reality was surprising as most of the participants appeared to submerge themselves in the Symbiocene during the interview in the way they were positively sharing thoughts and feelings while proudly showing the photographs. This could indicate that imagining the Symbiocene provides hope whilst being pressured by a hopeless society. An alternative epoch as a beacon of hope along with other fundamental providers of hope are possibly the participants' drivers for their activism. This is something that Hicks (2014) underlines as he claims that the radical or active kind

of hope is a way of surviving negative circumstances and is therefore defining one's existence. It is exactly that transformative hope that keeps the activists going.

The interplay of public negative images and a sense of hope is thus confronting the activists in the practical possibility of their imagination. but is also countered by a defining sense of hope that the Symbiocene provides the activists. This confrontation does not seem to foster hopelessness among the activists, as Hajer and Versteeg (2019) suggest. It is rather two worlds that, despite being reciprocally influential, seem to balance intricately in the life of the activists. Hope for a different narrative, a different discourse or an alternative, seems to prevail for the activists as hopelessness would decrease the ability to bring about change and that does not set the precedence in this case. But what are activists pinning their hopes on when imagining the Symbiocene? The activists have mixed perceptions of the role of technology in the Symbiocene, as explained in the following section.

Technocratic technology

The role of technology is emphasised by Frank (male, 65) as he addresses a startup called Plantlab in Den Bosch which is a horticulture startup that uses artificial light and vertical stacking of 'fields' to grow crops. While showing an image of his vegetable garden with a chicken coup in the back (Figure 9), he narrates that unfortunately, having a plot of land to grow vegetables and keep chickens for eggs is often unhealthy due to heavily polluted soils, although it is very fulfilling and is a wonderful way to be in contact with nature. He refers to the Symbiocene as a model or framework by which the smaller powers of all 'pinpricks', companies such as Plantlab and small initiatives like community gardens that pioneer the sustainable transition and aim to 'do good' for the planet, can be united.

Figure 9 Picture taken by Frank (male, 65) depicting his vegetable garden.

An example of an artefact that is perceived as a Symbiocene element in the urban environment is Figure 10, a photograph taken by Maetzu (male, age 45) showing a raised solar panel. Maetzu narrates that the structure that the solar panel is built upon reminded him of a tree or plant and *"... how cool would it be if in the future you have something that actually turns plants into energy for people... that is in cooperation with nature?"* Maetzu addresses what could be possible in the future as a result of technological innovation. The picture itself

Figure 10 Photograph taken by Maetzu (male, age 45) depicting a raised solar panel in Den Bosch

in this case is thus partially a Symbiocene element but it is primarily the inspiration and association he experienced from seeing this artefact. He gives meaning to the Symbiocene by referring to future technology that could be a collaboration between humans and nature.

How Frank and Maetzu expressed a form of hope or trust in types of technology such as artificial light and new ways of gaining energy, Several activists express more doubt about technocratic solutions ultimately saving the Earth. Erich expresses his doubt about technological innovation such as electric cars as he states that "*Then millions of children in the Congo still have to search for minerals, so no justice plus still a lot of pollution, plus still dangerous roads with cars hitting children so it is not a solution to problems it is just shifting them while the capital remains in place.*" Erich and others oppose the idea that humans think they are smart enough to solve everything with technology and that humanity should not gamble the Earth's future on possible technological innovations that might arise, especially when falling back on a more sustainable way of living would provide more certainty.

The different conceptualisations that activists have of the Symbiocene increase the uncertainty of an imagined future by potentially destabilising the previously constructed visions. The various contesting imaginations of the future can be aligned when brought together and reworked to find common ground. The Voros Futures Cone emphasizes possibilities beyond the present moment, neglecting the influence of an individual's past experiences in imagining a future. However, this past up to the present is in this case partially what constructs this difference. Various beliefs have been shaped throughout a participant's life and these externalise in the way they express themselves. Hajer & Pelzer (2018) demonstrate how different Techniques of Futuring, such as the bringing together of actors in an organised interaction where a sequence of staged performances are set up assists in coming to a 'shared fictional expectation'. Using their techniques, the different conceptualisations of the activists could be brought together in order to reduce uncertainty and clear up imaginaries of the Symbiocene.

The definition of the Symbiocene as an era where humans, nature, and technology work together in a mutually reinforcing relationship (symbiosis) to create a new balance, is mainly reflected in the connection between humans and nature. Doubt is still expressed by several activists about technocratic solutions that are believed to ultimately save planet Earth as they leave room for spatial injustices in terms of labour and pollution, which is underpinned by Bick and colleagues (2018) who present the example of how the costs of unjust spatially distributed environmental or social degradation are often not included in this price of a product such as clothing, but also by Williams and Woodson, 2019 who describe that future visions are often focused on these unequal and/or unjust socio-technical innovations which are then reproduced by funded academic research projects, in opposition to stimulating a more open debate (Hajer & Versteeg, 2019).

The Symbiocene is liable to different conceptions that can be distilled into a few aspects. Firstly, how humans ensure other humans and non-humans are not harmed or subjugated to ensure justice in space (e.g. pollution and social degradation) and time (e.g. intergenerational justice). Secondly, how humanity must decentralise itself and thereby acknowledge that humans are part of a system instead of being able to control it and that if this system is harmed or degraded, it ultimately means degrading humanity itself. Lastly, the Symbiocene gives meaning to activists through the transformative function of hope. This provides a positive outlook that the destructive Anthropocene can be abolished for a mutually reinforcing relationship between humans and nature but in which the role of technology must be mediated through organised interaction to come to a shared fictional expectation and to stabilise imaginaries. A varying conception of the Symbiocene by activists and the attached meanings they have with it are constructed. How this conception of the Symbiocene is imagined through photography is elaborated in the following section.

Imagining the Symbiocene through photography

Activists have constructed definitions and expressed meanings regarding the Symbiocene. The narrative surrounding the Symbiocene is imagined through the photographs taken by the participants which are elaborated on in this section.

