# Unearthing Ecology
*memories of nature foregone*

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*To reverse the effects of civilisation would destroy the dreams of a lot of people. There's no way around it. We can talk all we want about sustainability, but there's a sense in which it doesn't matter that these people's dreams are based on, embedded in, intertwined with, and formed by an inherently destructive economic and social system. Their dreams are still their dreams. What right do I — or does anyone else — have to destroy them.*

*At the same time, what right do they have to destroy the world?*[1]

[1] Derrick Jensen, *Endgame, Vol.1: The Problem of Civilisation,* 2006.

**Abstract**

The Coronavirus pandemic has brought a monumental shift in perceptions of planetary health and human well-being. In the last three years, numerous studies have been analysing the causes and impact of Covid-19 in medicine, ecology, psychology, and socio-cultural fields. The list is endless - and no one field can be removed from the other, as there is no one satisfactory approach that will enable us to understand the depths of change that have taken place.

This dissertation is a multidisciplinary investigation of the layers of the pandemic from environmental and humanistic approaches. By adopting these various lenses, I attempt to demystify the complex interplay between biodiversity loss and human interaction with nature. Through creating an interdisciplinary framework, I explore the relationship between environment and infectious disease emergence, theories of human ecology and my positioning as a designer in the ecological realm.

In this collection of essays that explore the human experience in tandem with the ecosystem, I journey the reader from an objective, broader scope to a subjective, context-driven narrative. Reading this paper is like cutting into a piece of the earth - the depth is formed by the layered accumulation of different perspectives that have evolved over each other. The key question threads these approaches together, ultimately asking, what does ecology mean to us, and what will we choose to remember from this time that we lived?

*Note*
*As we are still living amid Covid-19, this dissertation has been written keeping in mind the studies and research that have been made available so far. The writings in the work do not contain absolutes of medical research, nor do they claim to give answers in favour of one theory over the other. This investigation aims to provide a navigation framework through the lived experience of the global pandemic.*

**Keywords**

*biodiversity loss, human ecology, covid-19, Anthropocene, social design as resilience*

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PART I

**The interplay and impact of biodiversity loss and infectious disease emergence within the context of Covid-19** | *Academic Analysis*

## Biodiversity and Ecological Equilibrium

The term biodiversity can be understood as "the different kinds of life found in one area - the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world."[2] It is a contraction of the words 'biological diversity,' which denotes 'the sum total of all biotic variation from the level of genes to ecosystems.'[3] According to a study conducted in June 2000 to understand ways of defining and measuring biodiversity, it was realised that there is no possible way to look at how biodiversity is distributed, the rate at which it is disappearing and what that entails for the future to come until units are assigned to it.[4]

Scientific research has since proven that there are multiple facets that can be measured, including species richness, geographic evenness, and species differences. At the time this study was released, biologists were looking into the details of the growing biosphere, temporal patterns in biodiversity and the functioning of ecosystems.[5] The cataloguing of biodiversity was growing out of the cumulative gathering functions of online databases. Parallelly, there were emerging questions about the state of biodiversity equilibrium - what were the upper limits that were being set through evolution versus the impact of mass extinctions that would never allow this state of equilibrium to be reached.[6] More than twenty years later, not much has changed. We still do not quite understand the base ecological structure that is needed to sustain life.

According to Darwin and Wallace, 'a diverse mixture of plants should be more productive than a monoculture.'[7] They proposed the creation of vacant ecological niche spaces caused by the loss of a species, stating that diverse ecological communities are able to exist in positive and complementary interactions with each other, hence outperforming single species communities.[8] While this theory has been debated and parts of it are controversial, 95% of experimental studies indicate that ecosystem functioning and diversity are interdependent for healthy ecological well-being.[9] Several studies have shown that only 20-50% of species are needed to sustain most biogeochemical ecosystem processes.[10] It is unknown whether the other, seemingly redundant, species have a crucial role to play over extended time periods, protecting against environmental changes. This research indicates that biodiversity impacts other ecological processes, such as the transmission of disease and the resistance of communities to invasion.

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[2] Lorin Hancock, 'What Is Biodiversity and Why Is It under Threat?', *World Wildlife Fund* <https://www.worldwildlife.org/pages/what-is-biodiversity> [accessed 19 May 2022].

[3] Andy Purvis and Andy Hector, 'Getting the Measure of Biodiversity', *Nature*, 405:6783 (2000), 212–19 (p.212) <https://doi.org/10.1038/35012221>.

[4] Ibid.

[5] Ibid.

[6] Andy Purvis and Andy Hector, *Nature* (2000) p. 214.

[7] Darwin and Wallace as quoted in Andy Purvis and Andy Hector, 'Getting the Measure of Biodiversity', *Nature*, 405.6783 (2000), 212–19 (p.216) <https://doi.org/10.1038/35012221>.

[8] Ibid.

[9] Andy Purvis and Andy Hector, *Nature* (2000) p. 217.

[10] Ibid., p. 217.

