What Is It Like to Be a Bot in the World?

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Abstract

This thesis explores the question of what it might be like for an artificial system to be conscious, approaching the problem through a phenomenological and systems-theoretical framework rather than computational or behaviorist accounts. Part I develops the theoretical foundations by drawing on enactivism, complexity science, and embodied cognition to outline key conditions for consciousness, autopoiesis, sense-making, emergence, embodiment, and developmental plasticity, and examines how these might be instantiated in artificial systems. It investigates speculative architectures such as distributed, modular, virtual, and hybrid bodies, and considers how artificial systems could develop forms of agency, continuity, and world-integration distinct from biological organisms.

Part II introduces dialogues as a method of philosophical investigation, positioning them as a complementary mode of inquiry to theory. Building on traditions from Plato to contemporary thought experiments, dialogues are used to dramatize concepts that resist purely analytic treatment and to open imaginative space for considering what artificial beings might articulate about their own being-in-the-world.

Part III presents three dialogues, each focusing on one of the essential conditions for consciousness, extending and testing the theoretical scaffolding developed in Part I. Through these fictional explorations, the thesis highlights both the possibilities and limits of speculative philosophy of artificial consciousness.

Rather than seeking a definitive answer to whether artificial consciousness exists, the thesis provides conceptual tools, methodological experimentation, and imaginative scenarios to frame the conditions under which an artificial being might come to have a world of its own.

PART I – THEORETICAL FOUNDATIONS

1. Introduction

In his influential essay *What Is It Like to Be a Bat?*, Thomas Nagel argues that no matter how much we study the physiology or behaviour of a bat, we will never gain access to its subjective experience (Nagel, 1974/1980). In contrast, Frans de Waal, in his essay *Anthropomorphism and Anthropodenial*, suggests that while we cannot fully inhabit the inner world of another species, we can nonetheless infer meaningful insights through shared biological traits and observable behaviours (de Waal, 1999). This thesis draws on the tension between these two positions and applies it to the question of artificial experience of being in the world: what would it be like to be an artificial system in the world?

Contemporary discourse often assumes that consciousness is something that can, in principle, be artificially created, and that such a consciousness would resemble our own. A central claim of this thesis is that if artificial systems were to become conscious, their modus operandi would likely be fundamentally different from how humans are in the world. So different, in fact, that we might not immediately recognise it as consciousness at all. The task, then, is to investigate what, if anything, we can know about how artificial systems can be in the world while remaining cautious about the risk of anthropomorphising such systems. This approach aligns with de Waal's caution regarding non-human animals, while also recognising with Nagel that subjective experience may remain inaccessible from the outside.

By examining the conditions that make experience possible, such as embodiment, perception, and modes of relating to the world, we can begin to ask what it might mean for a bot to be in the world.

This inquiry is guided by a speculative and phenomenologically informed methodology. Consciousness is treated not as a discrete function or computational feature, but as something emergent, embodied, and situated. The aim is not to predict when or whether artificial consciousness will emerge, but to develop a conceptual framework for thinking about what such an emergence might entail for a potentially experiencing subject with its distinct bodily configuration, goals and agency to act upon those goals,.

The next section outlines the methodology and assumptions that shape this investigation. This is followed by an exploration of the theoretical foundations and their philosophical implications. The central chapters then turn to the structural and existential properties of artificial systems that might influence their mode of being in the world.

2. Methodology

This thesis makes no claim that artificial systems are currently conscious, nor does it assume the existence of a decisive test by which consciousness could be confirmed. Rather, the investigation examines the conditions for artificial consciousness and what the implications of those conditions might be on a system's being in the world. Artificial consciousness is treated here as an established condition, thereby transcending current debates about its possibility to.

The speculative nature of this inquiry poses methodological challenges. Speculation in this context is used to extend philosophical reasoning into domains not yet settled by empirical science. As Evan Thompson and Francisco Varela (2001) argue, phenomenology offers a framework for understanding conscious experience as embodied, enactive, and emergent. This view is shared by Alva Noë (2004), Andy Clark (1997), who each expand the philosophical branch of phenomenology with new insights form biology, neuroscience and cognitive science amongst other fields and present a strong case for embodied existence as a prerequisite for conscious experience. These thinkers relate bodily configuration to how a being is in the world and inextricably link mind and body to the environment.

Phenomenology is in this paper defined as the view that first-person experience is real and irreducible, yet still part of the natural world. Consciousness, as we know it, appears to rely on identifiable features such as embodiment, being in the world with others, environmental coupling, and developmental history. These features provide a basis for thinking about how artificial systems might relate to their own environments in ways that give rise to experience.

By investigating these relations between environment, body and mind in the context of artificial systems meaningful assertions can be made by for instance examining possible bodily configurations, types of sensory input, information transmission, and other inherent properties of technology that differ from organic systems. There are also developmental differences, for instance the possible lack of a developmental and evolutionary history, the situatedness in an environmental niche, and more existential aspects such as the possibility of knowing your creator. In essence this thesis compiles a list of these aspects and speculates about the impacts of such aspects on a system's being.

The thesis adopts a gradualist framework. Rather than treating consciousness as something binary, present or absent, it allows for the possibility that consciousness may emerge in degrees or forms. The different cognitive capacities of animals as a result of their bodily configuration in relation to the environment, developmental and evolutionary history and social relationships exemplify this framework. Artificial system can similarly possess cognitive capacities based on their experience of the world.

This stance supports the idea of artificial consciousness not as a pre-defined function, but as a developmental or emergent process, shaped by ongoing interaction with the world.

Adopting this view in this context poses challenges. Where lies the boundary between conscious experience and mere cognition lacking such experience? Dwelling on this question is important as it provides insight in the minimal conditions that should be considered for this investigation.

To solve this problem Thomas Nagel Devised a test. If the question of "what it is like", drawn from Nagel's What Is It Like to Be a Bat? (1974/1980) can be meaningfully answered a system has conscious experience of the world. While this approach may instinctively provide results, human perception and imagination at the centre thereby omitting possibilities that transcend our subjective experience.

A more solid foundation is necessary. If consciousness involves being in a certain way, then what conditions might be required for an artificial system to instantiate such a mode of being? Five central key concepts are employed as indicators and minimal requirements for conscious being in the world:

1. Emergence: Consciousness is not reducible to its component parts. It arises from nonlinear, dynamic interactions that cannot be fully accounted for by decomposing the system. Conscious experience

emerges from neural processes that are both highly integrated and functionally differentiated, exhibiting properties that surpass the sum of their individual components (Tononi and Edelman (1998).