Grassroots uprising

As explained in the previous section, humans tend to keep control of their environment. However, nature does not always comply. Figure 11 depicts tree branches creeping through a gate and Figure 12 shows moss growing all over a wall, wooden post and clogs. Both images, according to the photographers, resemble nature taking over as humans do not interfere. In some way, it is a grassroots uprising of nature as it is reclaiming space. Usually, to keep control over the environment, humans cut down whatever does not fit their conception of a clean and orderly nature. Therefore, seeing organisms growing freely can be interpreted as a passive act of humans 'allowing' nature to exist, hence there is still a power relation of tolerance in place. Nevertheless, the Symbiocene is imagined through these pictures because, as Alice elaborates in Figure 11: *"People love it if things have their place and that it stays there, so to say, but that is not how nature works. So if they [the tree branches] go through a door or whatever, that should be possible. Yeah, at least that nature is able to move…"* (female, age 20)

Figure 11 Photograph taken by Alice (female, age 20) depicting tree branches creeping through a gate.

Figure 12 Photograph taken by Olim (male, age 20) depicting moss growing on a wall, clogs and a wooden post.

Thus, seeing nature taking over space is an aspect of the Symbiocene that can be conveyed through photography. To further define this, an example of activists' (semi-)daily spaces in which they depict the Symbiocene is provided by three participants, who all took pictures of wildered backyards from themselves or relatives. The three participants shared the view that nature can sustain itself if not interfered with by humans. The effect seen in the pictures is different stages in which the plants are filling the space of the garden.

Figure 13 A bush in Livy's garden that she leaves to grow.

Figure 14 Olim's parents' garden full of native Dutch species that they leave to grow.

Figure 15 Leonardo's garden that he leaves to grow.

Livy (female, age 50), who photographed Figure 13, explains, "*if I just leave that bush alone, if it can just be itself completely, then it protects me. I protect that bush because I just let it live for what it is.*" Her description of the mutual relationship she feels with something that she simply lets grow appears symbiotic.

Olim (male, age 25), while pointing to the bottom-left corner of the picture of Figure 14, explains that this garden used to be completely tiled but that his family became more aware of the effect of biodiversity, hence they sowed the garden with native species and let nature do the rest.

Figure 15 is taken by Leonardo (male, age 40) and as he was showing the picture he enthusiastically described how he found it amazing just how many animals enter his garden, such as a recurring pair of pigeons that breed in between the shade of all the plants. Besides his bewildered garden catering to animals, he explains that he loves to sit there and completely relax.

The participants all share a connection or embodied experience with the space they photographed in their everyday lives such as mutual protection, appreciating the effects of their garden on biodiversity, the animals that thrive there or simply relaxing. These pictures are taken on a local scale in a space of the activists' everyday lives but can be interpreted as symbolising a counter-movement to the global Anthropocene and its impacts on nature.

In line with the way climate change and its politics are portrayed as a global concern (IPCC 2023), Ghosh (2017) and Morton (2013) state that climate change as a hyperobject is so immense that its consequences on a global scale transcend our current thinking and envisioning as humans, emphasising the immense and unimaginable changes these global processes bring about. Activists reveal feeling small as opposed to this enormous challenge of global warming and feel as if their impact feels marginal. Despite this contrast, the photographs taken by these activists depict imagined Symbiocene spaces that resist the prevailing discourse of order and control as seen in the exercise of the culture-nature dichotomy. The negatively constructed future plays out on a global scale and is a slow temporal process that is difficult to imagine. This incomprehensible future potentially hinders the ability to bring about change, which is

at least reflected on a global scale as large get-togethers of actors, such as the COP28 in Dubai showed once more how fossil fuel industries are still massively influential through the near quintupling of representatives that were present, who were lobbying against the collective debates that advocate for a transition away from fossil fuels as part of our energy system (Kluger, 2023). The latter example demonstrates how meaningful leadership prioritizing strategic progress over short-term appeal is currently more exception than rule (Everard, 2016)[4].

Despite this negative reporting that influences future climate policy, the activists participating in this inquiry symbolise a countermovement on the local scale in their everyday environments by taking photographs that, to them, imagine the hopeful alternative of the Symbiocene. In addition, the global COVID-19 pandemic has at times revealed the capability to support human-animal empathic relationships through an increasing interest in 'backyard biodiversity' resulting from the isolation in hyper-local settings (Searle et al., 2021). Activists are no longer restricted to this hyper-local setting of the home but the connection of the activists with this space is still present through their shared lived experiences. This connection appears to stimulate the emergence of the imagination of a hopeful alternative such as the Symbiocene in this hyper-local setting.

Although the aforementioned photographs assist in imagining the Symbiocene, the use of photography and imagery comes with its intricacies such as framing, which is outlined in the following section.

Imaging, framing and praxis

There are many specific remarks to be made about photographs that at first glance seem symbiotic but upon further inspection reveal caveats. Frank showed a picture of a residence, depicted in Figure 16, that was advertised as completely energy-neutral, which is an important aspect of minimising the negative impact on the environment. The windmills in the back of the residence seem to support the imaging of a 'green' piece of architecture. However, as Frank narrates, the owner of the house is a major car lover and has a private collection of primarily fossil-fuel supercars, which are nicely hidden underneath the building.

Figure 16 Photograph taken from the internet by Frank (male, age 65) depicting an energy-neutral residence.

He further elaborates on this by reasoning that the imaging of sustainability has become important for communication to the public. This imaging, when hiding what is truly underneath it, such as the supercars being hidden under the energy-neutral building, is considered greenwashing. Frank explains that this frame still dominates many sectors and initiatives. Greenwashing is currently one of the obstacles that the Symbiocene experiences as mere appearance does not reduce a carbon footprint or create mutual relationships between humans and non-humans.

Another photograph that highlights a clear contradiction in a picture that appears Symbiocene at first glance but turns out to not meet the participants' conception of Symbiocene upon exploring the details

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is depicted in Figure 17. This photograph, taken by Leonardo, shows foamy, flowing water filtered by the tropical plants in a greenhouse at the LaTrappe brewery. The participant explained that the tropical plants filter the water with their root systems which is a way to minimise or even abolish the use of chemicals while the plants grow. However, the owner told the participants that the plants, at the moment, still die in the process.

Symbiocene initiatives are visible but the praxis is not yet adapted to the concept.

