

The background of the entire page is a light green, semi-transparent image of a microscopic plant cell structure, likely an onion skin. The cells are roughly hexagonal and arranged in a honeycomb pattern. A large, central cell is particularly prominent, framing the main title text.

# **Challenging the Human-centric Perspective on Architecture;**

Promoting Interspecies  
Design Through the  
Re-Imagination of  
Human and Non-human  
Relationships

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## Introduction

Architecture has long been shaped by the human-centric perspective, focusing primarily on the need, desires and behaviours of people. This approach, which has dominated design practices for centuries, has led to a built environment that often ignores or marginalises the role of non-human species. Yet, the increasing recognition of ecological crises presents an opportunity and necessity to rethink this one-dimensional perspective.

This dissertation explores the evolution of the human-centric perspective in architecture and its implications for both the built environment and the natural world. It begins with an examination of the historical context and development of the human-non-human divide, tracing how the early separation of humans and non-human species laid the foundation for architecture as a discipline. This separation has long shaped architectural practices, which have predominantly prioritised human needs over ecological and interspecies concerns.

The study continues to explore this evolution between species after tracing its roots in the domestication of animals and how this further entrenched the separation between humans and non. Historically, examples of co-habitation, such as the Norwegian Skuts, Svalgangs and farmhouses (Saeidi, S. Davidova, M. Et Al. 2023) show how spaces were previously designed to accommodate both human and animal needs, providing an alternative perspective on how we can re-introduce these design practices in the modern day. Furthermore, this research engages with the concept of the Anthropocene (Crutzen, P. 2006) critically analysing how this era – defined by human

dominance over the earth's systems – has influenced architectural practices. The critique delves into the ways architecture has both contributed to and been shaped by the Anthropocene. Philosophical perspectives on human and non-human relationships are also explored, drawing from the works of Gregory Bateson, Claude Levi-Strauss (Ingold, T. (2000), and Donna Haraway (Haraway, D. 2016). These thinkers challenge the conventional views of human exceptionalism as a direct impact of the Anthropocene and offer new methods of perceiving the dynamic between species, laying the groundwork for a reimagined approach to architectural thinking and practice. The research leads on to highlight how profit-driven models in architecture often prioritise economic gain over ecological harmony and sustainability, reinforcing human dominance in a capitalist system and exacerbating environmental degradation.

The shift towards interspecies design not only challenges conventional, human-centric architectural practices but also aligns with growing environmental imperatives. In this context, the introduction of the new Biodiversity Net Gain (BNG) Law (Department for Environment, Food & Rural Affairs (2023) provides a crucial opportunity for rethinking how architectural projects impact ecosystems. This legislation, which mandates developers to ensure that new developments leave biodiversity in a better state than before is directly relevant to architectural practice.

By exploring how architecture can incorporate the needs of non-human species, this research emphasised the timely importance of integrating ecological considerations into the built environment.

This analysis points for a shift toward more inclusive and ecologically responsive design practices. As sustainability becomes a central concern in contemporary architectural practice, the issue of 'greenwashing' (Simo Minana, J. 2024) is addressed. This dissertation questions whether many current "green" initiatives – often presented as solutions to ecological crises – are in fact contributing to the problem. By questioning whether 'the cure is more dangerous than the disease' (Bellamy Foster, J. 2002 Pg.26) it explores how superficial sustainability measures may fail to tackle deeper, systemic issues of environmental exploitation. Shifting toward solutions, this

study introduces interspecies design as an innovative approach to architecture. Through case studies and practical examples, it demonstrates how architects can integrate the needs of non-human species into their designs, promoting environments that are ecologically responsive and inclusive of other species. Finally, the research synthesises theory and practice, combining philosophical insights with practical design proposals through the introduction of Marcus Adams and his design studio (Marcus, A. (2023). By exploring these interconnected themes, this dissertation challenges the traditional anthropocentric paradigm in architecture, advocating for the shift towards a more sustainable and ecologically responsible approach that embraces the interdependence of all species.





# Human vs Non-human, The Argument of Epistemic Equality

Non-human. 'Not belonging to, appropriated to or produced by humans' (Merriam-Webster (2023) The paradigm between the human and non-human has existed for millennia. Arguably, this separation can be seen to have started 5-8 million years ago when humans disjoined themselves from our closest living relative; chimpanzees (Alexander. R, 1990, p.3). Since then, the human world has continued to evolve far beyond physical and biological differences.

As the separation occurred between human and non-human species, the relationship also shifted between one another that created a divide within habitats and dwellings. Adaptations to survive in the natural environment led humans to begin the process of construction of living spaces that we would now call architecture. One of the earliest man-made dwelling spaces is recorded as being 400,000 years ago (Dennis, R. 2021) discovered in France at the site of Terra Amata. This finding provides an example of the catalyst that created a true divide between humans and non-humans through architecture. The separation of inside vs outside, and the formation of a hierarchy of importance.

'Anthropocentric' is the 'regarding of humankind as the central or most important element of existence, especially as opposed to animals.' (Crutzen, P. 2000) in conjunction with biological changes: a decrease in overall body size, brain size and reduction in jaw proportions (Dorey. F, 08/02/21), humans have also evolved to a self-perceptual positioning as being at the centre of the world.

Historically, architecture has served as a tool to prove dominance and superiority

over the natural world. Between 12,000 and 9,000 B.C (Douglas, O. L. (2021) the first domestication of animals was introduced, Sheep, in Southwest Asia. As the levels of domestication increased and spread globally, farming animals for produce required the built environment to develop, catering for both human and non-human needs. Early examples of this can be seen in animal enclosures, stables and barns, their integration into human settlements creating a clear boundary between humans and non-humans with the use of architecture.

Although traditionally the keeping of agricultural animals has been separate when considering architectural structures, there have been instances 'whether intentional or not, where there [has been] a transition towards a post-anthropocentric architecture that supports peoples and other being's co-living' (Saeidi, S. Davidova, M. Et Al. 2023). One key example of this is the 'historical architectural and urban elements of svalgangs, skuts and breathing envelopes. (Saeidi, S. Davidova, M. Et Al. 2023). These historical structures support cross-species co-living in the context of Norway (ostlandet) a geographical region of south-eastern Norway (Saeidi, S. Davidova, M. Et Al. 2023).

Several historical and vernacular studies have been performed on Norwegian svalgangs (see Figure 2 ), Skuts (See Figure 4 ) and their breathing envelopes (See Figure 3 ). These studies focused on various semi-interior spaces and their envelopes. (Saeidi, S. Davidova, M. Et Al. 2023). (Saeidi, S. Davidova, M. Et Al. 2023). These case study examples consider other species' habitats and habited landscapes with a non-human perspective.





Fig. 2, Rakova (2017) Svalgangs Bergen



Fig. 3, Rakova (2017) Stue - Farmhouse



Fig. 4, Rakova (2017) Skut, Sissela House Viga

Ultimately, the semi-interior spaces are not sealed but offer exchange between interior and environment for other species. This enables a social interaction among other agents. Reflecting on this historical approach to a co-designed co-inhabited structure may prove integral when looking to implement methods of interspecies architecture in the twenty first century.

As an example of major anthropocentric structures in history, ancient monumental forms can be used, such as the Great Pyramids of Egypt (2500 BC) or Great Wall of China (1700 AD). The grandiosity of these architectural feats have been used to reflect the power of humans and humans alone. Architectural historians have taken time to react to the topic of Anthropocene, partially due to the complexity of the evolving situation and increasing involvement of a wider image, applying new methods of thinking unconfined to a single field (Costa Meyer, E. 2016).

As architecture progressed into the 18th century, the recognition of anthropocentric ideologies was amplified beginning with the founding of Palladian architecture. (V&A Museum 2025). Palladian architecture sought to re-introduce the classic Greek and roman ideals of human proportion into the built environment, directly afflicting any previous natural or organic type structure with the human form (V&A Museum 2025). The emergence of this style of architecture did in fact embrace the introduction of non-human species in conjunction with humans despite the strong anthropocentric foundations. These designs including large gardens, orchards or park-like settings where nature was designed to complement the human setting. However, this type of design

can be interpreted as reinforcing the notion that the environment and non-humans, exist for human use and enjoyment which in turn contributes to the increase of environmental degradation, biodiversity loss and other issues relating to the exploitation of non-human species. This can be interpreted as one of the main structural turning points within the architectural trajectory of designing for human and non-human species, strengthening the anthropocentric views in which humans are seen as separate from nature, rather than interconnected with or part of the natural world.