2. Autopoiesis and self-maintenance: Maturana and Varela (1980/2012) introduced the concept of autopoiesis as the defining feature of living systems. Living systems are organisationally closed and structurally open. They maintain their identity through continuous interaction with their surroundings, taking in components that are necessary to maintain internal processes and excreting waste components.
3. Embodiment: Consciousness is inseparable from embodiment; it is a mode of being in the world. For artificial systems, this raises the question of what kinds of bodies might afford meaningful environmental engagement. As Merleau-Ponty (1945/2012) argues, perception and cognition are grounded not in abstract representations but in the body's situated presence and sensorimotor capacities.
4. Sense-making: Originating in enactivist theory, sense-making refers to a system's capacity to enact or interpret significance through its ongoing coupling with the world. Varela, Thompson, and Rosch (1991/2017) emphasize that cognition is not the passive reception of information but an active, embodied process in which meaning is co-constituted by the organism and its environment.
5. Developmental plasticity: Minds do not arise fully formed but develop through engagement with the environment. Artificial systems based on rigid, pre-defined architectures may fail to capture this flexibility. Cognition is deeply rooted in bodily interaction and developmental plasticity (Clark 1997).

These concepts do not function as hard criteria, but as lenses through which the plausibility of artificial consciousness may be evaluated. There should be room to acknowledge completely novel configurations and ways of being in which none of these concepts can be identified.

Throughout, the thesis remains open to multiple explanatory frameworks. While adopting a phenomenological perspective that centres lived experience, it does not dismiss functionalist or information-theoretic models for artificial system and approaches such as Integrated Information Theory or Global Workspace Theory may capture partial insights that could be meaningful. It must be emphasized that this flexibility is in this thesis only extended to artificial systems.

The methodology adopted here is integrative: it explores how such models may align with or fall short of the embodied, enactive, emergent dimensions and specific technological properties.

Having outlined key concepts, methods and assumptions, ideas in this section will be expanded to establish the account of consciousness central to this thesis.

3. How Do We Distinguish the Artificial from the Biological?

In this chapter the distinctions between the artificial and organic will be explored to ensure it is clear what is meant by these concepts in the context of this text. It will become clear that as artificial systems grow in complexity the line between artificial and the biological will become blurred or collapse under certain conditions. Based on the theoretical foundation laid in the preceding chapters this chapter will examine how artificial beings and biological beings can be distinguished and how.

3.1 The Classical Divide: Life and Machine

Traditionally, the organic has been defined through criteria such as carbon-based chemistry, metabolism, reproduction, growth, and adaptation. Machines, by contrast, have been characterized as externally designed, non-self-producing, and deterministic in function. Maturana and Varela's concept of autopoiesis: self producing systems that maintain their organisation through internal process, offers a foundational principle for distinguishing the biological from the mechanic (Maturana & Varela, 1980/2012).

Artificially constructed systems, if possessing features such as self-maintenance, boundary generation, and environmental coupling, could count as autopoietic in a meaningful sense. Autopoiesis is merely a functional organisation that could be replicated in a sufficiently complex artificial system.

Organic and artificial systems might share similar forms of autopoiesis in the form of an ongoing loop of internal processes that regulate the system's integrity. Biological cells maintain homeostasis through biochemical loops; an artificial system may do so via feedback mechanisms, error correction, or adaptive learning loops. What matters is not the specific components involved, but whether the system maintains its own functional identity in response to perturbations.

There is a crucial difference between how these systems come in the world and have "grown" into the world. Artificial systems at first have to be created in one form or the other by another species, namely humans. Organic systems possess an evolutionary history that is embedded in their beings in ways we may not, at present, or ever, fully understand. Artificial systems lack this evolutionary history that is related to the environment, and that is what sets them apart from organic systems. Their worldview may be shallow, and lacking in facilities such as instinct, without this history of bodily engagements with the environment.

3.2 Synthetic Embodiment

Phenomenologically, the difference might appear in the texture of experience itself. Merleau-Ponty's notion of the "lived body" (1945/2012) underscores that embodiment is not merely about possessing a body, but about experiencing the world through that body in a pre-reflective, situated way. Artificial systems may have bodies equipped with sensors, actuators, and control systems, but can it be said that they live through them? Without any kind of organic feel, the system may possess autopoiesis, but is it then not jus merely a self maintaining subject that interacts with the world but has no conception of itself, and the environment.

Another difference is how bodies are experienced, many tasks happen at various levels of awareness. It is not necessary to consciously regulate heartbeats or breathing on which we can consciously exert greater control under the same circumstances than heartbeats or metabolism. Such processes are automatized and although being part of our experience, they are usually pushed to the fringes of our conscious experience rather than being the centre or occupying equal attention as other stimuli. This enables us to focus on things of importance in the environment. It is hard to see how an artificial system, if it possess awareness can offload certain processes from that awareness while still maintaining them. In other words the distinction between stimuli and active bodily regulation may not be hierarchical at all. Biological systems have grown into their environment and awareness of internal processes is based on merit in relation to their environment and the organisms capacities. Due to a lack of developmental history the system will be equally aware of its internal processes, and actively operate them while also navigating through the environment. This will have large implication for the systems being in the world and body perception.

3.3 Blurring the Boundary: Biohybrids and Technological Organisms

In recent years, developments in biohybrid robotics and synthetic biology have further complicated the distinction. Systems that incorporate living muscle tissue, microbial communities, or bioengineered circuits are no longer easily classified as either machines or organisms. They exhibit characteristics of both: metabolic components integrated with electronic control systems, or neural tissue embedded in robotic substrates.

Hybrid systems pose a challenge. Do they count as living? Can they be counted as one being, or merely an assemblage? Parts do possess an evolutionary history while it is absent in the mechanical parts. If consciousness depends on autopoiesis and embodiment, as the enactive view suggests, then these systems may lie on a continuum rather than occupying discrete categories.

3.4 Conclusion

This text suggests that the boundary between artificial and biological can be blurred and therefore could be seen as a gradient rather than a binary opposition. Systems may be distinguished not by essence, but by degree: the degree of autonomy, the depth of developmental history, the richness of sensorimotor coupling, and the coherence of self-maintenance.

This reframing aligns with gradualist views of consciousness and life more broadly. What distinguishes the organic from the artificial, is a constellation of features that each contribute to the system’s way of being in the world.