Figure 17 Picture taken by Leonardo (male, age 40) depicting Tropical plants filtering water at the La Trappe brewery in Berkel-Enschot.

The activists conveyed the Symbiocene through photography in everyday settings as a countermovement to the prevailing discourse of the Anthropocene. This is unique as the ability to bring about change in global politics seems hindered by short-term appeal but is much less the case in the hyper-local settings of the activists. As the Symbiocene is imagined in the local and not the global, this is possibly one of the entrances from where to start tackling issues like global warming and biodiversity loss. However, in contrast, the photographs on the local scale at times reflected the imaging and even greenwashing that hindered a transition to the Symbiocene. The following section elucidates the meanings and attachments that the photographs hold for the activists.

Meanings and attachments to photographs

As outlined in the previous section, the activists share deeper connections with their everyday environments through several embodied experiences. For many of the participants, the urban environment of Den Bosch has a prominent place in their everyday lives and some explicitly described it as the living environment that they feel attached to, despite the urban not always providing much green space. Green space in the urban environment is a prominent theme in the photographs of the activists and many participants described feeling at ease in (their local) green spaces as they can connect to nature. When showing the researcher a picture of a natural playground in an eco-village, depicted in Figure 18, Maetzu (male, age 45) acknowledges a connection to green spaces when reflecting on his younger years, as he narrates: *"When I was a kid myself. I just talked about all the plastic playground equipment, but [there] was also a little hill on a bush and at that little hill on a bush I used to get so much, yes, I used so much my imagination from that I was [a] pirate treasure hunting."*

As the participant presents the photo of the natural playground, he recalls feelings of playing in the past. Through this anecdote, he imagines the Symbiocene by using an image in the present to reflect on joyful memories from the past. In this sense, his imagination of the future is rooted in past experiences which he uses to emphasise

Figure 18 Natural playground in an eco-village in Culemborg, photographed by Maetzu (male, age 45)

how these more natural playgrounds stimulate children's creativity and fantasy during children's play, in contrast to the more regulated playgrounds. The positive associations that Maetzu experienced from reflecting on his past will shape how future generations of children will experience playing in the Symbiocene.

Figure 19 A photograph taken by Erich (male, age 20) depicting a market stall with plants and flowers in the 'Hooge Steenweg' during the weekly market in Den Bosch

Erich came across the weekly market in Den Bosch and explained that he was amazed by how beautiful such a street can become with so something ostensibly simple such as greenery and how this could be beneficial for people and biodiversity. He then, in a more activistic tone, thinks out loud why this urban street is not transformed to host more greenery:

"[...]it is then always lost to efficiency, because such a street you know has to be efficient for cars and vans to drive over. And yes, there are all these archaeological things in the ground there, so you are not allowed to put trees. So, should that be at the expense of our liveability? I don't think so. Those are just all concepts [...], trade-offs that we have made, but those are not physical boundaries that stop us from changing anything." (male, age 20)

Erich expresses a certain desire for change. This particular street in the urban environment of Den Bosch initially does not evoke the Symbiocene for him; however, when the weekly market stalls out a variety of plants and flowers, he envisions this space as part of the Sumbiopolis. A change in scenery, caused by a temporary event, stimulates the imagination of an alternative space as a lasting effect. This pop-up style could act as a powerful technique of futuring to stimulate the desire for an alternative future. Under the heading of 'temporary', spaces can be staged to allow visitors to engage with them. In the case of this particular street in Den Bosch, it would be transformed from a primarily grey to a more green space. In stimulating not merely the imagination in the mind but by incorporating embodied experiences through senses such as smell and touch, multiple, the experience is much more tangible. This potentially shifts subjective ideas regarding an alternative future, or space as part of that future, within the Voros Futures Cone, as evidenced in Erich's experience, in which the physical attributes stimulated imagination on an alternative space that became more desirable.

Figures 13 to 15 of the preceding section highlighted how participants expressed a strong attachment to their hyper-local everyday surroundings that they were familiar with. The latter two Figures (18 and 19) are not everyday familiar spaces but are rather classified as encounters. The activists encountering these spaces provoked joyful past experiences of play in the case of the natural playground and aspirations for a future transformation of a particular urban street in the case of the temporary plants and flowers. The activists ascribed meaning to these spaces based on an experience in the past or a stimulus that sparked the imagination. As these spaces became meaningful to the activists, they decided to document their experience through photography. It can be argued that 'random' encounters have the capacity to stimulate the imagination of the Symbiocene, even rooting a lasting effect on the space through the constructed meaning by the activists.

The way through which the images ultimately assist in futuring the Sumbiopolis is outlined in the following section.

Futuring the Sumbiopolis

Despite the inspiring ways in which the Symbiocene and its corresponding Sumbiopolis triggered participants, taking photographs was expressed by most participants as 'difficult' or even 'not possible'. The prerequisite of taking pictures in the urban environment provoked even stronger difficulties in their experiences. Activists adjusted their expectations, as Maetzu narrated: "*lowering the bar a bit*" (male, age 45). Despite these initial difficulties, it is important to note that all these activists individually presented multiple pictures, ranging from five to eleven per participant, which they were all able to narrate through an array of (embodied) experiences, conceptions and meanings related to the Symbiocene. Photography and verbal elaboration thereby still seemed to yield results, although with some difficulties for participants.

The organisation of the research project provided an encounter with the concept of the Symbiocene and constructed a framework through which activists can participate by taking photographs of the contemporary urban environment. The particular methods/tools of data-driven photo-elicitation and their corresponding verbal elaboration in semi-structured interviews have assisted the activists in conceptualising, imagining and attributing meaning to the Symbiocene, as outlined in the prior sections of the results. These results show that activists tend to have diverse conceptualisations toward the construction of the Symbiocene but it is possible to identify common ground in terms of the root causes such as the culture-nature dichotomy and the subsequent subjugation of nature. The tools of photography and elaboration as a separate activity for the individual participants thus resulted in the emergence of mixed conceptualisations of this alternative future but by bringing the data together these differences were scrutinised.