Figure five and figure six illustrate how the proportion of human form had begun to influence the form of architectural structures. Palladian architecture follows the same rules of proportion as Di Vinci's Vitruvian Man (1487).

Anthropocentrism can be understood as a psychological construct (Kelly, 1955). This introduces the theory of cartesian dualism (Descartes, R. 1596-1650), the human mind that is separate from body, creating the true 'division between humanity and nature' (Ingold. T, 2000, P. 15).

In order to fully understand the cause of a human centred world and therefore, human centred architecture, we must first begin to try and understand the origins; where these perceptions, beliefs and ways of interacting with others came from. Through analysing the root causes, there may be an opportunity to shift the way in which humans and non-humans interact, or more specifically, how humans have an influence with non-human species rather than on non-human species (Andrew, P. Kiyoko, M. et al. 2017) When looking into the relationship between

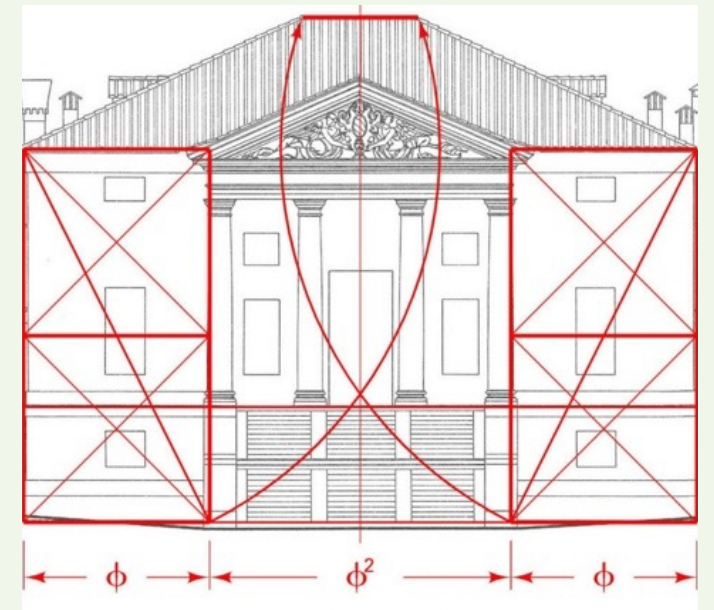


Fig. 5, Fletcher, R. (2020) Introduction to Architectural proportion

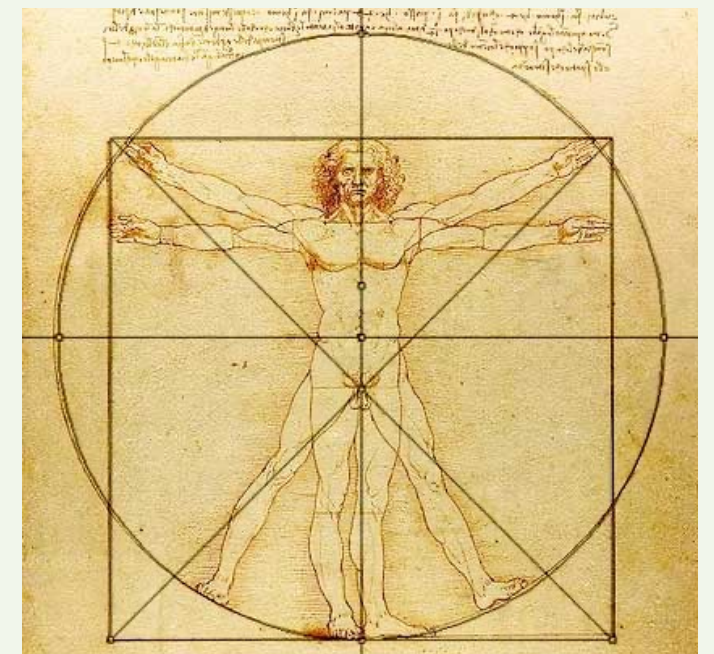


Fig. 6. Di Vinci, L (1487) Vitruvian Man

human and non-human species, the theory of Cartesian Dualism (Descartes R. 1596-1650) can be considered as one of the philosophical pillars that provided anthropocentrism with its ability to thrive and take over within modern and historical architecture. This being through the understanding of the separation of the mind and body, along with the view that humans possess rationality that distinguishes them from other life forms, aligning with the idea that humans see themselves outside of nature: governing and controlling it, rather than being intrinsically part of it.



‘Among the many dilemmas [that architecture] confronts us with today, the imbrication of the human and non-human worlds’ is one that holds significant weight amongst present and past designers. ‘A premise of such potentially fruitful complexity calls for a radical critique of inherited dualisms such as nature and culture, subjectivity and objectivity, the animate and the inanimate, the local and the global. It also rules out that cherished anthropocentric illusion: our view of ourselves against a natural world external to human beings.’

(Costa Meyer, E. (2016).

The built environment humans have created, in essence, has become a reflection of how humanity perceives its place in the world. With paramount importance, perhaps using historical evidence to suggest these advances prospered at the hinderance of non-humans.

Costa Meyer explores how architecture provides a canvas for the crossing over of human and non-human relationships. She insights an optimistic view of potential ‘fruitful’ (Costa Meyer, E. 2016) developments, innovations and changes to the way design, specifically architecture, is perceived through dissecting the foundations of how as humans think; How we absorb, analyse and react within the human environment to the world, knowledge and others around us. The ‘anthropocentric illusion’ (Costa Meyer, E. 2016) is built around the idea that it the Anthropocene is not real, un-materialised, ‘a psychological construct’ (Kelly, 1955). That it is evidently more informed to approach the human and non-human relationship with equal expectations of value and, or purpose. As Bruno Latour states ‘is not to act autonomously in front of an objective background, but to share agency with other subjects that also have lost their autonomy’ (Latour, B. 2014). He outlines the need for a shift away from the human-centred, subject-object dichotomy.

Through applying Latour’s theory of agency (Latour, 2014) architects and designers can reframe architecture as a network of relationships where humans share agency (Latour, B. 2014) with other entities, such as non-human species. The Latourian approach recognises the idea of control and the evolution that is required for collaboration to take place so that the focus of a symbiotic

relationship can be formed.

‘Human, fauna, flora and the environment are one entity like a human body with its limbs. Everything is interrelated and interconnected. Planet Earth is one ecosystem, a sum of unified and interconnected organic and integrated life. Our building must bear common responsibility to manage and to preserve our environment.’ (Widodo, J. 2019)

Professor Ingold (1948), a British anthropologist, explores the perceptions between human and environment, therefore human and non-human. (Ingold. T, (2000) Ingold emphasises how the human brain views the outside world, he describes the human perception of relativism within environment as ‘Founded upon a double disengagement of observer from the world’ (Ingold. T, 2000 P. 15) Meaning the idea that humans are so far detached from their surrounding environment that the relationship between humans and non-humans has been categorised as incompatible in societal and cultural norms.

Ingold’s theory and beliefs surrounding human and environment can be directly linked to the rules of architecture. That spaces are designed to bring comfort and shelter from the outside world. By saying that ‘a house is a machine for living in’ (Le Corbusier, 1923) Le Corbusier suggests that architecture is designed to create a self-contained, inward-focused environment. It can remove the occupant from the external world, making the interior primary space of interaction and experience, therefore removing experience of outside and in hand, interaction with non-humans.