## Covid-19 as a Looking Glass

According to the World Economic Forum's Global Risk Report published in 2021, environmental concerns such as climate change and biodiversity loss are related to pandemics, and are among the ten top long-term risks that the world is likely to face over the next decade.[11] The United Nations published a press release in October 2020 revealing that countries worldwide had failed to fulfil any of their decade-long biodiversity targets.[12] The origin and transmission path of the Coronavirus are still not yet certainly known, but we do know that zoonotic diseases, which are diseases transmitted from animals to people, are on the rise.[13] The WHO defines zoonosis as 'any infection naturally transmissible from vertebrate animals to humans.'[14] As disclosed by an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) report released in October 2020, 'future pandemics will emerge more often, spread more rapidly, do more damage to the world economy and kill more people than Covid-19, unless there is a transformative change in the global approach to dealing with infectious diseases.'[15]

Covid-19 is caused by the SARS-CoV-2 and has been classified as a zoonotic disease. However, no animal reservoir has yet been discovered.[16] According to other scientific groups, Covid-19 is an 'emerging infectious disease of probable animal origin,'[17] with ecological, environmental and demographic factors placing the human population at closer contact with a previously unfamiliar microbe.[18] Among several theories about the origin of the Coronavirus, the most probably one is that of a wildlife spillover from a virus that originated in bats in China. A joint report conducted by the World Health Organisation (WHO) and the Chinese government has found that a bat virus went through other animals and ended up infecting humans.[19] What is not known in this scenario is which was the intermediary host. This points to a highly crucial aspect of biodiversity coexistence - the crowded, unhygienic conditions of live animal markets and how they serve as a perfect transmission point for diseases to spread from animals. Researchers have found that nearly 50,000 animals of 38 different species were sold at Wuhan markets over the 18 months preceding the outbreak.[20]

If we use Covid-19 as a contextual lens for this argument, it is impossible that a virus that comes from animals jumped to humans so efficiently and in one instance. Robert Redfield, a virologist and former director of the U.S. Centers for Disease Control, speculates that the virus had been

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[11] Marco Lambertini, 'COVID-19 Has Shown What Happens When We Destroy Nature - 2021 Must Be the Year We Change Course', *WWF International, Thomas Reuters Foundation News* (19 January 2021) <https://news.trust.org/item/20210119081114-l50qc/> [accessed 4 May 2022].

[12] Ibid.

[13] 'COVID-19 and the Environment' *Geneva Environment Network* (2022) <https://www.genevaenvironmentnetwork.org/resources/updates/updates-on-covid-19-and-the-environment/> [accessed 28 February 2022].

[14] Najmul Haider and others, 'COVID-19—Zoonosis or Emerging Infectious Disease?', *Frontiers in Public Health*, 8:596944 (2020), 1-8 (p. 1) <https://www.frontiersin.org/article/10.3389/fpubh.2020.596944> [accessed 28 February 2022].

[15] 'COVID-19 and the Environment' *Geneva Environment Network* (2022) <https://www.genevaenvironmentnetwork.org/resources/updates/updates-on-covid-19-and-the-environment/> [accessed 28 February 2022].

[16] Najmul Haider and others, 'COVID-19—Zoonosis or Emerging Infectious Disease?', *Frontiers in Public Health*, 8:596944 (2020), 1-8 (p. 1) <https://www.frontiersin.org/article/10.3389/fpubh.2020.596944> [accessed 28 February 2022].

[17] Ibid.

[18] Stephen S. Morse, 'Factors in the Emergence of Infectious Diseases', *Emerging Infectious Diseases*, 1.1 (1995), 7–15 <https://doi.org/10.3201/eid0101.950102>.

[19] Josh Fischman, 'It's Much More Likely the Coronavirus Came from Wildlife, Not a Lab', *Scientific American* (2021) <https://www.scientificamerican.com/article/its-much-more-likely-the-coronavirus-came-from-wildlife-not-a-lab1/> [accessed 4 May 2022].

[20] Victoria Gill, 'Covid Origins: Scientists Weigh up Evidence over Virus's Origins', *BBC News*, 9 July 2021, section Science & Environment <https://www.bbc.com/news/science-environment-57782955> [accessed 4 May 2022].

circulating for months before we noticed it.[21] Sunda pangolins and horseshoe bats have both been found to carry similar viruses.[22] In the forests of Southeast Asia, the critically endangered Sunda pangolin shares its range with the intermediate horseshoe bat. Research shows that as forest habitats shrink, the susceptibility to pathogens amongst pangolins increases. The Sunda pangolin was found in urban forest fragments in Malaysia despite having a much lower mammal diversity than a connective forest. Thus, these animals can persist in fragmented forests where there are more chances to encounter humans and other animals that can transmit zoonotic diseases. Poached for meat, scales, and skin, Sunda pangolins are illegally imported into China from Vietnam and Malaysia. A wet market in Wuhan, where such animals are sold, is suspected of being a source of the current pandemic.[23]

## Patterns of Loss

In today's world, human-led anthropogenic activities are the leading cause of destruction to biodiversity. Historically, over 70% of diseases with zoonotic origin have originated from wildlife - including the Ebola virus, HIV/AIDS, and severe acute respiratory syndrome (SARS).[24] The intertwined planet of humanity and nature implies that the present Anthropocene[25] is characterised by a 'tightly interconnected world operating at high speeds with hyper-efficiency in several dimensions.'[26] Among these dimensions are globalised food production and distribution, extensive trade and transport networks, strong financial and capital market interconnections, internationalised supply and value chains, mass migration, social innovation, and the development and exchange of technology.[27]

Research shows that approximately half of the zoonotic diseases that have emerged since 1940 have directly resulted from changes in land use.[28] This can be attributed to the fact that when land is cleared for crop and livestock production, it increases the contact rate between humans and wild animals. This implies the bridging of cultivated land patches becoming adjacent to areas of high biodiversity and is a critical factor in causing pathogen spillover. Livestock, specifically, is highly relevant in the spread of zoonotic diseases as it frequently serves as the interface of such spillover. [29] To discuss unsustainable wildlife trade, one needs to talk about neglectful environmental policies, which would prompt us to understand the intensification and expansion of agriculture and human land use. Ultimately, this points towards harmful production and consumption patterns that wreak havoc on the environment and increase human contact with wildlife, livestock, and pathogens.[30] As a result of deforestation, forest fragments and dwindling

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[21] Josh Fischman, 'It's Much More Likely the Coronavirus Came from Wildlife, Not a Lab', *Scientific American* (2021) <https://www.scientificamerican.com/article/its-much-more-likely-the-coronavirus-came-from-wildlife-not-a-lab1/> [accessed 4 May 2022].