In engaging in the act of futuring, activists have not only contested the Symbiocene and imagined it for themselves, but have provided contemporary visuals to be shared. The Symbiocene as an abstract philosophical alternative era to the Anthropocene is far from rooted in the academic world, let alone a general discourse. The pictures taken in settings of the everyday and on the hyper-local scale within the urban environment provide visual material that people can relate to. These images add to the philosophies, art installations and research papers on the Symbiocene by widening the group of people that can participate in constructing their vision of the Symbiocene and its corresponding Sumbiopolis.

Ultimately, these images assist in bridging a huge temporal gap between the Anthropocene and the Symbiocene and particularly shape the imaginaries on the city level, as this is reflected in the pictures. This is because the act of futuring and the deployment of the corresponding techniques of photo-elicitation and interviews have assisted in shaping the space for action to shift the concept of the Sumbiopolis from an unimaginable (crossing the porous limits of the Futures Cone) alternative future urban environment towards a more preferable one. This potentially paves the way for a self-fulfilling prophecy to attempt to break the limiting barriers introduced by the Anthropocene and its anthropocentric cities.

Alice (female, age 20) expresses a particular technique that was not explored in this inquiry. According to her, this artefact could proliferate meaning ascribed to things such as nature even in the future. The researcher and the participant walk to a still-life mural that refers to the 400-year-old mulberry tree located in the courtyard of a library in Breda, depicted in Figure 20. While standing in front of the mural, she explains that the mulberry tree has a long history and by portraying it in the mural, a story is not only captured but will also proliferate as long as the mural resembles its story and people can narrate it. This assists in creating awareness in people about the value of this specific tree but could also be constructed for nature in general. In this way, transferring knowledge through a static art piece assists in shaping the space for increasing the meaning that people ascribe to organisms even in the future as long as the mural exists and the story is narrated.

It remains uncertain whether a mural will ever be constructed to remind humanity of the destructive period of the Anthropocene.

Figure 20 A 400-year-old mulberry tree in the courtyard of a library in Breda, photographed by Alice (female, age 20)

This section has responded to the four subquestions relating to what the Symbiocene means to activists, how the Symbiocene is imagined in the photographs taken by the activists, what meanings or attachments these photographs have to the participants and how these images ultimately assist in futuring the Sumbiopolis. These subquestions have been carefully addressed in order to provide an answer to the proposed research question, which is discussed and concluded in the remaining sections.

Discussion

Several shortcomings and limitations arise when conducting academic research to which this inquiry is no exception. X points of discussion are highlighted in this section and after each individual shortcoming a recommendation for further studies is provided that is aimed at (future) researchers who are interested in the fields of the Symbiocene or Geographies of Futuring.

First of all, the combination of qualitative methods of data-driven photo-elicitation and semi-structured interviews produced rich data but only for a small number of respondents. This small number of respondents is partially due to a rather small target group, which consists of the activists who were physically present during at least one of the several meetings in the weeks during the research period. Future research could extend the target group to different locations where XR activists are active or in other social movements to increase the number of respondents

Second of all, the participants were recruited under XR activists in a single city which resulted in a homogenous group of white activists residing in the Netherlands, more specifically in the province of Noord-Brabant. Future research could benefit from diversifying the recruitment of participants to other movements which share the imaginative characteristics but in different geographical areas of the world, putting emphasis on including the Global South, as this would most likely provide interesting new perspectives on the matter. Ultimately, when research on futuring the Symbiocene has increased, different geographical locations and people with varying backgrounds could be compared to provide explicit insight in how these factors influence the way the Symbiocene is imagined.

Last of all, the Symbiocene as a conceptual epoch entails an enormous transformative capacity that is likely to transform social infrastructures for all spheres of life, which for an inquiry in a specific discipline is a lot to grasp and increases the risk of oversimplifying processes that are of interdisciplinary nature. Adjusting the scale to the Sumbiopolis made the analysis more manageable but still entailed a lot as to why the last recommendation for future research, to render the inquiry more tractable, would be to focus specifically on one level of scale or the dynamics of scale. The latter means that the transition to the Symbiocene is in essence an issue of the translation from global to local and the reverse: the expansion from local to global, which is thus also a potential scope of analysis.

With the implications of this inquiry pinpointed, concluding remarks are provided in the final section of this dissertation.

Conclusion

This inquiry departed from the current separation of culture and nature as two different realities which originated from the Christian theological doctrine and was later reinforced by the European Enlightenment to validate the subjugation and subsequent degradation of nature for human gain (Mrozowski, 1999; Haila, 2000). This human exceptionalism marks the relationship between the human and non-human to this day which fuels the domination of the former over the latter (Plumwood, 1993). The more-than-human geographies critically reflect on this culture-nature dichotomy and acknowledge that the degradation of nature is ultimately the degradation of humans as these are not separate realities but rather coexist in complex interwoven ecosystems (Haraway, 2015). In line with this strand of geographies, Crutzen (2006) critically reflects on the period of humanity's impact on the environment resulting from the perpetuated separation and submission of nature in his diagnosis of the Anthropocene. This geological era in which human (anthropos) activity dominates the living and non-living environment is now reflected upon as one of the catalysers of anthropogenic climate change (IPCC, 2023).

The environmental philosopher Glenn Albrecht (2015) proposes an alternative to the destructive Anthropocene: the Symbiocene, derived from the Greek word 'sumbiosis', meaning 'living together', or 'companionship'. The Symbiocene is a geochronological epoch that envisions humans, nature, and technology conspiring to create a new balance in companionship and a mutually reinforcing relationship. The concepts of futuring (Hoffman et al., 2021) and techniques of futuring (Hajer & Peltzer, 2018) in combination with the Voros Futures Cone (Voros, 2017) were combined and rooted in the more-than-human geographies to serve as a unique framework for imagining alternative ecocentric futures (Sheikh, Foth and Mitchel, 2023; Fieuw et al., 2022). The Symbiocene as a possible future, although presumably preposterous or unimaginable at this point, has the potential to shift towards being a preferable future by circulating images of the Symbiocene in the present, thereby bridging the gap between now, the Anthropocene, and the possible future, the Symbiocene. These images were collected in collaboration with seven activists from Extinction Rebellion Den Bosch using the methods of data-driven photo-elicitation and semi-structured interviews that were analysed through Reflexive Thematic Analysis (Braun & Clarke, 2021) to scrutinise opinions, contradictions, feelings and explanations of the activists.