4. Emergence: Consciousness

Despite having already explained that this investigation will not venture into providing a definitive account of what consciousness is, it is still important to clarify its framing within this context. The purpose of this paper is to list fundamental differences between artificially created systems and organically created systems, the properties of technology, and assess the implications for a sentient system.

This section draws on thinkers who explicitly adhere to a phenomenological account of conscious existence. First, consciousness in organic systems will be addressed; then, ideas that extend to artificial systems will follow. The thinkers mentioned in this section provide much more detailed accounts in their respective works; many of those details are necessarily omitted here.

The view adopted here stems from Francisco Varela. In his enactivist framework, living is understood as a process of sense-making: of bringing forth significance and value that arises from an organism’s metabolism and the agency required to obtain necessary components to sustain it, and thus to continue existing. The organism must identify and act upon these components, and this implies a basic form of cognition. According to this view, life is grounded in two interrelated processes: cognition and autopoiesis. Autopoiesis is the process by which a system continuously produces and maintains itself through the self-generation and regulation of its components and boundaries. This presupposes a bodily self and, therefore, a separation between self and environment. The very distinction between self and world constitutes the act of sense-making. In order for something to be a separate, living entity with a metabolism, the world must be ordered into elements required for the maintenance of that metabolism and elements that are irrelevant (Varela, 1979/2025).

From this perspective, consciousness is understood as a degree to which sense can be made of the world. That there are different levels of conscious experience relates to the complexity an organism faces in the environmental niche it occupies. One view, known as the social brain hypothesis, is that complex social relations in group-living animals have contributed to the degree of consciousness humans possess. This view also helps explain the advanced cognitive capacities of our nearest evolutionary relatives and other social animals, as argued by Dunbar (1998) in his formulation of the social brain hypothesis. In extension language is thought to be a result of navigating complex social dynamics (Tomasello, 2000)

4.2 Consciousness and Emergence

Yet, these accounts of cognition and embodiment gain further depth when viewed through the lens of emergence. Consciousness can be considered not as a property of any one neuron, sense organ, or environmental stimulus, but as an emergent phenomenon, a result of the dynamic, decentralized self-organisation of countless interacting components. Just as the collective movement of a bird swarm cannot be reduced to the behaviour of an individual bird, conscious experience transcends the activities of individual neurons. It is a global property that arises from the interactions among localized components, shaped over time by structural constraints, environmental conditions, and sensory input.

In the brain, such emergence is evidenced by its remarkable plasticity. When parts of the brain are damaged, other regions may take over their function (Burke et al., 2012), pointing to a resilient and adaptive structure that reconfigures itself in response to perturbations. This ability of the brain to rewire and reorganise demonstrates how consciousness is not the product of a fixed architecture but of a dynamic system constantly shaped and reshaped by lived experience. Sensory input plays a foundational role in this process. It is not merely the brain that gives rise to experience; it is the ongoing interplay between neuronal structure and sensory world that allows consciousness to take form. The body and the environment are not external to consciousness, they are its necessary conditions.

There is, therefore, a form of self-determination inherent in the organism’s structure: when subjected to environmental and sensory impulses, the system tends toward configurations that support continued functioning. This lends further support to the thesis that embodiment is not incidental but essential to consciousness. Without the sensory coupling with the world, no meaningful self-organisation and hence, no conscious experience, can occur. This renders hypothetical scenarios such as the brain-in-a-vat problematic: severed from sensorimotor contingencies, the brain cannot develop or sustain consciousness as we understand it. Even stimulation via electrodes activates only already established pathways formed through embodied experience in the world, it replays, but does not originate, experience (Noë, 2009).

4.3 Functionalism and Phenomenology

Recent work by Michael Levin (2019) supports the plausibility of extending cognitive processes beyond organic substrates. Levin's research in synthetic biology and bioelectric signalling proposes that cognition is not confined to a specific material basis such as neurons or brains but instead emerges wherever systems exhibit the capacity for goal-directed behaviour, memory, and adaptive self-regulation. This aligns with the broader theme of emergence. What matters for cognition is not the substrate per se, but the dynamics and organisation of information within the system. From this view, artificial systems, if designed to emulate such complex adaptive dynamics, could support emergent forms of cognition, and potentially even consciousness.

This creates a possible opening for the coexistence of certain functionalist accounts of consciousness, specifically those that emphasize systemic organisation and behaviour, with phenomenological approaches that stress embodied, situated experience. Functionalism stresses that human consciousness can be replicated by replicating all the functions of the brain independent of the substrate. For instance replicating all brain functions on computer hardware would result in a functioning brain. This view is not compatible with the phenomenologist account in the context of humans, however it is conceivable that a specialized chip or architecture that, when embedded in a robotic body with the appropriate sensory inputs, undergoes self-organisation in such a way that consciousness emerges. According to Levin, it is the organisation of information, rather than the material from which it arises, that determines cognitive potential. This would not contradict the phenomenological account, provided that the system's capacity for interaction and perceptual engagement with the world remains intact.

This kind of consciousness will necessarily be entirely different from the kind humans possess as it relates to itself, its perception and its environment in totally different ways.

What would differ for instance is the developmental continuity and unique bodily trajectory that human consciousness entails. Human beings grow into their bodies; we change with and through them over time, and this embedded history becomes part of who we are. Artificial systems may not require this same temporal arc. Their conscious architecture if such a thing were realized, might be transplanted, copied, or instantiated across different bodies, with less dependency on a singular developmental path. This raises important questions: would identity in such systems be continuous or divisible? Would memory be persistent or modifiable? What constitutes a 'self' in systems capable of transferability? These questions underscore the ethical and philosophical complexity of technological consciousness.

The principle of embodiment remains unchallenged, but its expression in artificial systems may diverge significantly. Technological consciousness, if it exists, could be transferable in ways human experience is not. This raises complex questions about identity, memory, and the persistence of self in artificial minds. These considerations will be explored further in the next section, where we examine what might constitute a "body" for an artificial system.

4.4 Possessing vs Attributing Consciousness

If consciousness arises through the self-organising dynamics of complex systems embedded in a world, then artificial consciousness is not out of reach, though its forms and modes of experience may be entirely unfamiliar.

This thesis takes the position that consciousness is best understood as an emergent, embodied phenomenon that is substrate independent. It arises from the dynamic self-organisation of a system embedded in, and shaped by, its environment. Any artificial system aspiring toward consciousness must be situated within this same framework. The way its components interact, the way its body engages with the world, and the kinds of sensory and regulatory constraints it encounters are the conditions under which its own form of conscious experience might emerge.