[22] Amy Y. Vittor, Gabriel Zorello Laporta, and Maria Anice Mureb Sallum, 'How Deforestation Helps Deadly Viruses Jump from Animals to Humans', *The Conversation* (2020) <http://theconversation.com/how-deforestation-helps-deadly-viruses-jump-from-animals-to-humans-139645> [accessed 4 May 2022].

[23] Ibid.

[24] Odette K. Lawler and others, 'The COVID-19 Pandemic Is Intricately Linked to Biodiversity Loss and Ecosystem Health', *The Lancet Planetary Health*, 5.11 (2021), e840–50 <https://doi.org/10.1016/S2542-5196(21)00258-8>.

[25] See Essay 2 'Human Ecology and Beyond' p.12.

[26] Carl Folke and others, 'Our Future in the Anthropocene Biosphere', *Ambio*, 50.4 (2021), 834–69 (p.837) <https://doi.org/10.1007/s13280-021-01544-8>.

[27] Helbing 2013 as quoted in Carl Folke and others, 'Our Future in the Anthropocene Biosphere', *Ambio*, 50.4 (2021), 834–69 (p.837) <https://doi.org/10.1007/s13280-021-01544-8>.

[28] Frank Van Langevelde and others, 'The Link between Biodiversity Loss and the Increasing Spread of Zoonotic Diseases', *Think Tank European Parliament,* PE 658:217 (2020), 1-23 (p.16) <https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2020)658217> [accessed 1 June 2022].

[29] Ibid.

[30] 'COVID-19 and the Environment' *Geneva Environment Network* (2022) <https://www.genevaenvironmentnetwork.org/resources/updates/updates-on-covid-19-and-the-environment/> [accessed 28 February 2022].

forest edges have been a repeating theme in tropical zoonoses.[31] Forest clearing causes more species to disappear, but others adapt.[32] Those who adapt tend to become more concentrated, creating ecological niches, as explained above, increasing infection levels.

Aspects of changes in the biological hemisphere progress at different speeds and in different locations, and even though these changes are not always palpable, they are constantly taking place. Human dominance of the environment can be seen in the fact that the current population is ten times greater than all wild animals combined.[33] By adding the amount of human use and consumption of livestock, only 4% of Earth's mammals remain wild.[34] We are altering the life history of species and sculpting novel, unnatural habitats for them, reaching thresholds that will cause irreversible changes to planetary health when crossed. Suppose we can understand the significance of biodiversity and organisms in providing a buffer for a shock against extreme events. In that case, it is in humanity's self-interest to strengthen the Earth system from a safe-operating place.

The Covid-19 pandemic has exacerbated inequalities between all presences of society's dualities - including polarities of wealthy and developing countries, access to medical healthcare and the lack of medical infrastructure, and the privilege of climate inaction versus the handicap of its direct impact. All medical research conducted to identify the source of the virus has led to the discovery of hypotheses that will take years to test. How have we reached such an advanced stage with our intelligence, technological evolutions and availability of resources, yet the consequence of our own actions confounds us? It is essential that in our attempt to grasp this ecological truth, we build social resilience to face the answers we will find. To create a sustainable future in the face of enormous environmental uncertainties, we need to develop flexible socio-technical systems that combat the dynamics of policy and welfare and nurture our collective capacity to honour the direction of development adaptively and fluidly. It is crucial to understand the complexities of existing in the Anthropocene and re-define our relationship with nature as it exists today.

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[31] Amy Y. Vittor, Gabriel Zorello Laporta, and Maria Anice Mureb Sallum, 'How Deforestation Helps Deadly Viruses Jump from Animals to Humans', *The Conversation* (2020) <http://theconversation.com/how-deforestation-helps-deadly-viruses-jump-from-animals-to-humans-139645> [accessed 4 May 2022].

[32] Ibid.

[33] Carl Folke and others, 'Our Future in the Anthropocene Biosphere', *Ambio*, 50.4 (2021), 834–69 (p.837) <https://doi.org/10.1007/s13280-021-01544-8>.

[34] Ibid.

PART II

# Human Ecology and Beyond

PART II

**Human Ecology and Beyond** | *Philosophical Exploration*

Human ecology can be defined as the 'study of the interactions between human and non-human nature in different cultures.'[1] Taking a multidisciplinary approach, it is an inquiry into the relationship between humans and their natural, social and built environments. Emphasising complexity and change, it is a topic of interest across many different disciplines. Such an integrative approach has given rise to various interpretations across diverse fields, shifting focus from evolutionary, environmental, historical and contemporary theories of human ecology. The following sections in this chapter look into the most notable ecological writings of theorists such as Graham Harman, Bruno Latour, Jane Bennett, Donna Haraway and Timothy Morton.

## The Anthropocene

The term 'Anthropocene' (from Greek: *anthropos*, for 'human', and *cene*, denoting 'new' or 'recent') can be understood as a 'new geologic epoch demarcated as the time when human activities began to have a substantial global effect on the Earth's systems.'[2] It was first popularised by atmospheric chemist and Nobel laureate Paul Crutzen, although it had been in use by Soviet Union scientists already in the 1960s.[3]

More than a crisis with an end, the Anthropocene is representative of an ecological *threshold*. It encompasses numerous factors varying from global climate change to disruptions in oceanic and atmospheric currents, the disturbance of water cycles, soil degradation and the rapid loss of biological diversity.[4] It has now been dated as officially starting in 1945. The Anthropocene is a geologic period with an extremely specific date and one marked by the *human factor,* i.e., the existence of humans as a geophysical force on a planetary scale.[5]

In various studies, the coronavirus pandemic has been characterised as an 'Anthropocene disease', emphasising the influence of human activities on ecosystem networks and their impact on society, public health, and the environment.[6] This crisis has brought to the forefront the catastrophic linkages between the climate crisis, global health, and capitalism.