The four subquestions have been carefully outlined to provide an answer to the following research question: *How do activists of Extinction Rebellion imagine the Symbiocene in contemporary urban environments?*

Activists of XR conceptualise the Symbiocene as an epoch in which human exceptionalism gives way to a decentralising mindset that acknowledges that humans are part of a larger system that they must nurture to ensure social, spatial and temporal justice and to live in harmony in a mutually reinforcing relationship with the non-human. Despite negative images of global climate catastrophe looming over the future (Ghosh, 2017) that obstruct the ability to bring about change (Hajer & Versteeg, 2019) and construct a positive outlook for the future, the activists of XR, supported by the transformative power of hope (Hicks, 2014), manage to imagine and subsequently document their embodied experiences, connections and attachments to the Symbiocene in everyday spaces or encounters on a (hyper-)local scale as a countermovement to this prevailing discourse. This act of futuring assisted the activists in shaping the space for action to shift the concept of the Sumbiopolis from an unimaginable alternative urban environment towards a more preferable one that can at large assist the transition from the Anthropocene to the Symbiocene.

Literature

Adeyemi, K., & Disu, O. (2012). Floating City Solutions for Africa's Vulnerable Coastal Communities: The Case of Makoko. What are sustainable African cities, 18-23.

Albrecht, A.G. (2019). Earth emotions: New Words for a New World. Cornell University Press.

Albrecht, A.G. (December 15, 2015). Exiting The Anthropocene and Entering The Symbiocene. Psychoterratica. https://glennaalbrecht.wordpress.com/2015/12/17/exiting-the-anthropocene-and-entering-the-symbiocene/

Amin, A., & Thrift, N. (2002). Cities: Reimagining the Urban. Polity.

Andrews, C. J. (2008). Greenhouse gas emissions along the rural-urban gradient. Journal of Environmental Planning and Management, 51(6), 847-870.

Bayes, C. (2023). Reimagining urban nature: literary imaginaries for posthuman cities. Liverpool University Press.

Bick, R., Halsey, E., & Ekenga, C. C. (2018). The global environmental injustice of fast fashion. Environmental Health, 17, 1-4.

Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis?. Qualitative research in psychology, 18(3), 328-352.

Bruno, A., Fumagalli, S., Ghisleni, G., & Labra, M. (2022). The Microbiome of the Built Environment: The Nexus for Urban Regeneration for the Cities of Tomorrow. Microorganisms, 10(12), 2311.

Castree, N. (2003). Commodifying what nature?. Progress in human geography, 27(3), 273-297.

Chagani, F. (2014). Critical political ecology and the seductions of posthumanism. Journal of Political Ecology, 21(1), 424-436.

Chancel, L. (2022). Global carbon inequality over 1990–2019. Nat Sustain 5, 931–938. https://doi.org/10.1038/s41893-022-00955-z

Chavez, C. (2008). Conceptualizing from the inside: Advantages, complications, and demands on insider positionality. The qualitative report, 13(3), 474-494.

Choi, M. (2016). More-than-human geographies of nature: Toward a careful political ecology. Journal of the Korean Geographical Society, 51(5), 613-632.

Cluley, V., Pilnick, A., & Fyson, R. (2021). Improving the inclusivity and credibility of visual research: interpretive engagement as a route to including the voices of people with learning disabilities in analysis. Visual Studies, 36(4-5), 524-536.

Cork, S., Alexandra, C., Alvarez-Romero, J. G., Bennett, E. M., Berbés-Blázquez, M., Bohensky, E., ... & Wyborn, C. (2023). Exploring Alternative Futures in the Anthropocene. Annual Review of Environment and Resources, 48, 25-54.

Costa, A. L., & Coimbra, S. (2024). Joining voices for social inclusion: Activism and resilience of professionals working with people in situations of vulnerability. In Learning Inclusion in a Digital Age: Belonging and Finding a Voice with the Disadvantaged (pp. 83-93). Singapore: Springer Nature Singapore.

Crippa, M., Guizzardi, D., Pisoni, E., Solazzo, E., Guion, A., Muntean, M., ... & Hutfilter, A. F. (2021). Global anthropogenic emissions in urban areas: patterns, trends, and challenges. Environmental Research Letters, 16(7), 074033.

Crutzen, P.J. (2006). The "Anthropocene". In: Ehlers, E., Krafft, T. (eds) Earth System Science in the Anthropocene. Springer, Berlin, Heidelberg. https://doi.org/10.1007/3-540-26590-2_3

Dowling, R., Lloyd, K., & Suchet-Pearson, S. (2017). Qualitative methods II: 'More-than-human'methodologies and/in praxis. Progress in Human Geography, 41(6), 823-831.

Eaton, H. (2020). Crossroads and Crosshairs: Violence, Nonviolence, Critique, Vision and Wonder. Towards a Just and Ecologically Sustainable Peace: Navigating the Great Transition, 49-71.

Ecocide Law. (2021). Legal Definition and Commentary 2021. https://ecocidelaw.com/definition/

Elvey, A. (2006). Beyond culture? Nature/culture dualism and the Christian otherworldly. Ethics and the Environment, 63-84.

Everard, M. (2016). Co-creating the Symbiocene. The Ecosystems Revolution, 139-153.

Fainstein, S. S. (2010). The Just City. Cornell University Press.

Ferrando, S. (2023). Gardening the Symbiocene: Andrea Zanzotto's and Daria Menicanti's poetic hospitality. Ecozon@: European Journal of Literature, Culture and Environment, 14(1), 119-135.

Fitzgerald, C. (2019). The Hollywood Forest Story-Eco-Social Art Practice for the Symbiocene. Minding Nature, 12(3), 53-58.

Fitzgerald, C. (2020). The Hollywood Forest Story: Placemaking for the Symbiocene. In The Routledge Handbook of Placemaking (pp. 365-377). Routledge.

Fourcade, M. (2011). Price and prejudice: on economics, and the enchantment/disenchantment of nature. The worth of goods, 41-62.

Frumkin, H. (2002). Urban sprawl and public health. Public health reports.