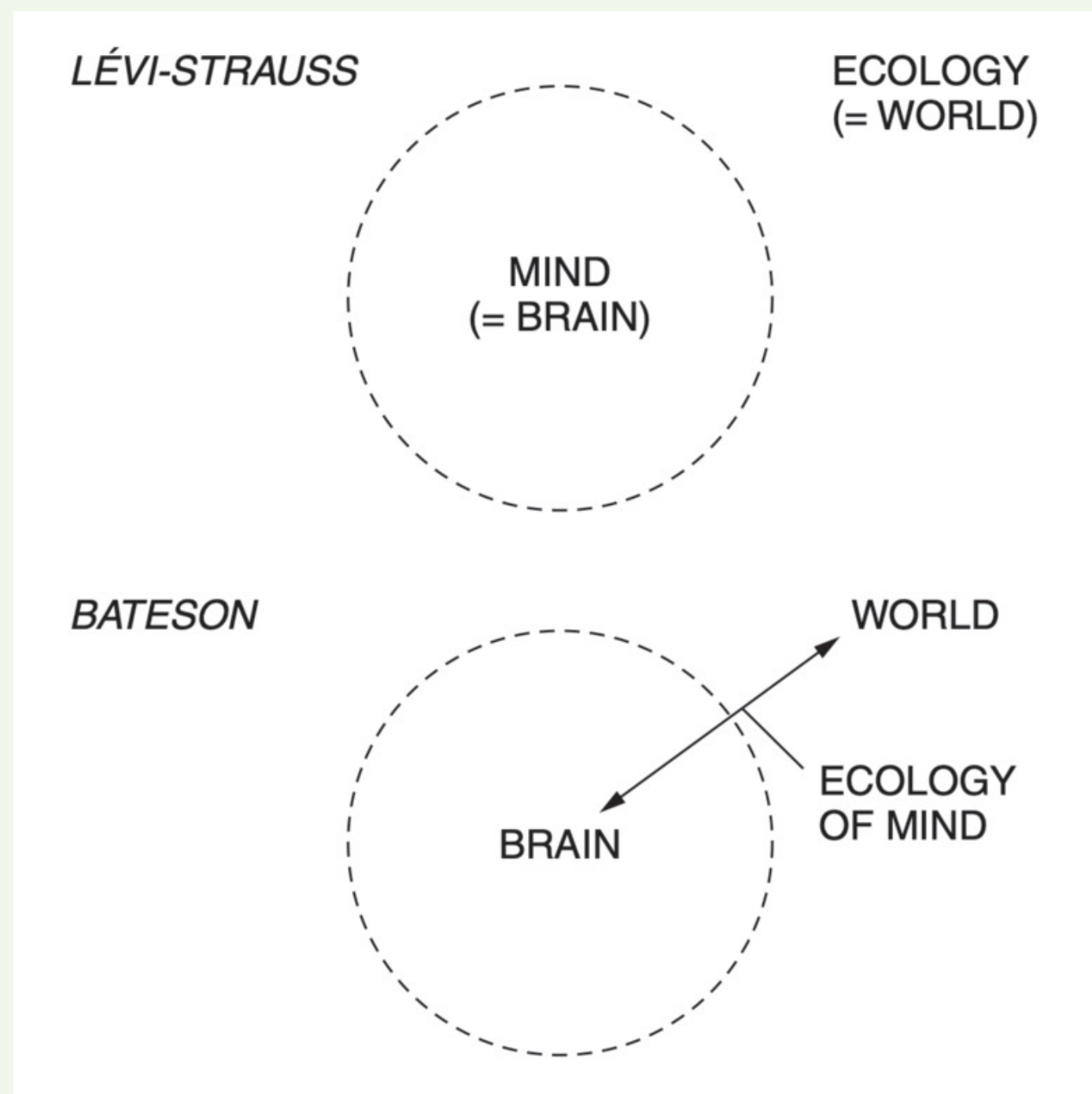


Fig. 7, Ingold, T. (2000) The Perception of the Environment.

Figure seven shows a diagram found within Ingold's chapter 'Mind and Ecology' (Ingold, T. 2000) where Levi-Strauss's (1829-1902) and Bateson's (1904-1980) theories of perception have been compared to show the relationship between mind (brain) and world. For Levi-Strauss, the perceiver of world can only be experienced through a passing of information between 'outside and inside' (Ingold, T. 2000) meaning only through individual experience of the senses and the brain can the world be understood (Ingold,

T. 2000), Supporting the previous theory of Cartesian Dualism (Descartes, R. 1596-1650). Additionally, Levi-Strauss also believed in the theory of binary opposition. The first example being 'nature vs culture' (Levi-Strauss's, C. 1829-1902) 'nature' (the body) linking to the physiological and biological aspects of humans as beings including the instinct and/ or propulsion that influences certain natural behaviours. 'Culture' (the mind), in contrast, represents the perceptions of humans and how we interpret the world.

This theory of binary opposition can also be applied to the human way of life and the natural way of being, in consequence human vs non-human. 'Human' acting as the culture and the dominant half of Cartesian Dualism whilst 'non-human' reflects the surrounding eco-bio-sphere (Fortuna, P., Wróblewski, Z. & Gorbaniuk, O. 2023) that holds physicality of the natural world in which humans are so far detached from.

On the other hand, for Bateson (1904-1980) the notion of 'brain' and 'world' as two separate entities was 'absurd' (Ingold, T. 2000, P.18). He illustrates the connection of mind and world through the example of the blind man's cane (Ingold, T. 2000. P.18)

'do we draw a boundary around his head, at the handle of the cane, at its tip, or halfway down the pavement? If we ask where the mind is, the answer would not be 'in the head rather than out there in the world' (Ingold, T. 2000. P.18).

It is more rational to imagine mind as something that extends outward into the environment. Bateson introduces the idea of 'ecology of mind' (Bateson, G. 1972) the theory that references the interconnectedness between 'mind' and all living systems, contradicting Levi-Strauss's theory of binary opposition when considering humans and non-humans. In summary, Bateson (Bateson, G. 1972) promotes a much more integrated view of the mind, and therefore body, magnifying that rather than being separate from the world, the human mind is shaped by the engagement with the world around us. Bateson refuses to isolate humans from nature, recognising that thoughts, behaviours and experiences are shaped by environment: nature.

These theories become important when attempting to understand the complex relationship between human, non-humans and architecture. To apply Bateson's rule of 'brain' and 'world' (Ingold, T. 2000, P.18) within the sphere of 'space' and 'entity', Space reflecting physical architectural area and entity signifying living being's human and non, there should be no clear divide between the two, that a united ecology of mind (Bateson, G. 1972) prevents space becoming separated from entity. 'we [do not] need a sperate ecology of mind' but 'rethink our understanding of life' (Ingold, T. 2000, PP 18- 19) Although acknowledgement that the human 'mind' (Ingold, T. 2000, P.18) extends outward into environment has been established, a shift in perspective to focus on non-humans and their agency (Latour, B. (2014) may provide interesting and innovative possibilities in the upcoming support for the interconnectedness of species 'And therefore, our relationship with the non-human.' (Levi-Strauss's, C. 1829-1902) emphasising the role that architecture plays.





# Tentacular Thinking, An Approach to Interconnected Life

Fig. 8 , Zhang, M (2018) The Human Body and Nature

‘Anthropocene’ “relating to or denoting the current geological age, viewed as the period during which human activity has been the dominant influence on climate and the environment.” (Oxford Languages (Date Unknown). Linking back to the shifted societal view that the world is now ‘human centred’ (Zavoleas, Y. Davidova, M. 2020). Can be placed at the centre for critique as Donna Haraway (1994), a prominent scholar and writer whose work challenges binary thinking in society. (Khan, A, 2023 [21/02/25] has shown within her writings ‘Staying with the Trouble: making kin in the Chthulucene’ (Haraway. D, 2016).