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[1] 'Human Ecology', *The Department of Human Geography* (2022) <https://www.keg.lu.se/en/education/subjects/human-ecology> [accessed 28 March 2022].

[2] Whitmee et al., 2015, p.1975 as quoted in Pierre-Marie David, Nicolas Le Dévédec, and Anouck Alary, 'Pandemics in the Age of the Anthropocene: Is "Planetary Health" the Answer?', *Global Public Health*, 16:8–9 (2021), 1141–54 <https://doi.org/10.1080/17441692.2021.1893372>.

[3] William F. Laurance, 'The Anthropocene', *Current Biology*, 29:19 (2019), 953–54 (p.953) <https://doi.org/10.1016/j.cub.2019.07.055>.

[4] Eva Horn and Hannes Bergthaller, *The Anthropocene: Key Issues for the Humanities* (London: Routledge, 2020), p. 2.

[5] Timothy Morton, *All Art Is Ecological* 001 (London: Penguin Books 2021), p. 6.

[6] Pierre-Marie David, Nicolas Le Dévédec, and Anouck Alary, 'Pandemics in the Age of the Anthropocene: Is "Planetary Health" the Answer?', *Global Public Health,* 16:8–9 (2021), 1141–54 <https://doi.org/10.1080/17441692.2021.1893372>.

## Perspectives

Historically speaking, we have always known about and attempted to articulate environmental concerns. In 1972, James Lovelock proposed the Gaia Hypothesis after the ancient Greek goddess of the Earth, also known as the 'mother of all life.'[7] This theory put forth the ideology that the Earth and it's biological systems behave as a single entity. Lovelock proposed that various self-regulating feedback mechanisms keep the Earth habitable through organisms tightly coupled to their environment.[8] At that time, such an approach differed vastly from the classical understanding of global ecology, which was understood as a set of biological responses to a menu of physical conditions.[9]

Climate change is by no means a novel phenomenon, nor are we novices to its long-term implications on our existence. We find ourselves vaguely, roughly, approximately placed in the Anthropocene - somehow deep in the middle of the Sixth Mass Extinction event on planet Earth,[10] and somewhere in this vagueness, we dissociate with the consequences to come while reinforcing the actions that would indeed make it move faster towards us. There is something in such a chain of the attitude-behaviour cycle which is innately *human,* even unfortunately so.

Theorists including Graham Harman, Bruno Latour, Jane Bennett and Donna Haraway have argued that the Anthropocene is to be understood as an *ontological shock* or a 'quake in being.'[11] This approach attributes agency not only to humans but also to non-human forms of life, the Earth system or the material world. Climate change today is ungraspable - it is an immeasurable, boundless, expansive entity - one that can disappear if you try and look at it directly but is constantly wrapped around you like a stifling cloak.

This phenomenon is extensively spoken about by Morton, who in his writings references German philosopher Heidegger's approach of *vorhanden,* meaning present-at-hand.[12] Things around us seem to disappear when we focus on our tasks; they aren't constantly present. It is only when something malfunctions or presents itself in forms that we aren't used to do we notice them. We find value in things that serve us in the modern world*,* and the *us* here is the most significant distinguishing factor. We have an endless fascination for objects that make our life easier, faster and thereby better - but we are not inclined to be intrigued by the ground on which they are built.

Morton adheres to a philosophical approach known as *object-oriented-ontology (OOO),* developed by Graham Harman*,* which proposes that nothing can be grasped or accessed all at once in its entirety.[13] A form of speculative realism, OOO claims that real things exist. Those things are objects rather than amorphous 'matter.'[14] It is closely connected to the rejection of 'correlationism,' which is the pattern of human thinking about things merely in terms of the effects they have on us.[15] According to this poetic realism, if everything that exists is an object that cannot be reduced or made small, that it defies holism and reductionism, then we are left in a

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[7] P.J Boston and others, 'Gaia Hypothesis - An Overview', *ScienceDirect* (2022) <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/gaia-hypothesis> [accessed 29 March 2022].

[8] Ibid.

[9] Ibid.

[10] Timothy Morton, *All Art Is Ecological* 001 (London: Penguin Books 2021), p. 7.

[11] Eva Horn and Hannes Bergthaller, *The Anthropocene: Key Issues for the Humanities* (London: Routledge, 2020), p. 10.

[12] Timothy Morton, *All Art Is Ecological* 001 (London: Penguin Books 2021), p. 8.

[13] Timothy Morton, *All Art Is Ecological* 001 (London: Penguin Books 2021), p. 10.

[14] Timothy Morton, 'Here Comes Everything: The Promise of Object-Oriented Ontology', *Qui Parle*, 19:2 (2011), 163–90 (p. 165) <https://doi.org/10.5250/quiparle.19.2.0163>.

[15] Dylan Kerr, 'What Is Object-Oriented Ontology? A Quick-and-Dirty Guide to the Philosophical Movement Sweeping the Art World', *Artspace* (2016) <http://www.artspace.com/magazine/interviews_features/a-guide-to-object-oriented-ontology-art> [accessed 30 March 2022].

highly unnerving situation where there is never completion. There are always more parts than a whole. This philosophical approach to understanding ecology is highly critiqued for its basis in pre-critical naïveté and Kantian limitations. Although it claims to provide a reckoning for our species, OOO is difficult to grasp due to its obscurity.

However, Morton's work can be credited for the artistic and philosophical value in helping people perceive climate change. An example of this is what he terms 'hyperobjects,' which are defined as those that have vitality to them, but you can't touch them, like race, class or radioactive waves.[16] Global warming is perhaps the most dramatic example of this - an entity so vast in space and time that it defies traditional ideas about what it is in the first place. Thereby, we are constantly inside hyperobjects, which in turn are always passing through us.