Gall, T., Vallet, F., & Yannou, B. (2022). How to visualise futures studies concepts: Revision of the futures cone. Futures, 143, 103024.

Gamolina, J. (2022, 6 april). Future History: Lo-TEK's Julia Watson on Sustainable Infrastructures, Multiple Permutations, and Symbiosis with the Planet — Madame Architect. Madame Architect. Retrieved on 8 April 2024, via https://www.madamearchitect.org/interviews/2022/3/13/julia-watson

Garcia, E., Vale, B., Vale, R., Garcia, E., Vale, B., & Vale, R. (2021). Current Ideas for Future Built Environments. Collapsing Gracefully: Making a Built Environment that is Fit for the Future, 17-47.

Ghosh, A. (2017). The Great Derangement: Climate Change and the Unthinkable. University of Chicago Press.

Gibbs, L. M. (2009). Water places: cultural, social and more-than-human geographies of nature. Scottish Geographical Journal, 125(3-4), 361-369

Gray, J., Whyte, I., & Curry, P. (2018). Ecocentrism: What it means and what it implies. The Ecological Citizen, 1(2), 130-131.

Haila, Y. (2000). Beyond the nature-culture dualism. Biology and philosophy, 15, 155-175.

Hajer, M. A, & Versteeg, W. (2019). Imagining the post-fossil city: why is it so difficult to think of new possible worlds?. Territory, Politics, Governance, 7(2), 122-134.

Hajer, M. A., & Pelzer, P. (2018). 2050—An Energetic Odyssey: Understanding 'Techniques of Futuring'in the transition towards renewable energy. Energy research & social science, 44, 222-231.

Haraway, D. J. (2003). The companion species manifesto: Dogs, people, and significant otherness (Vol. 1, pp. 3-17). Chicago: Prickly Paradigm Press.

Haraway, D. (2015). Anthropocene, capitalocene, plantationocene, chthulucene: Making kin. Environmental humanities, 6(1), 159-165.

Harris, C. (2004). How did colonialism dispossess? Comments from an edge of empire. Annals of the Association of American Geographers, 94(1), 165-182.

Hay, I., & Cope, M. (Eds.). (2021). Qualitative Research Methods in Human Geography. Oxford University Press.

Hicks, D. (2014). A geography of hope. Geography, 99(1), 5-12.

Hoffman, J., Pelzer, P., Albert, L., Béneker, T., Hajer, M., & Mangnus, A. (2021). A futuring approach to teaching wicked problems. Journal of Geography in Higher Education, 45(4), 576-593.

Hopkins, P. E. (2007). Positionalities and knowledge: Negotiating ethics in practice. ACME: an international journal for critical geographies, 6(3), 386-394.

International Union of Geological Sciences (IUGS) (March 20, 2024). The Anthropocene. www.iugs.org. Retrieved on 29 March 2024.

IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001

Isevski, J. (2023). Nayar, PK (2019). Ecoprecarity: Vulnerable Lives in Literature and Culture. Routledge. Journal of Posthumanism, 3(3), 311-314.

Karpouzou, P. (2016). Symbiotic Citizenship in Posthuman Urban Ecosystems: Smart Biocities in Speculative Fiction. Symbiotic Posthumanist Ecologies in Western Literature, Philosophy and Art, 9, 99.

Kluger, J. (2023, 5 december). There are more fossil fuel lobbyists than ever at COP28. TIME. https://time.com/6342799/fossil-fuel-lobbyists-cop28/

Latour, B. (1993). We have never been modern. Harvard University Press.

Latour, B. (2007). Reassembling the social: An introduction to actor-network-theory. Oup Oxford.

Lehmann, S. (2023). Reconnecting with nature: Developing urban spaces in the age of climate change. Emerald Open Research, 1(5).

Leiss, W. (2022). Eco-Dominion. Russian Studies, Political Science, and the Philosophy of Technology, 219.

Liverman, D. (2004). Who governs, at what scale and at what price? Geography, environmental governance, and the commodification of nature. Annals of the Association of American geographers, 94(4), 734-738.

Lockard, E. S., & Lockard, E. S. (2014). The Case for an Integrative Approach. Human Migration to Space: Alternative Technological Approaches for Long-Term Adaptation to Extraterrestrial Environments, 125-148.

Lorimer, J. (2010). Moving image methodologies for more-than-human geographies. cultural geographies, 17(2), 237-258.

Luo, Y., & Gao, Y. (2022). In the wake of the China-Africa ivory trade: more-than-human ethics across borders. Social & Cultural Geography, 23(2), 270-291.

Marcotullio, P. J., & Solecki, W. (2013). What is a city? An essential definition for sustainability. Urbanization and sustainability: linking urban ecology, environmental justice and global environmental change, 11-25.

Mega, V. (2022). Climate-conscious cities: the critical decade to 2030. In Human sustainable cities: towards the sdgs and green, just, smart and inclusive transitions (pp. 73-103). Cham: Springer International Publishing.

Ministerie van Financiën. (2023). 25 fossiele subsidies. Retrieved on 31 May 2024, from https://www.rijksfinancien.nl/miljoenennota/2024/bijlage/1848724

Montani, G. (2007). The ecocentric approach to sustainable development. Ecology, economics and politics. FEDERALIST-PAVIA-, 49(1), 25.

Moore, J. W. (2014). The capitalocene. Part II: Abstract social nature and the limits to capital.

Morton, T. (2013). Hyperobjects: Philosophy and Ecology after the End of the World. U of Minnesota Press.

Mrozowski, S. A. (1999). Colonization and the commodification of nature. International journal of historical archaeology, 3, 153-166.

Mulder, K. F. (2016). Urban symbiosis, a new paradigm in the shift towards post-carbon cities. TU Delft/The Hague University of Applied.

NLÉ. (2011). MFS I - Makoko Floating School. Retrieved on 8 April 2024, via https://nleworks.com/case/makoko-floating-school/

Okeke, F. O., Chukwuali, B. C., & Idoko, A. E. (2019). Environmentally-responsive design; A study of Makoko floating school building. International Journal of Development and Sustainability, 8(8), 476-487.