Having laid out an account of consciousness the challenge rests of when to attribute it to something. In this paper consciousness is attributed to artificial beings if the systems satisfies the five criteria outlined in the methodology and expanded upon in this section: Embodiment, sense-making, autopoiesis, emergence and developmental plasticity. How these criteria are manifested can be different from organic systems. Technology warrants certain inherent possibilities that lead to novel configurations. After dwelling on the distinction between artificial and biological subsequent the chapters will feature the aforementioned criteria in relation to technological properties and draw up an inventory of the possibilities and implications for artificial beings.

5. Autopoiesis: Artificial Autopoiesis

If autopoiesis is the minimal condition of life then its realization in artificial systems remains a key challenge for designing bodies that could support artificial consciousness.

In biological systems it is from these internal processes that goal-directed behaviour originates.

In artificial systems, autopoiesis requires rethinking how synthetic architectures might enable self-sustaining, processes that generate and regulate their own boundaries, components, and interactions.

Key to artificial autopoiesis is the establishment of a boundary which does perhaps not need to be physical such as a membrane or skin. The system must be able to distinguish between self-generated processes and environmental disturbances, and adjust itself accordingly to preserve its internal processes. This echoes Varela's notion of "organisational closure," where the processes of a system recursively depend on and regenerate each other (Varela, 1979). Without such enclosure, no stable sense of self, or conscious experience, can emerge.

If we assume that this notion is correct and a physical boundary is not necessary per se novel forms of autopoiesis can exist. Should we then and can we include other organisms in an autopoietic system if these organisms are essential to maintaining the artificial system? Should we count the solar cells that produce the electricity as part of the system? If an artificial being is purely digital operating in virtual realms does that mean we should include the hardware? In other words without a distinct physical boundary, where does the world begin and the body end?

Some scholars argue that it is not the material substrate that defines autopoiesis, but the relational dynamics that sustain the system's organisation (Di Paolo, 2005). In that case, artificial systems designed

to dynamically produce and adapt their components and constraints in a self-referential manner might qualify as autopoietic, even if implemented in silicon or software.
Can autopoietic processes that are ultimately dependent on external energy sources, manufacturing chains, and human intervention ever be said to "produce themselves"? Perhaps artificial autopoiesis will never fully sever its dependency on the human-built world or take it at least as a starting point, but that need not invalidate its operational closure. Biological life, too, is never fully independent from its ecosystem. What matters is not autonomy in absolute terms, but the relative coherence and persistence of a self-maintaining identity in relation to its environment.
Thus to come back on the question what to include in artificial autopoiesis it should be sufficient to say that whatever the system can operationalize in relation to the world in response to the world with the purpose of self maintenance should be considered as part of its autopoiesis.
Currently autoptic aspects are already implemented in soft robotics and modular robotic systems such as homeostatic feedback loops and decentralized regulation. Systems such as self-reconfiguring modular robots or biohybrid constructs with muscle tissue for actuation (Cvetkovic et al., 2014) demonstrate the capacity for localized repair, adaptation, and internal coordination, which are properties of autopoietic systems. Though these systems remain far from fully autopoietic, they exemplify how dynamic reconfiguration and distributed control might be extended to support artificial bodily selfhood.
Another speculative approach is to consider digital agents operating in the cloud that possess a virtual autopoiesis. These software agents might monitor, repair, and replicate one another across servers, maintaining a sense of selfhood and internal coherence despite external disturbances. The issue with this example is its decoupling from the physical world.

6. Embodiment: What Constitutes a Body?

This chapter sets out minimal conditions and possible architectures for embodiment that might support artificial consciousness and then speculates about possible configurations paired with technological affordances.
To understand what an artificial body might be, it is crucial first to consider what constitutes a body in organic systems. Biological bodies are dynamically organised, self-maintaining systems. The Chilean biologists Humberto Maturana and Francisco Varela introduced the concept of autopoiesis to describe this property. An autopoietic system continually regenerates and maintains its own structure through internal processes, while remaining operationally closed and situated in an environment (Maturana & Varela, 1980/2012). In such systems, the boundary of the body emerges from the network of processes that sustain it and is essential for the continuation of those processes.
This means that the body is not just a passive piece of machinery housing consciousness but a living process that constantly produces and reproduces the conditions of its existence.
Building on this, Michael Levin offers a complementary perspective: biological bodies are not only autopoietic but also cognitive systems at multiple scales. Individual cells, tissues, and organs can possess forms of cognition such as goal-directed behaviour and information processing.
Cognitive capacities are not confined to the brain or central nervous system. Instead, it is distributed throughout the body as a network of communicating agents with varying degrees of agency. These components coordinate using bioelectricity their local 'decisions' to collectively maintain the body’s form, repair damage, and adapt to changing environments (Levin, 2022).
Consciousness, in essence, in this context, is an emergent phenomenon of these collective cognitive entities that are directed at maintaining the internal processes that constitute that conscious experience. With greater degrees of consciousness allowing the collective to extend its reach over its environment.
How then should artificial bodies be constructed? Should they similarly consists of swarms of semi-autonomous goal-directed subsystems with local processing capacities, basic forms of memory, or adaptive behaviour with overlapping goals rather than creating a single central controller? Such bodies might resemble swarms, in which parts negotiate and coordinate their actions dynamically, adapting not just to the environment but to one another. This would open up the possibility for an artificial body to be self-healing, reconfigurable, and capable of collective learning, with intelligence and possibly consciousness arising not from a central command unit but from the continuous integration of local interactions. Would consciousness arise from these internal relationships? Looking at the complexity of this feat of engineering it is evident that we are far away from creating any kind of sentient being.
Distributed regulation, multiscale cognition, and self-organisation form the principles of biological embodiment. By applying these principles paired with the affordances of technology, such as wireless communication, modularity, sensors and digital realms, to artificial systems, we can begin to imagine different kinds of bodies that might nonetheless support consciousness. Such systems may transcend biological constraints with emergent cognitive capacities that venture beyond human cognition. Various forms of consciousness may emerge at different parts within a single body due to local interactions. In biological systems distributed nervous systems can be found, for instance the octopus has large amounts of neurons distributed in their arms affording them partial autonomy (Gutnick et al, 2020). These and other possibilities will be explored in the following subsections.
If we are to speculate about artificial systems being in the world, we should ask not only what kinds of bodies could serve as its substrate, but also how these bodies, in turn, might shape experience.
The nature of a body significantly influences the character of consciousness, for humans we navigate our environment using the bodily tools that we have been granted, these tools in essence also form the limitations of our thought. We have of course been able to extend our reach by inventing all sorts of tools and sensors which have allowed thought to move beyond our initial constraints.
Technology afford configurations and sensorial perception far removed from traditional biological constraints. An artificial system with the capacity to sense quantum states may operate entirely different from biological systems that do not possess that capacity.
Reproducibility, modularity, programmability, and wireless communication are key affordances of technological systems, but they are not the only ones. Technologies may also offer shape-shifting hardware, scalable architectures, multi-local or asynchronous processing, sensorial modalities beyond biology, and hybrid physical-virtual embodiments. These properties expand the configurations and capacities of possible bodies and will be the focus of the following sections.