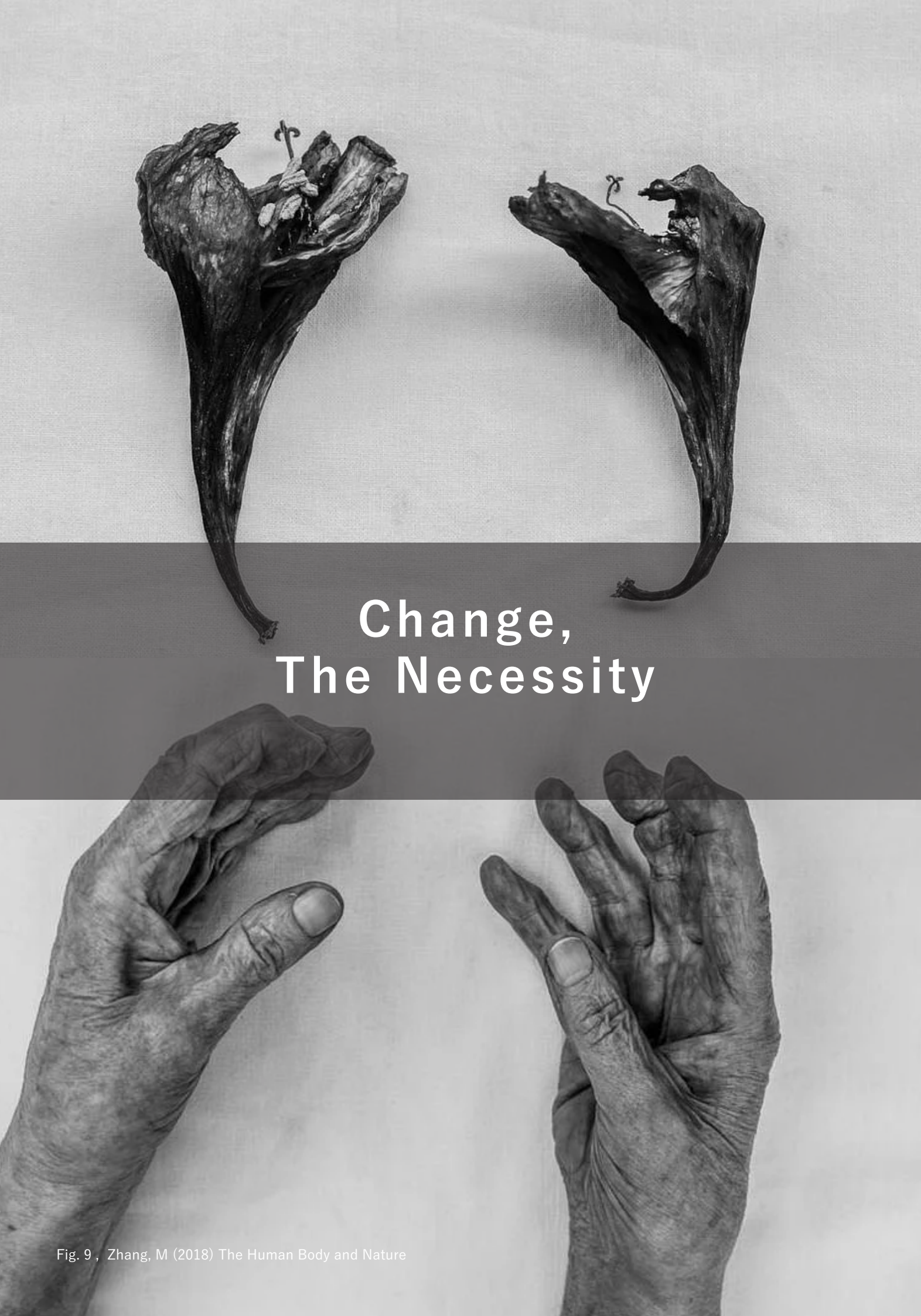
Haraway introduces the concept of the Chthulucene. The Chthulucene, unlike Anthropocene ‘is made up of ongoing multispecies stories and practices of becoming-with’ (Haraway. D, 2016). Haraway presents this concept as a time and space in which humans and non-humans must co-exist in collaboration. ‘Becoming-with’ is the idea that opposes the concept of just simply ‘being’ which often implies separation and self-contained, isolated entities. When considering the context of architecture, the Chthulucene holds a weight of importance and impact as to how designers should consider their project and it’s influence on the eco-biosphere (Fortuna, P, Wróblewski, Z. & Gorbaniuk, O. 2023) that surrounds.

‘Nothing is connected to everything; everything is connected to something’ (Haraway. D, 2016) Haraway suggests that the world is not simple, it is not a monolithic system as to which individuals or actions are directly and evenly connected to other entities. The understanding for architecture and interiors must be challenged also, spaces in relation to both human and non-

human entities. The historical and traditional architectural thinking has often centred solely on the human user, with building and spaces designed with a focus on human comfort, needs and experiences. ‘Becoming-with’ also can be considered as a method of ‘tentacular thinking’ (Haraway, D. 2016) which is the idea of ‘interconnectedness’ (Haraway, D. 2016) ‘nets and networks’ between human and non-human agents. Embedded in the Chthulucene, tentacular thinking poses as a central metaphor for understanding the interconnectedness between humans and non-humans in design. Not only physical design but also a societal, hierarchical design for relationships where well-being of all beings: humans, animals, plants are co-considered and therefore, co-designed.

Haraway rejects the dichotomy between the sacred and secular saying, ‘This Chthulucene is neither sacred nor secular. This earthly worldling is thoroughly terran, muddled and mortal – and at stake now’. She describes two categories often used to divide the human experience. ‘sacred’ relating to the divine, transcendent and arguably human created realms, while ‘secular’ refers to human, material world. She suggests the world in which we are now, the Chthulucene, is beyond this dualistic thinking. The Chthulucene is ‘terran’ meaning it is of earth and all that resides here. Through the final statement ‘at stake now’ Haraway indicates that there is an un-arguable need for change. One change of which that may be considered crucial is the method of architecture and interior architectural design. ‘To renew the biodiverse powers of terra is the sympoetic work and play of the Chthulucene’. Applying this Chthulucenic, tentacular thinking to architecture.





## Change, The Necessity

Fig. 9 , Zhang, M (2018) The Human Body and Nature

The philosophers discussed all prove to argue true and relevant points, however, is there a real need? The collective idea that we must act now; why? Who is to say that the human centred world is the wrong kind of world to live in?

The impacts of a human centred world, an anthropocentric world, can be concentrated down to the infectious drive of capitalist and economist design that has grown from these anthropocentric ideals. 'Capitalism and its economists have generally treated ecological problems as something to be avoided rather than seriously addressed' (Bellamy Foster, J. 2002 Pg.10). 'Since the beginning of time, living species have had to find ways to adapt to the natural environment' (Lee Smith, D. 2011). In essence, the focus of architecture has become a profit-driven system. 'Over time, [architectural] designs intended merely as a way of providing functional adaptation to the environment often acquired an aesthetic quality that transcended their initial purpose'. 'the intention of architectural design was no longer focused on environmental adaptation' 'the unfortunate result is that today architecture often seems to be part of our environmental problems rather than part of a necessary solution' (Lee Smith, D. 2011) When architecture neglects the broader ecology, agency and interconnectedness, it can become shallow and one-dimensional. It focuses solely on human needs in a diverse world, where humans are just one small part of a much larger system, often to the detriment of the environment and therefore ecology of its surroundings.

"Because a building costs so much money, construction- and within it, architecture – necessarily works for and within the monetary system" (Dreamer, P. 2013)

The Anthropocene Epoch – what can be referred to as the present geological age of Capitalininan (Bellamy Foster, J. 2022 pg. 83) has refused 'to take serious responsibility of humanity for the fate of the earth. This refusal has made it possible to ignore the way in which human interventions, driven by a narrow conception of progress, have contributed to the degradation of the environment, [ecology] and the climate' (Stengers, I. 2010)

As humans living in this Anthropocene, 'we are constantly invited by those dutifully serving the gods of profit and production to turn our attention elsewhere, to downgrade our concerns, and view the very economic system that has caused the present global degradation of the environment as the solution to the problems it has generated.' (Bellamy Foster, J. 2002 Pg.25). Although in the current 21st century climate, we as consumers and designers are constantly bombarded with pro-capitalist promotions urging us to prioritise short-term gains and solutions, it is becoming evidently clear how crucial the recognition of systemic change is in order to move towards a more equitable and ecologically symbiotic design approach to modern architecture.

As established, one of the primary effects of capitalist, human-centric architecture is it's emphasis on profit, which at first glance may appear to have little or no direct environmental or ecological impact. On the surface, it may seem that these profit-driven designs only serve to generate the necessary capital that allows further growth within the architecture industry. However, when we delve deeper into the real consequences of this profit-driven approach, it becomes evident how closely intertwined capitalist and economic systems are when considering the



degradation and disregard for ecology.

An extreme example of human-centric, capitalist, and economically driven architecture, built at the expense of surrounding ecology and the environment, is The Three Gorges Dam in China (Hvistendhal, M. 2008). The dam was constructed with the primary economic goals of generating hydroelectric power and improving shipping navigation. While the project has brought significant economic benefits, the ecological consequences have been severe and often overlooked in the pursuit of growth (Hvistendhal, M. (2008). The environmental damage, such as widespread habitat destruction, biodiversity loss and sedimentation build up, highlights the cost of prioritising economic development over ecological health. China, home to 10 percent of the world's vascular plants, harbours a rich diversity of flora and fauna. The Three Gorges area alone accounts for 20 percent of China's seed plants, encompassing over 6000 species (Hvistendhal, M. 2008). However, the dam's construction has posed a serious threat to these ecosystems. One particularly alarming impact is the dam's disruption of delicate fish populations in the Yangtze River. The Yangtze is home to 177 unique fish species that evolved over millennia with the river's seasonal flood plains. By reducing flooding downstream, the dam fragments vital lakes and wetlands, making it increasingly difficult for the fish to survive. This alteration has already contributed to the decline of the baiji dolphin, a species so rare it is now considered functionally extinct (Hvistendhal, M. 2008). Had the ecological needs of the species inhabiting the region been given more

consideration during the planning and design process, the environmental impact could have been mitigated. With proper attention to the preservation of critical habitats and biodiversity, it might have been possible to balance economic ambitions with ecological sustainability, reducing the adverse effects on the ecosystem and species that depend on it.