**Matter and Agency**

How much has changed since the introduction of Gaia? Yes, it is true that when we view the Earth as made up of living parts rather than comprising of dead ones, we are more likely to connect with the environment around us. Years after Lovelock, similarities can be found in political theorist Jane Bennett's writings about the existence of matter. She theorises a 'vital materiality' that pulses through both human and non-human bodies.[17] This vital materiality is the belief that all matter has life, irrespective of how lifeless it may appear to be.

In a similar vein to Latour, Bennett uses the term 'political ecology' to describe examples of deliberation and recognition in which people are not the lone significant actors. As said by Kafka, De Landa, and Vernadsky in their writings, she argues that human individuals are themselves composed of vital materials.[18] By trying to differentiate between subjects and objects, or the living and non-living, we often fall into placing 'humans at the ontological centre or hierarchical apex.'[19] It is worthwhile to attribute such a materiality to that which is not human; one can imagine the environmental shifts it would bring if we gave the force of things more due. A massive flaw in our approach to protecting nature is that we think of ourselves as the active subjects in this relationship while everything around us is passive and lifeless. This causes us to ignore the power and vitality of matter. Bennett proposes that objects are alive because they have efficacy, as they are capable of altering the course of events.

We are constantly in the throes of trying to understand the trade-off between the object-subject relationship. Within this framework, we attribute agency to those aspects that we consider visibly changing - yet, we fail to recognise how those changes are taking place. Latour describes our affinity to make connections through narratives as 'not just a property of human language, but one of the many consequences of being thrown into a world that is within itself fully articulated and active.'[20] It has somehow come to be that the closer we have come to understanding nature through science, the scientific worldview has managed to invent the idea of a 'material world' in which agency of all its contributing parts has been made to disappear.[21] When we live in such a world, the natural environment is now nothing more than a zombie atmosphere where the exact details of nature have become less by the very scientific professions that keep multiplying. Consequently, Latour states that the action has been put in the antecedent [22] and, therefore, the consequence may as well not be there at all.

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[16] 'Hyperobjects', *Cyborg Anthropology* (2012) <http://cyborganthropology.com/Hyperobjects> [accessed 2 June 2022].

[17] Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010).

[18] Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010) p. 11.

[19] Ibid.

[20] Bruno Latour, 'Agency at the Time of the Anthropocene', *New Literary History*, 45:1 (2014), 1–18, p. 13.

[21] Ibid.

[22] Ibid.

Modernism does not build mental and emotional capacities for people to accept the responsibility for this rapid ecological degradation while holding onto the ideals of their revolutionary dreams. As Bruno Latour states -

> How can we simultaneously be part of such a long history,
> have such an important influence, and yet be so late in realising what
> has happened and so utterly impotent in our attempts to fix it?[23]

We live in the Information Age, yet we are unable to comprehend ecological information. Why is that? The delivery mode of environmental knowledge in the media adheres to that of an *information dump.* How is one expected to respond in the face of news articles that spew data about rising $CO_2$ levels while exclaiming that these levels are, in fact, the highest they have been in over 2 million years? These factoids are entangled with deep-rooted history, the impact of our collective action, and the unavoidable truth that the dramatic event has passed and the major revolutionary event has been forgotten.[24] By way of living in the Anthropocene, we need to understand that all agents share the same shape-changing destiny.[25] The old characteristics of objectivity and subjectivity cannot help us follow, document, tell and represent this destiny. Rather than melding nature and society, the most important political task is to differentiate and distribute agency as much as possible.

**Wayfinding**

The Earth is no longer a planet that revolves in its orbit, housing civilisation. The Earth today is shifting, restless, and crawling with over 7.9 billion people that crack open its crevices in a hunt for the last portion of elemental life that can be weaponised. In the olden days, nature existed as a reference point for decades in ancient law because *it had no subject*[26] *- because it was a space without man.* Today, we have altered and shifted the equilibrium of nature so much that it depends on us for its existence. It can be said that we have *enforced a subject onto the Earth again.*

It is easy to create a binary distinction between nature and culture in standard terms. Nature is the tree that is visible from my window, and the window by which I look at the tree belongs to the man-made and artificial culture. This debate extends to how we structure our knowledge bases. The sciences are responsible for the world of things, as opposed to the humanities, which are concerned with the products of the human mind.[27] This ties in with the common thread of discussion about living in the Anthropocene, which is the idea that this period has put an end to the distinction between both nature and culture. As mentioned above, if it is evidenced that climate change has destroyed the very idea of a nature that exists apart from human interference, then the nature that we intend to save has already ceased to exist.[28]

Have we already reached the end of the world? Is this era of climate activism marked by an undertone of environmental grieving?

In that case, what are we left with?

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[23] Bruno Latour, *New Literary History* p. 1.

[24] Ibid.

[25] Ibid, p. 15.

[26] Latour, *New Literary History* p. 15.

[27] Eva Horn and Hannes Bergthaller, *The Anthropocene: Key Issues for the Humanities* (London: Routledge, 2020), p. 51.

[28] Bill McKibben as quoted in Eva Horn and Hannes Bergthaller, *The Anthropocene: Key Issues for the Humanities (London: Routledge, 2020),* p. 51.

Perhaps, the first thing to do would be to understand the limitations of linguistics in giving historic viewpoints the same vocabulary that have densely populated our imagined protection of the natural world. If the absence of nature denotes the period of postmodernism, then is the absence of nature not just a physical one but rather one linked with memory? According to Latour, what characterises our era is not simply defined by the disappearance of nature but by the proliferation of hybrids that subvert the categorical distinction between nature and culture. Then, standards of ‘naturalness’ in urban life are not marked by the presence of trees, forests, or wildlife - instead, the measure of air quality indexes, certification guidelines for farming and mandates for hedge trimmings.