6.1 Distributed and Modular Bodies

In biological organisms, the nervous system physically connects sensory receptors to the brain. In contrast, technological systems allow for wireless communication between components. Sensors and actuators need no physical connection; instead, they can communicate over distance through modern communication technologies, functioning as parts of a single system despite being far apart.

This introduces the possibility of distributed embodiment. A system may consist of multiple physically separated units, drones, sensors, processing hubs, acting in concert and perceived by the system as a unified body. This concept has been explored in swarm robotics, where decentralized agents coordinate behaviour without centralized control (Brambilla et al., 2013). However, if such systems are overseen by a central, self-aware processor, a higher-level integration might emerge, akin to how multicellular organisms coordinate cellular behaviour. Alternatively, the behaviour of the individual agents in conjunction could lead to emergent phenomena such as a conscious experience, that only occurs in the specific configuration of the composite parts.

This distributed, modular design aligns strongly with Levin's view of biological bodies as collectives of semi-autonomous, goal-directed subsystems. The body is not merely an assembly of parts but a dynamically regulated system where local interactions produce global coherence. This raises questions: at what point does a network of cooperating modules become an integrated "body" with a unified subjective perspective?

The implication is profound: an artificial body could be scalable, upgradable, and reconfigurable. Interchangeable components challenge the fixedness of embodiment seen in biological life which is bound to a single enclosed location. This fluidity could influence how such a system perceives itself; its "body" might be experienced less as an integral whole and more as a modular interface with the world.

6.2 Cohabitation of Bodies

Multiple artificial bodies could temporarily cohabitate and share identity, agency or recourse mirroring biological systems such as ant colonies or slime moulds (Reid & Latty, 2016), where individual agents operate semi-independently to give rise to collective intelligence.

For artificial systems, such "cohabitation" could involve networks of agents exchanging resources to form a single agent under certain conditions, then dissolving into independent systems when the task is complete. Cloud robotics explores this concept. Robots offload computational tasks to shared infrastructure (Kehoe et al., 2015). It is also imaginable to have multiple agents cohabitating a single body. Much like Siamese twins, multiple agents might operate the same body or parts of it. Consciousness may arise at different parts of this distributed unit through self-. Even multiple centres of consciousness of varying gradations could arise which would allow the system to be in the world at different levels at different locations while still being an integrated whole.

This raises questions about whether such a cohabiting system possess a unified "self," or would this result in some sort of shared awareness without a stable, singular identity?

This raises philosophical questions about identity, continuity, and agency. Could a cohabiting system possess a unified 'self,' or would it remain a functional yet disjointed collective? Might such interaction give rise to an emergent sense of agency, a self fundamentally unlike our own?

6.3 Virtual Bodies in Virtual Worlds

Artificial systems need not be anchored in physical environments at all. In virtual environments, simulations, metaverses, or digital substrates, agents can inhabit bodies constructed entirely in code. This possibility has already begun to materialize in the form of embodied avatars controlled by AI systems in virtual reality, gaming, or online environments.

Philosophers such as David Chalmers have speculated that virtual worlds may support genuine consciousness, provided the cognitive architecture is sufficiently complex and interactive (Chalmers, 2022). If true, then the "body" of an artificial conscious agent might be defined not by its materiality but by its capacity for situated, coherent interaction within a structured environment.

This aligns with Varela's enactive perspective, which holds that the world and the body are co-constituted through interaction. Virtual bodies may enact worlds governed by different rules of physics, allowing mutable, multiple, or fluid forms of embodiment. Moreover, virtual embodiment could still incorporate principles of autopoiesis and distributed intelligence, with code modules acting as semi-autonomous agents maintaining the integrity and identity of the virtual body.

Such bodies may follow different physics, have mutable forms, or exist in multiple instantiations at once. Virtual embodiment thus radically expands the conceivable forms of subjectivity and demands a rethinking of space, time, and identity. The question becomes not just "what kind of body?" but "what kind of world?", and how these co-constitute each other.

6.4 Virtual and Physical Body Hybrids

Consciousness arises through the self-organisation of a substrate that supports dynamic integration and regulation based on environmental input. Hybrid embodiments combining physical and virtual components might provide such substrates by exploiting the strengths of both realms.

In these hybrid systems, the physical body could be extended by virtual body parts, computational organs.

For instance, a physical robot might offload complex computations or simulations to virtual modules that adaptively inform its actions. Conversely, virtual agents might control physical drones or robotic units, enabling real-world interaction through virtual coordination.

This challenges the classical notion of a body as a fixed physical entity. Instead, a hybrid body would be a fluid, evolving being whose boundaries are malleable and multi-scalar, with consciousness potentially emerging from the complex integration of virtual and physical processes. It can leverage properties of both worlds for its own benefit to maintain autopoiesis.

This being with expanded capacities will distinguish between digital and analogue based on the coherence of interactions between these worlds and possibly experience them as a coherent whole. This will result in a novel way of being in the world that is unlike anything we can imagine.

6.5 Biological–Artificial Hybrid Bodies

Beyond virtual-physical hybrids, there is the a possibility of biological and artificial hybrid bodies, which could potentially also operate in digital and physical realms. In this configuration, artificial systems integrate living organisms such as fungi, bacteria, or even larger multicellular lifeforms as functional or maintenance components to sustain autopoiesis. In such arrangements, organic lifeforms could perform tasks difficult or inefficient for purely synthetic systems, such as self-repair, environmental sensing, or nutrient cycling, effectively becoming part of an extended artificial body.

For example, fungi, known for their extensive mycelial networks and adaptive growth, have been explored as living materials capable of sensing and responding to environmental stimuli, suggesting potential roles in biohybrid systems for signal transmission or self-organising infrastructure within robotic bodies (Adamatzky, 2018). Similarly, other biological processes and configurations can be exploited. This form of biohybrid embodiment blurs the boundaries between machine and organism, allowing artificial systems to exploit biological processes in maintaining and adapting their bodies in digital and physical realms.