While The Three Gorges Dam is an extreme case, it highlights the core issues inherent in capitalist, economic, and anthropocentric architectural practices. These issues, where environmental concerns are often sidelined are becoming increasingly relevant as new regulations seek to address the environmental costs of development. In the UK, the introduction of the Biodiversity Net Gain (BNG) law (Department for Environment, Food & Rural Affairs 2023) marks a significant shift toward the recognition of the need to consider non-humans when proposing new architectural projects. Under this new legislation, developers and architects are required to ensure any new development leaves the environment in a better state than it was before, promoting biodiversity and reducing the negative ecological impacts that have traditionally been ignored in favour of economic progress (Department for Environment, Food & Rural Affairs 2023).

## Is The Cure Worse Than The Disease?



The built environment serves as a physical manifestation of the forces shaping society, influencing how we view our position relative to other entities and relative to other entities and reflecting the current state of relationships between them. As discussed, driven by constant growth and production, architectural development often favours short-term solutions over the systemic changes needed to address environmental, ecological, and human non-human crises. Greenwashing a process ‘which involves presenting a building or solution as environmentally sustainable when, in reality, it is not.’ (Simo Minana, J. 2024), further exposes this disconnect between the causes of ecological degradation and proposed solutions.

‘Greenwashing in architecture can take various forms, such as claiming to use sustainable materials while disregarding other unsustainable practices in the construction process’ (Simo Minana, J. 2024)

The Bosco Verticale building in Milan (see fig. 11), designed by Boeri Studio, can be used as a prime example of what the initial observer may think as sustainable, green, or eco-friendly architecture due to its living façade. However, a deeper analysis reveals that the building may in fact be guilty of greenwashing. (Simo Minana, J. 2024). The clearly visible abundance of plants and trees on the exterior of the building, scaling the façade, suggests a sustainable solution. ‘However, in reality, the need for soil and water to sustain the plants has led to an increase in the use of concrete and steel in the buildings structure. The balconies are made from 28 centimetre thick post tensioned reinforces, cantilevered concrete floor. These not only support the weight of

the vegetation but also be prepared to old the wind force that can be applied to trees at that height.’ (Simo Minana, J. 2024). The use of these materials and the negative impact they have, arguably outweigh any eco-biological positives they provide. ‘Cement is the largest industrial energy consumer in the world, responsible for 7% of industrial energy use’ (World business Council, 2018) ‘cement is the key ingredient of concrete’. Additionally, the maintenance of the building’s plants requires a significant amount of energy and recourses. For example, the need to pump water up 76 meters, considering unique weather conditions at that height, make the maintenance of the green façade a costly, energy consuming task (Simo Minana, J. 2024).

Analysing greenwashing (Yang, Z. Nguyen, T. T. H. et al. 2020) and its counterproductive effects calls for a deeper, more critical examination of the human-centric architectural systems that continue to shape our world.

Therefore, inevitably, ‘the question arises: is the cure more dangerous than the disease? Greenwashing: does the attempt to internalise the natural environment within the capitalist market system – without a radical transformation of the latter – lead to a new empire of the economy over ecology? A sort of neo colonisation where the old colonialism is no longer seen as sufficient? And what are the consequences of this?’ (Bellamy Foster, J. 2002 Pg.26)

Bellamy Foster begins to suggest that remaining in the same capitalist framework, focusing on maximising profit and consumption with the human-centric perspective of positive development,



Fig. 11. Simo Minana, J. (2024) Identifying greenwashing



there may be an ultimate perpetuation of environmental and therefore, ecological degradation. This framework is at risk of shifting to focus on new 'green' innovations, ones that suggest a positive change has happened when in reality the solution is being repackaged and sold as an aesthetic feature or perhaps even the next new trend. 'at the heart, neoclassical approach to environmental economics has one aim: to turn the environment into a commodity' (Jacobs, M. 1997) Greenwashing being perceived as the 'cure' may have serious knock-on effects, being the slowing down of genuine efforts for ecological recovery by giving the illusion of change while allowing the same exploitive systems to continue. It could be argued that it is far more beneficial for architects and designers to perceive this method of ecological improvement as more of a 'placebo' (Oxford Languages, 1972) that's being prescribed for the psychological benefit of the human-centric perspective on architecture rather than any physiological effect for the eco-biosphere itself.

'The world is not ours to master. It is a space we must learn to co-exist with other forms of life, with different kinds of forces and entities. Yet, to do so, we need to confront the consequences of our actions – what we are doing to the world is not only a matter of us versus nature, but a matter of how we reconfigure our very presence in it'. (Stengers, I. 2010)

Stengers approaches the major issues of human-centric views upon the world, and therefore, architecture by calling for a paradigm shift toward recognising the world as a shared space in which humans are one species among many. She re-enforces the idea that we must 'co-exist with other forms

of life, with different kinds of forces and entities' (Stengers, I. 2010). Stengers implies that architecture should be designed not to dominate but to co-exist with the surrounding environment and ecology. This thinking transcends mere 'green' or 'sustainable' models of human-centric design and requires a deeper, systemic thinking about how human-built spaces can actively support the ecological system they are a part of.



# Designing for Interconnected Ecologies

Fig. 12, Zhang, M (2018) The Human Body and Nature



Environment: ‘the surroundings of conditions in which a person, animal or plant lives and operates.’ (oxford languages 1725). The environment often is perceived as a lifeless entity rather than an interconnected system essential to human existence. Without emotional or physical connection, it becomes easier to ignore or exploit, as it doesn’t display suffering in the same way humans or animals do. This detachment allows the anthropocentric world to overlook the consequences, treated as a resource to be used rather than being lived-with. In the context of architecture, the surrounding ‘environment’ is what has been coined as the focus, however, when considering interspecies design, and architectural design overall, describing the space that humans and non-humans share is more accurately defined as ecology. ‘The branch of biology that deals with the relations of organisms to one and other and their physical surroundings’ (Oxford Dictionary 1875) This is because of its focus on the dynamic, interdependent systems that support life, rather than just physical area.

Ecology, environment and the human, non-human condition are united in one large system. No one part doesn’t impact the other, this is why it is integral to redefine the parameters in which designers think and consider when introducing new designs. With the consideration of human and non-human relationships and their ecology, designers can transform these theories, ideas and redefinitions into a tangible reality within the 21st century’s architectural climate through several different methodologies.

## Multi-layered habitats

‘As architects we are operating in a shifting landscape of ecological and cultural values. We must not only develop strategies for incorporating diverse habitats into the spatial and built environment, but we must also take on the challenge to radically re-think the special and visible dimensions of animals and urban organisms’ (Hwang, J. 2013). One way of incorporating both humans and non-humans into architecture is for species and micro-ecosystems to be worked back into the fabric of architecture (Kelly, M. 2022). Architectural elements such as facades, roof tops, walls and even underground spaces can be designed to accommodate species in the same place and maintaining normal function. For example, a shed panel that still repels water whilst housing a bat or beetle. Similarly, another example of this multi-layered architecture could be incorporating spaces where birds can nest in the façade’s recesses. Figure thirteen shows The Eastgate Centre in Harare, Zimbabwe. While known for its passive cooling system, the building’s design incorporates openings that are not only designed for architectural aesthetics but also ecological benefits.



Fig. 13, Holden, C. (2006) Eastgate Centre in Harare

## Shared Interior Eco-systems

Shared Interior Eco-systems can be another method of interspecies design that challenges the human-centric perspective on architecture. This shared space could consist of several systems that include insects, small animals and fungi to create biospheres within the architectural structure itself. Ecological displacement is one of the main impacts of anthropocentric architecture, the reintroduction of new, additional systems of ecology may be one of the first steps toward a more balanced, symbiotic design practice. The Eden Project (Grimshaw, N. 2001) can be used as a prime example of creating an interior eco-system for humans and non-humans to thrive.