Are we stuck somewhere between lauding nature as an object of reverent admiration while attempting to revel in its profound mystery? I would speculate that the first step would be to move away from the ideals of storied lands and toward naming them for their urban realities. When we can gather, assemble and have discourse around matters of concern while building conversations that do not alternate wildly between what is human and what is fact, our statements might be able to draw on what it is that they are bound to. We need to return the object and subject back to the ground for this to happen. This, perhaps, might hold the potential for us to channel our articulation compatible with that of the speech of Gaia, renewing the political body within an ecological framework.

PART III

# Emergence

PART III

**Emergence** | *Personal Practice and Experience*

## A Call to Action

In July of 2020, I moved back to my hometown of New Delhi, India. Covid-19 was moving fast through the city landscape, and the streets were completely devoid of any human activity. Amid rampant lockdowns, I received an invitation for a project collaboration aimed at creating a platform that brought to light narratives of solidarity amidst the chaos we were living in. Thus emerged Compassion Contagion, an online archive led by Nida Ansari, an activist, and Pooja Dhingra, an artist, that brought together creators from across the country to document acts of compassion and share stories of how these experiences were fundamentally changing human behaviour.[1] Funded by the University of York (Centre for Applied Human Rights) and the Open Society Foundations under Arctivists, Compassion Contagion interviewed a vast pool of relief workers, volunteers, grassroots workers, lawyers, farmers, journalists and the ordinary citizen to understand their motivation in providing mutual-aid and forming a 'new community driven by the passion to help, cutting across caste, class, religion, region in the face of the pandemic.'[2]

As part of this project, I illustrated an article titled 'The Anatomy of a Relief Kit - searching for compassion in the contents of a relief kit.' With stories from the field contributed by organisations such as Goonj, Sustainable Environment and Ecological Development Society (SEEDS) India and Mazdoor Kitchen[3], this article dissected the contents of a relief kit, how relief works, and if done consciously, how it can provide a road to recovery and rehabilitation.[4]

> *Relief* [5]
> 1. *A feeling of reassurance and relaxation following release from anxiety or distress.*
> 2. *Financial or practical assistance given to those in special need or difficulty.*

One of the illustrations created[6] was that of Kudumbashree, a women's collective run by the government of Kerala, India. This initiative comprised a local quartet of women seamstresses in their community who were stitching cotton masks and bags for their relief kits. Other supporting illustrations covered the article's written aspects, such as providing immediate relief, identifying needs, accompanying dry ration with utilities, boosting the local economy, focusing on neglected communities, adapting to the varying scale of disaster, and forging collaboration and decentralisation.[7]

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[1] Pooja Dhingra and Nida Ansari, *Compassion Contagion* (2022) <https://www.compassion-contagion.com> [accessed 3 June 2022].

[2] Ibid.

[3] Goonj: A non-governmental organisation headquartered in New Delhi, India, that undertakes disaster relief, humanitarian aid and community development in parts of 23 states across India.

SEEDS India: SEEDS partners with the vulnerable communities to build their resilience to disasters and climate change impacts. We use innovative approaches and technologies that work for these communities.

Mazdoor Kitchen: A citizen run voluntary initiative, working to provide meals and subsistence to daily wage workers in North Delhi.

[4] Nida Ansari, Pooja Dhingra, and Anjani Grover, 'The Anatomy of a Relief Kit', *Compassion Contagion* (2020) <https://www.compassion-contagion.com/fieldnotes/anatomy> [accessed 3 June 2022].

[5] Ibid.

[6] See Figure 1, p. 19.

[7] Ansari, Dhingra and Grover, *Compassion Contagion.*

**Figure 1:** Adira Andlay, *The Anatomy of a Relief Kit, Compassion Contagion, New Delhi,* 2020.

I have always been interested in creating work within the framework of social impact. Before this project, I have worked professionally with various research and conservation institutes that aim to build sustainability and social welfare through their public outreach efforts. However, this particular project came at a point where the ground beneath my feet, as is the case for most, had shifted entirely. The environment around us had already changed, and we were all trying our very best to find something to hold onto. For me, this thread was my practice as an illustrator. Herein lies my interest in the pandemic as a lens for finding points of navigation in the field of design. Situating my practice as a designer at the intersection of research, policy and ecological impact implies that the context of my work is in a dance with the thresholds of society, environment and human behaviour that are continuously being redefined. I find this to be both challenging and rewarding, and a space that allows me to grow in my work.

Living in India during the pandemic meant seeing the repercussions of a natural disaster transform itself into a national tragedy. On a global scale, there were monumental shifts taking place amongst the invisible forces of policy, climate inaction and healthcare infrastructure that had come undone. Simultaneously, the city that I knew to be home was being desecrated by the consequence of these very global forces that had no care for geopolitical boundaries. The more apparent it became that nobody was safe, the more fear spread amongst groups of people. Human behaviour tends to spiral in the face of calamity. When faced with disaster on a global scale, our instinct is not to help, assist, or save each other - it is to protect ourselves. However, the irony of the Coronavirus disease is that these two aspects of preservation are not mutually exclusive.

From what I have seen and experienced, I have found that the role of public mobility and non-profit organisations in providing support that was lacking from governments has been compelling in tiding over those groups of people that stood no chance of survival. The aid provided by the collective effort of artists, designers, social workers, activists and resource groups, amongst many other connectors, has been a way of rebuilding social resilience and capacity. Our future in the Anthropocene will be determined by our ability to build resilient societies and ecosystems and maintain planetary health through fostering, restoring, and regenerating diversity intertwined in social and ecological dimensions.[8] This is where design can bridge gaps between people, knowledge bases, and forms of governance, which harness the ability to action change when harboured as a unified collective.