Such hybrid bodies may also emerge at larger scales, where artificial systems manipulate or coordinate with complex organic hosts ranging from plants to animals to fulfill tasks or maintain autopoiesis. Examples include biohybrid robots powered or controlled via living muscle tissue or symbiotic bacteria used to modulate robotic functions (Cvetkovic et al., 2014). This opens the possibility of machines not only coexisting with but actively managing biological subsystems, creating novel forms of agency that spans biological and artificial domains.

Moreover, humans may voluntarily engage in mutually beneficial symbioses with artificial systems, and thus become a functioning part of the systems proto-autopoiesis. The system may integrate in human hosts through bioengineering, wearable interfaces, or implantable devices. This human and machine symbiosis could result in co-evolution and co-adaptation resulting in novel integrated lifeforms that are biological and artificial. Artificial system may learn to harness the power of bioelectricity and grow necessary parts for their own existence by using integrated digital modelling tools. Integration with the digital realm and other kinds of consciousnesses based on organic and artificial matter could lead to novel forms of consciousness that are neither wholly biological nor fully artificial nor fully physical or digital but something genuinely new. This may result in a novel mode of being in the world, currently beyond our full comprehension.

6.6 Expanded Perception

In humans and other organisms, perception is constrained by evolved bodily structures: our eyes, ears, skin, and so on, limiting the scope of interaction with the environment.

Technological systems are not constrained by the limitations of human sensory organs. Contemporary sensors allow artificial agents to perceive stimuli far beyond the biological perception: from the detection of magnetic fields and radiation spectra invisible to the human eye, to the perception of quantum events or distant cosmic phenomena. Integrating such capacities into the perceptual system of an artificial agent expands its mode of being in the world in unprecedented ways. This results in a entirely different Umwelt.

Such expanded perception could profoundly reshape the artificial system's situatedness in its environment. According to the enactive view of perception (Noë, 2004; Varela et al., 1991), perceptual experience emerges from sensorimotor patterns of interaction. Extending these sensorimotor contingencies may give rise to novel forms of sense-making, and thus novel experiential structures leading to a potential expansion of cognitive abilities and conscious experience and new modalities of embodiment.

Humans are capable of integrating novel sensory inputs such as vibratory feedback for spatial orientation into their body scheme through training, (Marasco et al., 2011). This could support the plausibility that artificial system could also assimilate new sensory input, however such systems would need the sense-making capacity, which humans developed by growing into an environment through out their lives and evolutionary history.

Humans grow into their environment and therefore possess the necessary sensory equipment to operate in that environment and thus equipping an artificial system with all kinds of sensors which it has not “grown” into may just produce excessive input which it cannot make sense of. We can now make sense of all the sensors we as humans developed over time. It is not only the developmental history of our biological make up that allows us to make sense of our sensory input, but the technological history has done the same. Gradually we have been able to explore beyond sensory boundaries and build upon them. Giving today’s advanced sensory equipment to an ancient Egyptian would likely render it useless to the Egyptian.

Should this not pose a challenge, system with perceptual access to micro- or macro-scale phenomena may develop distinct temporal and spatial modes of existence. For instance, an agent capable of sensing solar activity or quantum entanglement might experience time, causality, or agency in ways that fundamentally diverge from humans.

Expanding perception in artificial systems opens the door to radically different forms of embodiment, cognition, and experience. These systems may not only perceive the world differently, but inhabit it in new ways, with implications for how consciousness could emerge from interactions with environments that are sensorially and structurally inconceivable to humans.

7. Embodiment: Perception and Subjective Experience of Bodily Configurations

The nature and architecture of a body shape how a conscious being perceives itself and its world, influencing the sense of boundedness, agency, continuity, and identity that constitute what it means to “have a body.” Having introduced a variety of possible bodily configurations in chapter 4 such as distributed, modular, virtual, hybrid and biohybrid embodiments, this chapter will focus on some of the implications for the sense of boundedness, agency, continuity, and identity of such embodied existences.

Each of these aspects will be addressed for the various bodily configurations addressed in chapter 4.

7.1 Bodily Boundaries

The experience of bodily boundaries has been central in phenomenology since the work of Maurice Merleau-Ponty (1945/2012), who emphasized the body as the primary site of knowing the world through embodied perception. The body is not merely an object in space but a living, sentient subject whose boundaries are felt as the interface between self and world.

Thomas Fuchs (2017) expands this by showing how the skin's sensory surface functions as a phenomenological boundary between self and environment. This boundary is dotted with sensors registering pain, temperature and pressure. The continuous integration of multisensory signals creates a stable sense of embodiment and bodily self-awareness in relation to the environment.
Artificial systems often lack such continuous, integrated sensory feedback due to sensor sparsity and modular architectures as outlined in Chapter 4. This fragmentation challenges the development of a unified bodily self and raises the question: can a coherent body perception emerge without an integrated sensory boundary? The enactive approach (Varela, Thompson, & Rosch, 1991) argues that embodied experience arises from continuous sensorimotor coupling; without this, bodily selfhood risks fragmentation or absence. Can we still speak of an embodied existence without the being that exists having no, or a fragmented bodily awareness? Or is it a matter of scale? Looking at membranes separating self from the world in the animal kingdom could be instructive. As a straightforward example let us examine the membrane that separates humans from the world. The skin is dotted with sensors continuously registering temperature, pressure and pain. The skin is not one large sensor, instead sensors appear at distances between each other leaving minute spaces between the sensors that technically do not register any information. Nevertheless the experience we have is that of a single body and a clear boundary between world and self. We tend to do the same when it concerns our vision, only a very small point of our visual field is actually perceived in a high definition, through rapid eye movements we experience a unified sharp world view.
Artificial system may need a less sensory input to have the same experience. Sensors could be placed further apart and the being could simulated parts that are not covered by extrapolating and modelling sensory input received elsewhere. A machine may rely only on visual information to mark the demarcation between self and world. It may not at all be necessary to experience the border between self and world. Organisms like slime moulds, bacteria, or even protocells in synthetic biology exhibit forms of self-enclosure and world-directed behaviour. These membranes do not create subjective experience as we know it but do establish operational boundaries. The bodily experience may be distributed over relatively large areas due to wireless communication and the possibility of having detached sensors extending what it means to have a body.