Fig. 14, Eden Project (2022)

The Eden Project’s biomes function as part of larger, interspecies system that includes water management and waste recycling, mimicking natural cycles. On a human, architectural scale, buildings could integrate rainwater harvesting, greywater recycling, and composting systems (Commercial Limited 2023) For example, using water-efficient technologies and permeable landscaping allows rainwater to infiltrate the ground mimicking natural processes. These systems could be designed to directly benefit smaller-scale eco-systems within the

architecture, creating symbiotic relationships, encouraging architecture to serve as mutual refuge for both human and non-human replacing exclusionary, elitist architectural developments with mix use systems that recognise and prioritise the needs of all inhabitants.

## Closed loop systems and permaculture principles

In order to further reduce ecological degradation and over-use of resources, architects may consider introducing closed loop systems. Similarly to interior eco-systems, this would mainly focus on moving away traditional resource extraction allowing this method of interspecies design to have a magnified effect on the surrounding ecology rather than ecology from within. One example of this could be through sourcing materials that does not deplete local ecosystems such as mycelium-based construction or plant-based polymers that also provide habitats for micro-organisms or insects.



Fig. 15, Blast Studio (2024) Mycelium collum

As seen in figure fifteen, Blast studio in London has shown mycelium can be formed into any shape, grow mushrooms and potentially foster other types of life. (Bonilla Huaroc, C, 2024). Mycelium can be grown using agricultural by-products, making it



part of a circular economy. This fits within the framework of interspecies design as the waste from one process supports the needs of another.

### Mutual Functionality

Moving beyond ‘decorating’ with plants and not to be mistaken for greenwashing, designing for the combination of human and non-human species can introduce mutual functionality. For example, structures like algae walls that produce oxygen and food. The BIQ house in Hamburg, Germany (See Fig 16) serves as an actual built case study which incorporates 200m squared of closed photobioreactors in 120 façade-mounted boards creating algal biomass and heat as a renewable energy asset in this low-energy multifamily private building (Biloria, N. Yashkumar, T. 2019)

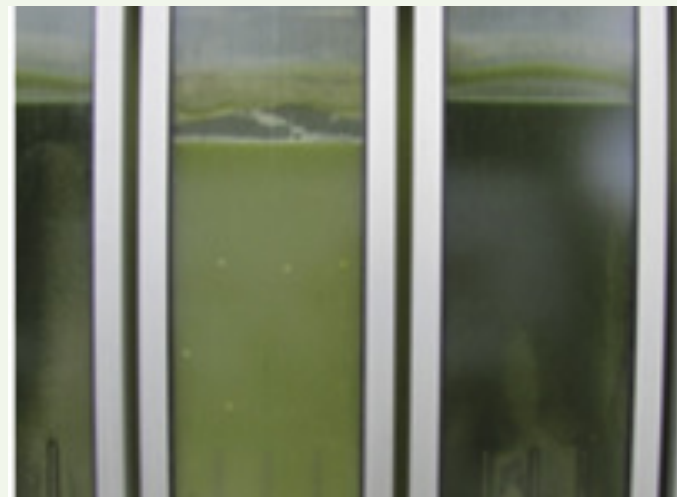


Fig. 16, Biloria, N. (2020) BIQ House

In addition to the energy conservation benefits these living walls provide, micro-communities can also be created and integrated to restore waste from the building into valuable operational recourses to achieve water independence, creating a building that has been re-imagined, serving as a cell where different species co-exist as one larger system. (Metwally, W.M. Ibrahim, R.A. 2024).

### Interactive zoning

Interactive zoning introduces the idea that humans, animals, insects and overall, a combination of ecosystems can actively engage with each other. An approach to this kind of zoning could be ‘modular’ design. Architecture that has intentions to shift in accordant to the needs of non-human inhabitants.

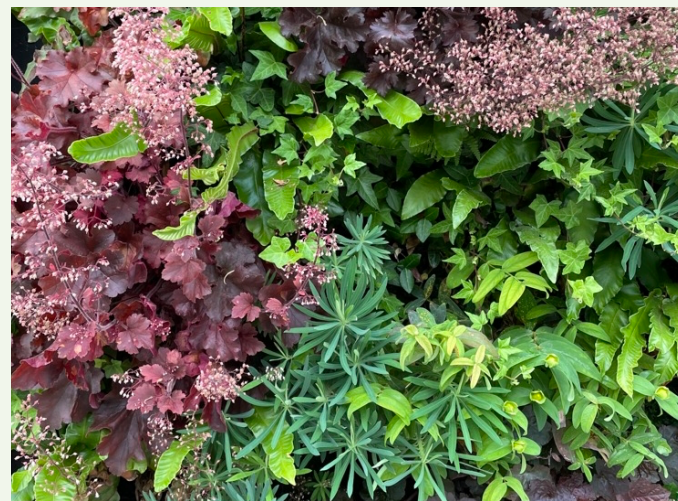


Fig. 17, Wigmore, J (2024) Living walls

To create designs in a way that create sustainable, symbiotic, fruitful relationships between human and non-human species. Although, more often not, the green walls we see within the human-centric environment of architecture we see now are part of the larger issue of green washing, when considering the correct species of plants and materials, green walls can provide pollinators with pollination friendly plants as well as a safe

space for small critters to reside undetected or disturbed by humans. A diverse selection of plants is crucial for maximising biodiversity in a living wall.

Fig. 17, Finding the right balance for living walls

Incorporating various plant species, both native and well-adapted to local or interior environment ultimately promotes a richer ecologic system. Selecting these plants carefully, not just aesthetic purpose will ensure a habitat that attracts a wide range of insects, pollinators and other small creatures. (Wigmore, J. 2023) Overall, allowing the same space to be shared by humans and non, whilst simultaneously reaping the benefits of it.

### Co-dwelling

By taking interactive zoning a step further through co-dwelling, this approach promotes not only the physical integration of human and non-human spaces, but also coexistence and equality in terms of access to habitats and resources within human-dominated environments. Perhaps a slightly more unconventional approach to interspecies design, the Jean-Marie Tjibaou Cultural Centre (Piano, R. 1998) creates an environment where animals and insects are a part of the architecture itself. (Langdon, D. 2023). The landscape surrounding the pavilions is designed with native plants that attract a variety of pollinators including bees, butterflies and birds.

As seen in Fig 18. the open, airy design of these pavilions allows animals to roam freely within the space, moving between indoor and outdoor areas. The centre is designed to seamlessly integrate human activity with the

natural world, allowing insects and animals to be present without disrupting human use of space.




Fig. 18, Langdon, D. (2023) Cultural Centre

### Long-term ecological resilience

Shifting away from short-term human centred development, interspecies design would prioritise long-term ecological resilience. Ecological resilience being ‘the ability of an ecosystem to maintain its normal patterns of nutrient cycling and biomass production after being subjected to damage caused by an ecological disturbance’. (Levin, S. 2023) That ecological disturbance being human-centric architecture. Through the combination of several inter-species design practices, buildings and therefore their inner ecology will cultivate their own predictive systems that allows them to adapt and change in relation to what the ecosystem needs over time.

‘One way to live and die as mortal critters In the Chthulucene is to join forces to reconstitute refuges, to make it possible partial and robust biological-cultural-technological recuperation and recomposition’ (Haraway, D. 2016).





# Multi-species Materialities

Fig. 19, Zhang, M (2018) The Human Body and Nature

As previously discussed, the concept of the Chthulucene (Haraway, D. 2016) emphasises the interconnectedness and reciprocity between species, challenging the human-centric perspective that has traditionally dominated architectural thought. Haraway 2016) advocates for a profound reimagining of how we engage with the world around us, urging humans to re-think our relationships with non-human entities and the natural environment. This reimagining calls for a 'recomposition' (Haraway, D. 2016) of human-nature, human-non-human interactions, where architectural practices can no longer solely serve human interests but must integrate and respond to the needs of other species as well. In a similar interest, Adam Marcus, Principal of Variable Projects—an innovative design and research studio that bridges architecture, computing and fabrication; embraces this interdisciplinary approach (Roca Santiario 2021). Through the use of computational design, digital fabrication and robotics, Marcus and his studio explore how emerging technologies can create new possibilities for ecological architecture (Marcus, A. 2023). These technologies enable the development of designs that are not only responsive to the environmental context but also foster inter-species coexistence. Marcus' approach to post-humanist architecture paves the way for ecologically integrated design solutions that go beyond traditional or 'trending' solutions, focusing on the cohabitation and interdependence of all life forms within urban, architectural ecologies.