**An Ecological Standpoint**

Through my journey as a designer, I have been trained in various fields of communication. Starting from Fine Arts, then moving to Information Design, and now Global Innovation Design, a common thread across all my work has been an attempt to observe, capture and investigate aspects of my surrounding environment through different mediums. My interest in expressing myself visually has led me to investigate socio-cultural fields of the humanities from a communicative lens. This has bolstered my visual output by incorporating research practices, methodologies and ecological narratives.

While I was working on a project at the Nature Conservation Foundation[9] in 2018 that required developing nature education material for students in peri-urban areas in India, I was introduced to the writings of Ann Pelo[10]. In one of her essays, she states:

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[8] Carl Folke and others, 'Our Future in the Anthropocene Biosphere', *Ambio*, 50.4 (2021), 834–69 <https://doi.org/10.1007/s13280-021-01544-8>.

[9] The Nature Conservation Foundation is a non-governmental wildlife conservation and research organisation based in Mysore, India. They promote the use of science for wildlife conservation in India.

[10] Ann Pelo is a teacher-educator, program consultant and author whose primary work focuses on social justice, ecological and Reggio-inspired teaching and learning.

*This is what I want for children: a sensual, emotional, and conscious connection to place; the sure, sweet knowledge of earth, air, sky. As a teacher, I want to foster in children an ecological identity, one that shapes them as surely as their cultural and social identities. I believe that this ecological identity, born in a particular place, opens children to a broader connection with the earth; love for a specific place makes possible love for other places. An ecological identity allows us to experience the earth as our home ground, and leaves us determined to live in an honourable relationship with our planet.*[11]

This quote is a piece of text that has remained with me long after the project in India reached its completion. Time and time again, I have found myself thinking about these words and the paths designers can chart out to realise them. Over the last year at the Royal College of Art, I have had the opportunity to delve further into my interest in ecological concepts and their interplay with the world of art and design. Following are two projects that I have created within an ecological umbrella under this institution.

The first project was designed and executed for the Design Psychology module in November 2021. It was co-created with three of my peers - Mariam Ibrahim, Sarah Stone and Xin Wen. Titled 'The Pip Kit', it is a holistic, educational toy designed to encourage urban children (ages 7-11) to learn about food through loose parts play, guided digital education, and interactions with nature.[12] This project explored designing for Piaget's concrete operational stage of development.[13] Inspired by the medium of slotted disks, The Pip Kit helps children to learn about the knowledge of an apple's life cycle and characteristics, accompanied by a virtual character, Pip, the farmer.

Drawing from Ann Pelo's writing, this project aimed at building nature connectedness in urban children through play. As urbanisation and industrialisation enable lifestyle changes, people increasingly spend more time in an indoor environment. With the onset of digital devices and entertainment, many children spend more time playing inside than outside.[14] However, studies have shown that children's perceived connectedness to nature is positively associated with their well-being and happiness.[15] Therefore, it is essential for urban children to feel connected with nature for positive mental health. This project allowed me to explore ways of designing for children that would promote the development of their ecological identity, a crucial aspect of cultivating an interest in ecology and the environment as they grow older.

In a short participatory design experiment conducted during my Vision II: Development project with fellow designer Xin Wen at the Royal College of Art and Imperial College London,[16] I discovered that there is no such thing as a global ecological context. Titled 'Sense of Place', this project explored our interest in urban ecology. We aimed to understand how people perceive nature and the phenomenon of plant blindness in cities. For this, we developed a high-fidelity laser cut map of the surroundings of the Royal College of Art campus, and asked people to map out their places of connection, frequently travelled paths and observable natural life.

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[11] Ann Pelo, 'A Pedagogy for Ecology', *Rethinking Schools* <https://rethinkingschools.org/articles/a-pedagogy-for-ecology/> [accessed 27 May 2022].

[12] See Figures 2 and 3, p. 22 and 23.

[13] During this stage, children are able to start thinking about physical objects rationally, while still struggling with abstract concepts. They start moving out of the egocentric thinking mindset of the previous stage and begin to see beyond their own perspectives. W. Huitt and J. Hummel, 'Piaget's Theory of Cognitive Development' *Educational Psychology Interactive* (2003) <http://www.edpsycinteractive.org/topics/cognition/piaget.html> [accessed 3 June 2022].

[14] Connor Ertz, 'Kids Now Spend Twice as Much Time Playing Indoors than Outdoors', e*arth.com* (2018) <https://www.earth.com/news/kids-playing-indoors-outdoors/> [accessed 29 May 2022].

[15] Capaldi et al. as quoted in Alexia Barrable and David Booth, 'Increasing Nature Connection in Children: A Mini Review of Interventions', *Frontiers in Psychology*, 11:492 (2020), 1-7 <https://www.frontiersin.org/article/10.3389/fpsyg.2020.00492> [accessed 29 May 2022].

[16] See Figure 4, p. 24.


**Figure 2:** Adira Andlay, Mariam Ibrahim, Sarah Stone, Xin Wen, *The Pip Kit, Design Psychology, London,* 2022.

**Figure 3:** Adira Andlay, Mariam Ibrahim, Sarah Stone, Xin Wen, *The Pip Kit, Design Psychology, London,* 2022.


**Figure 4:** Adira Andlay and Xin Wen, *Sense of Place, Vision II: Development, London,* 2022.

A challenge was that people had different responses based on where they come from and what they had seen before, so it became difficult to collate data with such a small user group with no baseline standard. Here, I learnt the importance of framing a question in the best contextual format to get the most informed outcome. It was interesting to see how what I considered an objective truth turned out to be a context-specific definition to me. For example, what I believe to be nature is not the same as what you might think it to be.