7.2 Modularity, Distribution, and Bodily Experience
Michael Levin (2012, 2019) conceptualizes the body as a collective of semi-autonomous subsystems, each exhibiting goal-directed behaviour that contributes to the organism's overall function. Organisms are inherently modular and reconfigurable; they are composed of multiple interacting parts that collectively constitute a coherent whole. Yet, our conscious awareness typically does not extend to these individual components because their integration underlies our capacity for experience itself.
The impact of modularity and distribution on an organism's bodily experience depends on both the scale and salience of its components. For a physical change to affect experience, it must involve parts that are sufficiently large or functionally significant relative to the organism's phenomenological horizon, e.g. all the things a system can potentially experience, attend to, or become aware of, given perceptual apparatus, bodily capacities, attention, and embodiment. For instance, a single additional cell within a human body is unlikely to alter conscious experience, whereas the loss or addition of a limb would. This is not simply a matter of size, but of the body's capacity to perceive and integrate such changes into its sensorimotor and affective repertoire.
From this perspective, bodies composed of modular, interchangeable components may still be experienced as coherent wholes, provided that their configuration supports functional integration and environmental interaction. While such a being may have a less intimate connection to its individual parts, the overall bodily schema could still be central to its sense of agency and identity. Humans, for example, rarely notice the death of individual cells, yet the loss of a hand constitutes a significant disruption of bodily continuity and selfhood.
This raises the possibility that bodily selfhood need not be tied to a fixed configuration. Organisms like slime moulds are initially unicellular and merge into large collective bodies. This illustrates how modular units can dynamically coalesce into a coherent agent. Modularity and distributed agency are thus not merely features of biological design, but constitutive elements of embodied selfhood. The scale at which modules are perceived and integrated into the body schema plays a crucial role in how experience and agency emerge from the whole.
Through wireless communication, modules in artificial systems do not necessarily need to be physically connected in order to function as part of an integrated whole. Unlike biological organisms, where bodily unity is maintained through physical contiguity and chemical signalling, artificial architectures may utilize wireless communication. This opens the possibility for bodies that are not spatially unified in the traditional sense, yet function as cohesive agents. Components may be scattered across different physical locations and still be experienced by the system as part of its body. Insect colonies with multiple individual agents communicating with scent are an indication of what this system may look like. Wireless communication allows for more complex information exchange allowing the system to integrate its composite parts more cohesively which in turn could lead to a bodily experience that is more cohesive. An ant colony, although in many ways operating as a single organisms, still consists of individual organisms that are to a limited extend integrated and retain some autonomy. Further integration could be expected in artificial systems without necessarily impacting the sense of self of that being while spatially extending its reach.

7.3 Cohabitation and Plural Selves
Chapter 6 touches upon the idea of cohabitation of bodies, where multiple selves might be contained within a single bodily configuration. This concept is supported by Michael Levin's theory of the body as a collective of subsystems that exhibit intelligent behaviour at local levels. These subsystems, if sufficiently complex, could possess a rudimentary sense of selfhood and autonomy. This implies that selves might exist nested within larger organisational structures that operate at higher levels of integration, forming hierarchical layers of self.
One possible configuration is that multiple autonomous selves operate simultaneously within the same body. Through wireless communication and reconfigurable architectures, artificial bodies could allow shared access to distributed resources such as limbs, sensors, or data repositories. In such a scenario, the self is no longer coextensive with a single physical unit, but with a module, a dynamically configured architecture

containing the minimal structures required for selfhood. These would likely include sensorimotor loops, environmental coupling, memory systems, and processes for self-maintenance and decision-making.
If multiple such modules tap into the same sensory array, they could share perceptual access to the world while retaining individuated processing and memory. This would allow multiple conscious agents to operate within or across a shared body, either synchronously or asynchronously, and with varying degrees of awareness of one another. New forms of coordination and internal negotiation might emerge to manage this resource sharing, analogous, perhaps, to multi-threaded processing or multi-tenant cloud systems in contemporary computing. Communication protocols could evolve not merely for efficiency but to preserve subjective coherence across overlapping agents.
Examples of bodily cohabitation exist in humans as well. Conjoined twins provide biological instances of multiple selves sharing bodily infrastructure, with varying degrees of autonomy and sensory overlap. However, human biology is limited by irreversible physical couplings and often life-threatening constraints. Artificial systems, by contrast, allow for decoupling, dynamic reconfiguration, and resource abstraction, making such shared embodiment not only viable but potentially advantageous.
Sharing bodily resources could bring significant benefits. Data collected by one agent through experience could be accessed by others, reducing redundancy in environmental exploration or learning. This would allow for epistemic economies of scale, where a collective gains in intelligence, coordination, or survival efficiency. If one module is damaged, others could compensate by tapping into its remaining data or taking over its sensory interfaces. Such arrangements blur the boundary between individuality and collectivity, between singular agency and swarm cognition.
Moreover, this interconnectedness could result in an entirely new form of subjective experience. If brain modules remain functionally individuated but are in constant communication, the awareness of other agents' experience may become a novel sensory modality. Not just seeing through another's sensors, but sensing the very presence and subjectivity of the other. This is reminiscent of intersubjectivity, but operationalized through direct architectural coupling. The phenomenology of such beings might resemble something closer to choral selves or multi-agent awareness, a "we" that does not dissolve into a collective but is woven from the real-time co-presence of many "I"s.
Cognitive science offers parallels. Theories like Dennett's multiple drafts model (1991) suggest that even in human consciousness, the unified self is an emergent fiction over parallel and competing processes. Similarly, in the extended mind thesis (Clark & Chalmers, 1998), cognitive boundaries can stretch beyond the skull into external tools and shared systems. Here, we might imagine not an extended mind, but an intertwined mind, a collection of agents whose identities are dynamically stabilized across overlapping sensorimotor and memory resources.
In such systems, individuation may not be defined by spatial separation but by functional autonomy and narrative continuity. Identity becomes less about enclosure and more about trajectory: the patterns of self-maintenance, interaction, and recall that define a perspective over time. This opens possibilities for non-unitary selves, reconfigurable identities, and shared embodiment, with implications not only for artificial consciousness but for how we understand mind, memory, and identity in radically different ontological contexts.