Oldrup, H. H., & Carstensen, T. A. (2012). Producing geographical knowledge through visual methods. Geografiska Annaler: Series B, Human Geography, 94(3), 223-237.

Oomen, J., Hoffman, J., & Hajer, M. A. (2022). Techniques of futuring: On how imagined futures become socially performative. European Journal of Social Theory, 25(2), 252-270. https://doi.org/10.1177/1368431020988826

Phillips, C., & Atchison, J. (2020). Seeing the trees for the (urban) forest: more-than-human geographies and urban greening. Australian geographer, 51(2), 155-168.

Pitt, H. (2015). On showing and being shown plants-a guide to methods for more-than-human geography. Area, 47(1), 48-55.

Plumwood, V. (1993). Feminism and the Mastery of Nature. Psychology Press.

Plumwood, V. (2003). Environmental culture: the ecological crisis of reason. Human Ecology Review, 10(1), 77-81.

Possamai, F. V. (2013). Nature and culture dualism: Genesis of an obsolete dichotomy. Philosophy Study, 3(9), 836.

Pyyry, N., & Tani, S. (2019). More-than-human playful politics in young people's practices of dwelling with the city. Social & Cultural Geography, 20(9), 1218-1232.

Rademacher, A. (2015). Urban political ecology. Annual Review of Anthropology, 44, 137-152.

Raessens, J. (2024). 17. Symbiosis, or How to Make Kin in the Chthulucene. Playful Perspectives on the Climate Crisis, 373.

Rahayu, M. (2023). Symbiocene as an Effort to Build Ecological Balance In Danny Boyle's The Beach (2000). TEKNOSASTIK, 21(1), 61-70.

Raupach, M. R., Marland, G., Ciais, P., Le Quéré, C., Canadell, J. G., Klepper, G., & Field, C. B. (2007). Global and regional drivers of accelerating CO2 emissions. Proceedings of the National

Robinson, J. M., & Breed, M. F. (2019). Green prescriptions and their co-benefits: Integrative strategies for public and environmental health. Challenges, 10(1), 9.

Roggema, R., Rodriguez, D., & Tillie, N. (2024). When the Bear Comes to Town: How the City Could Create Nature. Urban Planning and Construction, 2(2).

Rose, G. (1997). Situating knowledges: positionality, reflexivities and other tactics. Progress in human geography, 21(3), 305-320.

Sayer, A. (1984). Defining the urban. GeoJournal, 9, 279-284.

Searle, A., Turnbull, J., & Lorimer, J. (2021). After the anthropause: Lockdown lessons for more-than-human geographies. The Geographical Journal, 187(1), 69-77.

Sharma, A., & Patel, R. (2023). Environmental Degradation and Its Societal Consequences: A Comprehensive Study on the Relationship with Depression. Advances in Urban Resilience and Sustainable City Design, 15(8), 14-30.

Sheikh, H., Foth, M., & Mitchell, P. (2023). More-than-human city-region foresight: multispecies entanglements in regional governance and planning. Regional Studies, 57(4), 642-655.

Smithey, L. A. (2009). Social movement strategy, tactics, and collective identity 1. Sociology Compass, 3(4), 658-671.

Souza Júnior, C. R. B. D. (2021). More-than-human cultural geographies towards co-dwelling on earth. Mercator (Fortaleza), 20, e20005.

Stanford, C. (2019, 9 December). Neither above nor below. The Nature Of Cities. https://www.thenatureofcities.com/2019/12/07/neither-above-nor-below/

Stuiver, M. (2022). Chapter 2: The symbiotic city as the sum of beneficial relationships between people and nature. In The symbiotic city: Voices of nature in urban transformations (pp. 44-83). Wageningen Academic Publishers.

Stuiver, M. (Ed.). (2022). The symbiotic city: Voices of nature in urban transformations. Wageningen Academic Publishers.

Taylor, J. (2011). The intimate insider: Negotiating the ethics of friendship when doing insider research. Qualitative research, 11(1), 3-22.

The Nature of Cities. (2019, May). A Flash of Silver Green: Stories of the Nature of Cities, Vol. 1 – The Nature of Cities. The Nature Of Cities. Consulted on 26 March 2024, from https://www.thenatureofcities.com/a-flash-of-silver-green-tnocs-new-book-of-flash-fiction-on-future-cities/

Thompson, I., Mackey, B., McNulty, S., & Mosseler, A. (2009). Forest resilience, biodiversity, and climate change. In A synthesis of the biodiversity/resilience/stability relationship in forest ecosystems. Secretariat of the Convention on Biological Diversity, Montreal. Technical Series (Vol. 43, No. 1, pp. 1-67).

United Nations (2018, 16 May) 68% of the world population projected to live in urban areas by 2050, says UN. Department of Economic and Social Affairs. https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html

Upward, K., Usher, K., & Saunders, V. (2023). The impact of climate change on country and community and the role of mental health professionals working with Aboriginal communities in recovery and promoting resilience. International Journal of Mental Health Nursing.

Vocabulary.com. (n.d.). Symbiosis. In Vocabulary.com Dictionary. Retrieved on February 08, 2024, from https://www.vocabulary.com/dictionary/symbiosis

Voros, A. J. (2017, 24 February). The Futures Cone, use and history. The Voroscope. Retrieved on 18 February 2024, van https://thevoroscope.com/2017/02/24/the-futures-cone-use-and-history/

Watson, J. (2019). Lo-TEK: Design by Radical Indigenism.

Whatmore, S. (2006). Materialist returns: practising cultural geography in and for a more-than-human world. Cultural geographies, 13(4), 600-609.

Whatmore, S. (2013). Nature and human geography. Introducing Human Geographies,, 152-62.

Williams, L. D., & Woodson, T. S. (2019). Enhancing socio-technical governance: Targeting inequality in innovation through inclusivity mainstreaming. Minerva, 57(4), 453-477.

Wolford, W. (2021). The Plantationocene: A Lusotropical contribution to the theory. Annals of the American Association of Geographers, 111(6), 1622-1639.

Wood, J. (2007). Synergy city; planning for a high density, super-symbiotic society. Landscape and Urban Planning, 83(1), 77-83.