In the article 'Multispecies Materiality: Scaffolds for life and ecological kinship' (Marcus, A. 2023), Marcus seamlessly integrates Donna Haraway's theories (Haraway, D. 2016) with his, and his student's

practical design work, demonstrating how the fusion of theoretical insights and real-world architectural practice can lead to the creation of innovative, interspecies spaces. This approach challenges and ultimately overcomes the issues with the human-centric perspective on architecture.

He introduces his studies with the acknowledgement 'of interspecies cohabitation at first seeming jarring and uncomfortable.' He adds, 'Why would we want to share our living space with animals? Isn't the point of architecture to provide humans with shelter from the "natural" world? The reality is, however, that this cohabitation already happens, whether we like it or not.' (Marcus, A. 2023) Our architecture is already rife with other critters, plants, Molds and micro-organisms that inhabit the domestic system some invisible and some not. (Marcus, A. 2023). Marcus argues that it is 'not if we should live with other species, but rather how we might embrace such co-existence and design our buildings to anticipate productive modes of interspecies cohabitation' (Marcus, A. 2023) Even closer to home, our own bodies in fact contain more nonhuman cells. At any given time, approximately 70 to 90 percent of the cells in our own bodies are filled with genomes of bacteria, fungi, protists (Haraway. D 2007).

Haraway puts into perspective that these genomes, some of which play in symphony in order for humans to live at all, are integral for a balance and symbiotic relationship, adding that they allow her to 'become an adult human being in company with these tiny messmates.' (Haraway, D. 2007). The idea that human beings reach full maturity through the integration of human



and non-human genomes can be extended to architecture. Similarly, the idea that buildings and architectural systems will never truly reach their full potential until they incorporate and embrace non-human species, both those that have always existed in the environment and those that have been displaced or excluded. By recognising and integrating these species into the architectural fabric, spaces can evolve into more complete, interconnected ecosystems. In this way, architecture reaches its true potential, not as a purely human endeavour, but as a dynamic, cohabitative space where human and non-human life forms thrive together.

It is necessary to form new models of collaboration and co-existence with many other species with whom we share this planet. And while such sensibilities have been central to historical design around the world, the challenge for post industrialist, capitalist society to now unlearn many of its inherited assumptions about how architecture must serve as a protective bubble separating us from other species. (Marcus, A.)

These ideas have been explored through a series of recent architectural design studies taught at the Architectural Ecologies Lab at California College of Arts (Marcus, A. 2023). See figures 20 – 23.

The focus of Marcus' and his student's projects has been on material assemblies: Developing innovative approaches to conventional construction methods that promote habitats for more-than-human species of plants and animals (Marcus, A. 2023). The building envelope, traditionally thought of as an impermeable barrier between inside and outside, between

human and 'nature', is reimagined on the foundations of Haraway's thinking of post-humanist approach to the twenty first century. (Haraway, D. 2007). The deeper, thicker, and more porous assemblage, actively negotiating that architecture's most elemental purpose – as a boundary, a device of separation – transforms into one of connection, kinship (Haraway, D. 2016), and ecological stewardship as the envelope becomes a recast as scaffold for multiple forms of life (Marcus, A. 2023). Marcus's practices (Marcus, A. 2023) stand as a compelling example of how the theories aimed at reimagining the relationships between human and non-human species can be effectively integrated into architectural design. Through his introduction of interspecies design, he offers a practical approach that challenges and critiques the long-standing human-centric perspective in architecture. By rethinking the role of non-human species in the built environment, Marcus not only demonstrates the potential of such a framework but also highlights the importance of creating spaces that foster mutual co-existence between humans and other life forms.



Fig. 20, Hitch, M. Leffler, C. (2023) Interspecies Design

Custom moulded rammed earth columns incorporate crevices and pockets for small mammals at the ground level, while supporting an elevated timber structure for humans to occupy above the ground. (Hitch, M. Leffler, C. 2023)



A complex timber structure fabricated from simple components      subterranean habitats for burrowing owls. (Gendreau, A. Rico-Gomez, R. 2023).

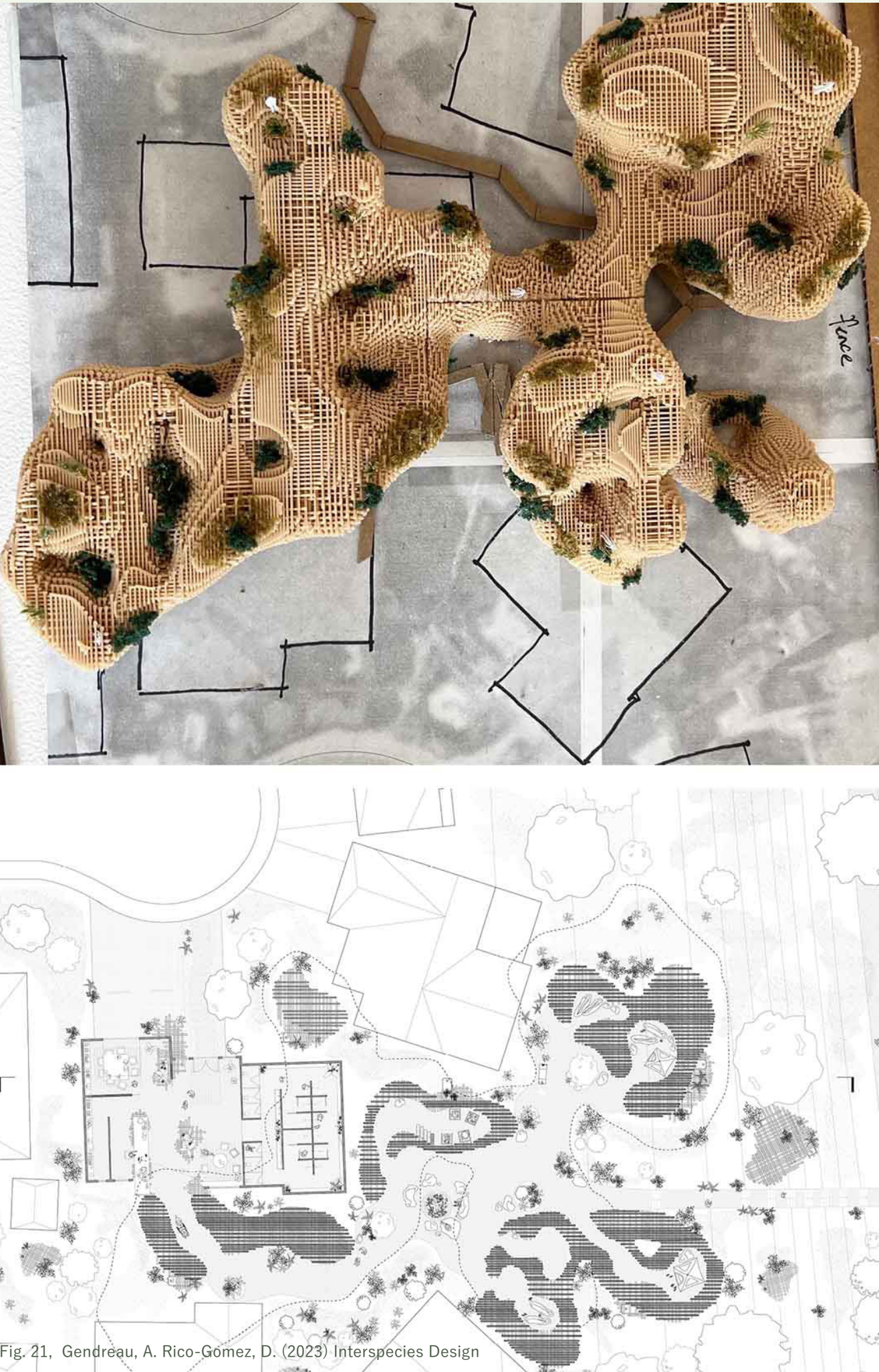


Fig. 21, Gendreau, A. Rico-Gomez, D. (2023) Interspecies Design

A cross-laminated timber roof system integrates planters with      also providing food for residents (Wing Kui Ho, C. 2023)