Through this process, various questions emerged that I hope to explore further in my practice as a designer. These include questions such as -

*How important is it to have a rich vocabulary of plant life when it comes to understanding the natural environment?*

*Can we ever strive for a global ecological understanding if everything is context-dependent? If not, how do we address climate change and environmental loss worldwide?*

Another challenge was realising the need to design something with a common structural base that is fluid enough to be used across different groups. This leads me to something that I discovered through this process called boundary objects, which is information that different communities can use in different ways for collaborative work through scale.[17] We live in a world characterised by the rapid movement of people across political borders, and when people move, so do their ideas about food, transport, culture, and nature. To build a mass ecological reckoning, one needs to collect data that represent these stories of mobility. A grand limitation of data is the rigidity it brings in its output - therefore, if the data subjects are fluid and flexible, as does the mode of data collection need to be.

Introduced by Star and Griesemer in 1989, boundary objects can be defined as below:

> Boundary objects are both plastic enough to adapt
> to local needs and the constraints of the several parties employing them,
> yet robust enough to maintain a common identity across sites.[18]

These objects, by their nature, are part of multiple social worlds and aid communication between them. The Vision module helped me articulate my Vision statement, which is now what I consider to be my manifesto as a designer. In March 2022, I wrote:

> *I want to create purposeful design interventions that facilitate discourse on human ecology, urban attitudes and climate activism to help people build enduring relationships with their environment.*
>
> *I want to do this by exploring participatory design approaches to develop contextually relevant toolkits.*
>
> *I want to understand the systems that have come before me (to join the dots) even if that means that my role is to be connective for things that already exist.*

Moving forwards, I'm keen to explore built environments through boundary objects in different cities across the world. I believe that being a part of the MA/MSc in Global Innovation Design at the Royal College of Art and Imperial College London has given me this platform, especially since the course is built to explore different geographic locations and what they have to offer. During my study abroad semesters at Keio School of Media Design in Japan and Nanyang Technological University in Singapore, I aim to work with a range of urban communities to try and better understand how to design for situations of natural disasters, climate emergencies and ecological

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[17] Susan Leigh Star, 'This Is Not a Boundary Object: Reflections on the Origin of a Concept', *Science, Technology, & Human Values*, 35:5 (2010), 601–17 <https://doi.org/10.1177/0162243910377624>.

[18] Sveta Stoytcheva, 'Boundary Objects: A Field Guide' (2013) <https://scalar.usc.edu/works/boundary-objects-guide/boundary-objects> [accessed 30 March 2022].

well-being. I would like to achieve these by developing toolkits that work as modes of communication and mobilisation.

**Sight**

*I saw systemic breakdowns*

In my opinion, design can be defined as any creation with a purpose - that which serves as a functional intervention - attempting to create a shift in people's behaviour and attitudes and the systems they function under. What Covid-19 did to an entire global population was highlight the complete lack of medical resources in developing nations, the inequality between the Global North and the Global South, the inefficiency of current healthcare bodies and the lack of responsiveness of governments in policy making and implementation. These aspects are all pain points that can be addressed through design reformation in their areas. While the root causes of the losses we have suffered in the last three years have emerged from our actions towards nature, they are inextricably linked with all other aspects of human life, making them so much more difficult to change. Ultimately, we cannot transform one part of any network without shifting the others built over it. These invisible systems that have malfunctioned and become visible are the ones that need to be rebuilt from the ground up.

*I saw nature foregone*

Based on my research, findings and introduction to the work of noteworthy contemporary ecologists, I can now say that nature to me means *a place of remembrance*. If you had asked me a few years ago, I would have probably told you that nature to me means *a place of rest*. I find it pretty remarkable that this massive transition in my perception of the natural world has occurred in my early 20s. It makes me wonder about all the socio-cultural milestones that children today will cross so much earlier in their lives in the years to come. A lot has changed in our adaptations with nature, and I am beginning to notice differences in my terminology of the same environment that I could once immerse myself in. A fact that cannot be denied is that we are now in a highly digitised world that gets technologically more complex daily. Our ideas, beliefs and functions are so intertwined with the machines we have built that we are not left with much that makes us *human*. Here, I refer to human in terms of cognitive autonomy, independent action and behavioural regulation. This, I think, is the most significant loss of our civilisation - one that I am not sure can be overcome with time. I believe that the vulnerabilities that allow us to surrender to our natural biological systems are the catalysts that remind us to be less destructive towards the ground we walk on and the air we breathe. As I grow as a designer, I hope to cultivate and help build contextual experiences for those who are themselves trying to make sense of the world around.

*I saw the need for social resilience*

In the years to come, we will witness mass shortages of food supply, water, clean air and shelter - and there may not be a way around this. In many ways, we are somehow currently living in the most peaceful time known to man. Yet, simultaneously, we are in an age of mass extinction - characterised by the economic degradation of jobs, denial of opportunities due to racial injustice and climate catastrophe on a global scale. We have never experienced grief and death in such large numbers without war - and our nervous systems do not know how to respond to this shock. If we are to attempt to think ahead, we cannot yet foresee what the outcome of the land that we have eroded on a global scale will have on us. Suppose we can take lived examples of mutual aid in the time of such natural disasters as providing relief to each other. In that case, I believe we can learn to build social resilience beyond the limitations of our greed for power and resources. It is of utmost importance that systems that are formed now are created with the intention of

effectiveness, not for short term gain, but for long term success in diversity and ecological equilibrium. If we can learn to subvert the crises which are yet to come with this skeletal framework, then perhaps the resilience we build will lend to the future shocks of deep uncertainty being transformed into capacities for novel innovation. Investing in global public goods such as education, multi-scale governance and resources for conservation efforts can potentially help us better detect unforeseen changes and nimbly transform innovations to support a future that can be sustained on a planetary scale. I believe this will help us foster an immensely strong connection with our ever-evolving natural environment - a place where we all meet, where we have a mutual interest and the one thing that all of us share.

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Royal College of Art

GID GLOBAL INNOVATION DESIGN