Appendix 1 Summary for participants (English)

Research title: The Sumbiopolis - Activists imagining the Symbiocene in contemporary urban environments

Research summary

The Anthropocene is considered to be the current era dominated by human activities, leaving an ever-growing imprint on our earth.

Glenn Albrecht proposed the Symbiocene in 2015 as a hopeful alternative to the current Anthropocene. The Symbiocene is an era where humans, nature, and technology work together in a mutually reinforcing relationship (symbiosis) to create a new balance.

Currently, over half of the world's population lives in cities, and this number is increasing globally. Expanding cities and increasing density often lead to the displacement of nature, resulting in the loss of soil and water, and subsequent decline in biodiversity.

Cities can benefit greatly from reducing emissions and creating space for nature, especially in the Symbiocene era. A Sumbiopolis could emerge; a city where humans, nature and technology mutually reinforce each other.

The Sumbiopolis may seem unimaginable now, but circulating images of this future city can make it more accepted and imaginable. Tangible images of the future make it more realistic and easier to imagine becoming real. Currently, there are few images to shape this future, and that is where I want to play a role with my research.

The research question addressed here is as follows: *How do activists of Extinction Rebellion imagine the Symbiocene in contemporary urban environments?*

How do you imagine the Symbiocene? I invite you to discover that by spending four weeks taking photos of elements, landscapes, objects or whatever in cities that you associate with, or imagine in, the Symbiocene. You can take the photos during these weeks at any time that suits you. You do not need any prior knowledge or professional equipment. Photos can be taken with your mobile phone or any other camera, as long as you can share them digitally or physically.

After taking the photos, we will discuss them in an interview to see what motivated you to take these photos and how you envision the Symbiocene with the help of your pictures. The interview will take place at the Willem Twee Poppodium, located on Boschdijkstraat 100 and will take up approximately one and a half hour. If, for any reason, the location is unsuitable, please contact me. The day of the interview is to be determined by further agreement based on availability.

Data processing

The photographs you take and the information you share during the interview are your intellectual property. Participation is voluntary, and you can withdraw yourself, including pictures and information you shared, at any time.

The research uses anonymised data and pseudonyms for privacy reasons. The pictures, conversations, and information are used solely for research purposes. The written paper includes pictures, quotes, and shared information. Additionally, a photo exhibition can be used to share these visuals and information. You are free not to take part in this.

Please feel free to contact me with any questions via
E-mail: s.mans1@students.uu.nl
Phone number: +31 625044226 (also Signal)

Appendix 2 Summary for participants (Dutch)

Titel onderzoek: The Sumbiopolis - Activists imagining the Symbiocene in contemporary urban environments

Samenvatting

Het Antropoceen wordt beschouwd als het huidige tijdperk dat gedomineerd wordt door menselijke activiteiten, die een steeds grotere afdruk achterlaten op onze aarde.

Glenn Albrecht stelde in 2015 het Symbioceen voor als een hoopvol alternatief voor het huidige Antropoceen. Het Symbioceen is een tijdperk waarin mens, natuur en technologie samenwerken in een wederzijds versterkende relatie (symbiose) om een nieuw evenwicht te creëren.

Op dit moment woont meer dan de helft van de wereldbevolking in steden en dit aantal neemt wereldwijd toe. Uitdijende steden en een toenemende dichtheid leiden vaak tot de verdringing van de natuur, wat resulteert in het verlies van bodem en water en de daaruit voortvloeiende afname van de biodiversiteit.

Steden kunnen veel baat hebben bij het verminderen van emissies en het creëren van ruimte voor de natuur, vooral in het Symbioceen tijdperk. Er zou een Sumbiopolis kunnen ontstaan; een stad waarin mens, natuur en technologie elkaar wederzijds versterken.

De Sumbiopolis lijkt nu misschien onvoorstelbaar, maar het verspreiden van beelden van deze toekomstige stad kan het meer geaccepteerd en voorstelbaar maken. Tastbare beelden van de toekomst maken het realistischer en makkelijker voor te stellen dat het werkelijkheid wordt. Op dit moment zijn er weinig beelden om deze toekomst vorm te geven, en dat is waar ik met mijn onderzoek een rol in wil spelen.

De onderzoeksvraag luidt als volgt: *Hoe stellen activisten van Extinction Rebellion zich het Symbioceen voor in hedendaagse stedelijke omgevingen?*

Hoe stel jij je het Symbioceen voor? Ik nodig je uit om dat te ontdekken door vier weken lang foto's te maken van elementen, landschappen, objecten of wat dan ook in steden die je associeert met, of voorstelt in, het Symbioceen. Het maken van de foto's kan tijdens deze weken op elk moment dat het jou uitkomt. Je hebt geen voorkennis of professionele apparatuur nodig. De foto's kunnen worden gemaakt met je mobiele telefoon of een andere camera, zolang je ze maar digitaal of fysiek kunt delen.

Na het maken van de foto's zullen we ze bespreken in een interview om te zien wat je gemotiveerd heeft om deze foto's te maken en hoe jij je het Symbioceen voorstelt met behulp van jouw foto's. Het interview vindt plaats in het Willem Twee Poppodium aan de Boschdijkstraat 100 en duurt ongeveer anderhalf uur. Als de locatie om wat voor reden dan ook niet geschikt is, neem dan contact met me op. De dag van het interview is in nadere overeenstemming te bepalen op basis van beschikbaarheid.

Verwerking gegevens

De foto's die je maakt en de informatie die je deelt tijdens het interview zijn jouw intellectuele eigendom. Deelname is vrijwillig en je kunt jezelf, inclusief foto's en informatie die je hebt gedeeld, op elk moment terugtrekken.

Het onderzoek maakt om privacyredenen gebruik van geanonimiseerde gegevens en pseudoniemen. De foto's, gesprekken en informatie worden uitsluitend voor onderzoeksdoeleinden gebruikt. Het geschreven verslag bevat foto's, citaten en gedeelde informatie. Daarnaast kan een fototentoonstelling worden gebruikt om deze beelden en informatie te delen. Je bent vrij om hier niet aan deel te nemen.

Neem gerust contact met me op als je vragen hebt via:
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Telefoonnummer: +31 625044226 (ook Signal)