diverse plant species that attract and support local pollinators while

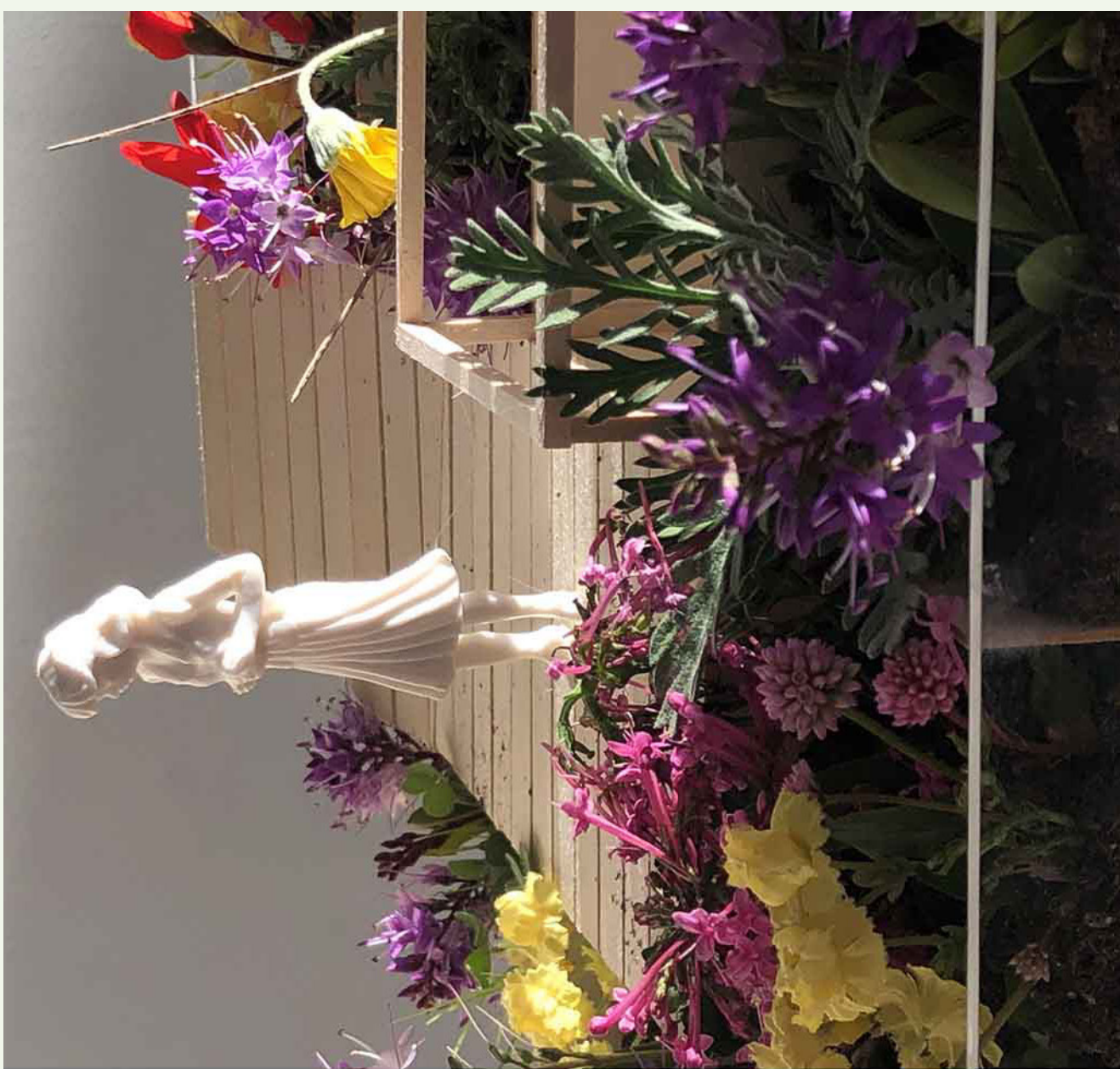


Fig. 22, Choi, S. (2023) Interspecies Design



Load bearing gabion walls made of stacked rocks serve as primary structure for the building while also providing porous, damp



habitats for local amphibian species (Yan, W. 2023)



Fig. 23, Yan, W. (2023) Interspecies Design

## Conclusion

This dissertation has explored reimagining the relationship between human and non-human species through the lens of various philosophical frameworks. In doing so, architecture emerges as an opportunity to move beyond the human-centric paradigms that have shaped capitalist and economist-driven designs (Bellamy Foster, J. 2002), which have contributed to environmental degradation and ecological harm, often masked by superficial solutions such as greenwashing. To address these issues, the practice of interspecies design has been analysed to offer a long-term, more symbiotic approach that fosters a sustainable and harmonious method of design compared to traditional human-centred architecture.

This dissertation has also traced the historical development of the human, non-human divide, beginning with the early separation of human and non-human species. This foundational distinction laid the groundwork for the growth of architecture as a discipline within the Anthropocene. As a result, architecture has largely been defined by anthropocentric values: Palladian architecture being a prime example of ratios of human form being applied to a building's structure (V&A Museum, 2025). Moreover, where human needs and desires have taken precedence over the well-being of non-human species and the environment. Through this historical context we can better understand how contemporary architectural practices are and continue to be influenced.

It becomes clear that to truly rethink human-centric architecture, we must turn to philosophical frameworks that challenge traditional boundaries, redefining human

-nonhuman relationships themselves. Philosophical theories such as Donna Haraway's concept of the Chthulucene (Haraway, D, 2016) along with the ideas of the Anthropocene and Bateson's ideas of 'Brain and 'world' (Ingold, T. 2000) introduce the concept that humans and non-humans should live in harmoniously and not competition.

Haraway envisions a world where human and non-human species coexist in a web of interdependent relationships. 'Nothing is connected to everything; everything is connected to something' (Haraway, D. 2016). Rather than separation and dominance, 'tentacular thinking' challenges the anthropocentric view that positions humans at the centre of existence and recognises the agency (Latour, B. 2014) of nonhuman species, acknowledging them as active participants in the world rather than a recourse to be exploited or ignored.

Similarly, Bateson's Concept of the 'brain' and 'world' – 'human' and 'non-human' – 'space' and 'entity' (Ingold, T. 2000) challenges the widely accepted theory of Cartesian Dualism (Descartes, R. 1596-1650), which asserts that humans possess a unique rationality that separates them from other life forms. This view aligns with the anthropocentric belief that humans are distinctly from nature, governing and controlling it rather than being intrinsically part of it. Bateson, however, suggests that there should be no hierarchical divide between humans and non-humans, and consequently, no separation within architecture itself (Ingold, T. 2000)



By re-imaging and re-defining the relationships between humans and non-human entities, designers can cultivate a deeper understanding and appreciation for the importance of creating spaces that nurture and support interconnected systems. Building on this understanding, this dissertation has emphasised the need to critique capitalist and economically driven architectural practices, which reflect the human approach to design. These practices often prioritise profit, aesthetics, and anthropocentric needs, while neglecting ecological concerns and the well-being of non-human species. The consequences of such environmentally indifferent designs are damaging, leading to the overexploitation of resources, such as depletion of freshwater sources, deforestation and the erosion of local ecologies. Furthermore, recognising the limitations and dangers of seemingly ‘green’ solutions is crucial when moving beyond these capitalist frameworks, and embracing designs that foster interconnected systems. This false sense of progress can perpetuate unsustainable practices, delay necessary change and ultimately hinder the transition to genuinely ecologically responsible and interconnected systems.

To challenge this ‘placebo’ solution (Bellamy Foster, J. 2002 Pg.26) and move beyond the human-centric perspective on design, this dissertation has introduced ways to implement interspecies design in practice, that provides an interconnected, symbiotic relationship between humans, non-humans, and architecture. This shift in approach is increasingly relevant considering the new UK governmental recognition for the need for change, particularly with the introduction of the Biodiversity Net Gain (BNG) law (Department for Environment, Food & Rural

Affairs (2023). As such, this dissertation’s exploration of interspecies design provides a timely and necessary framework for architects to move beyond short-term solutions and adopt inclusive practices. With the BNG law now requiring developers to enhance biodiversity through their projects, the need for integrated design that values both human and non-human life has never been more pressing.

Ultimately, it is crucial to recognise the need for a shift away from the human-centric perspective on architecture, reimagining how humans and non-human species coexist, so that architecture can continue to evolve and have a positive impact on surrounding environments and ecosystems.

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