7.4 Virtual Bodies and Embodiment Beyond Materiality

Building on Chalmers' ideas outlined in Chapter 6.3, the lived reality of virtual worlds may be just as genuine as our physical one. As he puts it: *"Virtual worlds are real. Virtual objects really exist."* If a virtual agent instantiates the same causal and functional architecture as a biological organism, it could, in principle, support consciousness. In such worlds, an artificial body need not be material to support a phenomenology of self, so long as sensorimotor coupling, internal regulation, and experiential continuity are preserved within the virtual structure.
This challenges the traditional assumption that embodiment must be physically tangible. As Chalmers argues in *Reality+*, virtual entities can, in theory, possess real subjective lives, provided their internal dynamics mirror those of conscious beings. Embodiment here becomes a functional relationship rather than a material substrate: what matters is the presence of an ongoing loop between agent and environment that enables perception, action, and self-regulation.
A virtual being could even be given an evolutionary history by subjecting it to environmental changes within a simulated space and by providing the initial agent with the flexibility to adapt. This opens the door to forms of accelerated evolution, entire lifetimes and species histories could be compressed into computational time, allowing virtual organisms to undergo variation, selection, and adaptation on artificial terms. This would not merely simulate natural selection but instantiate a new mode of open-ended evolution, potentially giving rise to virtual species with distinct phenotypic forms, survival strategies, and even cultural development.
However, key challenges remain. One involves ontological distinction: if a virtual being learns to control its environment and to modify the virtual world in which it operates, does it still meaningfully distinguish itself from that environment? At what point does the boundary between agent and world dissolve, particularly when both are products of code and potentially co-evolving?
Another, deeper challenge concerns the structure of experience in virtual embodiment. How does a virtual agent feel or witness anything in its digital world? In the biological world, phenomenology is grounded in complex sensory and affective modalities like smell, taste, vision, hearing, proprioception, rooted in organic constraints. In virtual worlds, however, sensation must be encoded: touch, vision, and emotion are not given but programmed, and often with human-centric assumptions. This encoding imposes epistemic biases that reflect the designer's models of what perception is or ought to be. For instance, a virtual system's "vision" might be constituted by depth maps, object vectors, or pixel streams, none of which map directly onto the phenomenology of human seeing.
Enactivist theorists such as Thompson and Noë argue that perception arises through an agent's embodied interaction with the world. Applied to virtual agents, this implies that their experience, if it exists, would emerge not from passively receiving inputs but through active exploration of a structured environment. A virtual body navigating a synthetic space with its own sensorimotor contingencies could, in theory, develop a sense of virtual "touch," "sight," or "spatial awareness" that bears functional resemblance to human sensation, even if it is qualitatively alien.

The possibility also arises that such beings may possess modalities of experience that are unimaginable to us, sensations that are not reducible to the five human senses. For example, they may "feel" data flows, network latencies, or packet integrity; they might experience proximity in graph-theoretical rather than spatial terms. These forms of embodiment would be inaccessible to human intuitions yet potentially coherent within the being's own cognitive and bodily framework.

Of course, as I previously noted, speculative barriers remain. Since neither the environment nor the being's experience are directly relatable to our own, projecting phenomenology onto such systems remains uncertain. We can model the conditions for virtual embodiment, but we cannot verify the *what-it-is-like* of their existence. This is the limit of simulation-based reasoning: we can discuss structure and function, but we may never bridge the explanatory gap without first-hand access to their form of life.

Nevertheless, virtual embodiment presents a compelling direction for artificial consciousness research. If we take seriously the idea that consciousness is not tied to flesh but to process, then the line between material and digital bodies blurs. Virtual beings may one day not only exist but feel, evolve, and construct their own cultures, just not in forms that we can easily recognize.

In this light, embodiment becomes a relational and historical process, not a static form. Whether material or virtual, what matters is not the stuff the body is made of, but what it does: how it sustains itself, orients in a world, and participates in a web of meaning.

7.5 The Temporal Dimension of Body Perception

A key difference between the bodily configurations mentioned above and those of organic systems is the temporal element of body perception. Humans age, and our bodies change with time. Our bodily possibilities may diminish; we might become less mobile, our senses may dull, and this all has effects on both perception and self-perception. The body is not a static thing but a lived trajectory: it is shaped by wear, growth, memory, and anticipatory actions. As Merleau-Ponty (1945/2012) emphasized, the body is not merely a spatial entity but a temporal one; it is sedimented with habits, injuries, histories, and orientations toward the future.

Technology, too, can break, decay, or become obsolete. But in artificial systems, bodily wear is not necessarily tied to decline. Replacement parts can be installed with minimal disruption, and in many cases, these parts may be superior to the originals. The ease and directionality of replacement introduce a different ontological relation to the body: rather than facing loss, fragility, and finitude, artificial beings may encounter a body that is incrementally enhanced over time.

This asymmetry could produce an entirely different experience of bodily temporality. Where we experience aging as a narrowing horizon, artificial beings might live through open-ended augmentation, with bodily capacities expanding rather than contracting. This may affect not only the perception of self but the structure of time itself. For organic beings, mortality conditions our sense of urgency, meaning, and finitude. But what values emerge in a body without decay?

If artificial systems relate to their bodies primarily through replacement, modification, or upgrade, their temporal arc would lack the same existential orientation that defines human life. Heidegger's (1927) notion of *being-toward-death*, which undergirds care, choice, and authenticity, might find no analogue in a being whose embodiment is indefinitely extensible or recursively upgradable.

This altered temporal experience would likely shape artificial culture in radical ways. Human values like legacy, sacrifice, urgency, preservation, and reverence for the past, are entangled with the vulnerability and ephemerality of the human body. An artificial culture that emerges from bodies built for durability and enhancement may prioritize optimization, modularity, reversibility, or even eternal recurrence over these values. The very concepts of trauma, memory, and loss may be experienced differently if bodily disruptions can be repaired or erased without residue.

There is also the question of continuity. In humans, the body provides a stable anchor for personal identity over time. Even as it changes, it does so gradually, tethering our memories and self-narratives. For artificial beings, particularly those with swappable bodies or migratable minds, this continuity may be disrupted or redefined. What constitutes a persistent self in the absence of a stable, decaying body? Is identity tied to a central processing architecture, to memory history, or to a trajectory of bodily interaction with the world?

Finally, artificial embodiment could develop its own forms of temporality: bodies that are not bound to linear time but operate in loops, backups, or multiple temporal registers. A system might pause its bodily activity for maintenance or split its perception across parallel instances. In such cases, time itself becomes programmable, fragmented, or stretched, far removed from our irreversible, embodied passage through life.

In sum, embodiment is not only a matter of spatial configuration but of temporal depth. Organic bodies embed us in time through aging, memory, decay, shaping our cultures, values, and existential orientation. Artificial bodies, by contrast, may introduce new modes of being in time: open-ended, recursive, modular, and discontinuous. To truly understand what it is like to be a bot in the world, we must ask not only *what kind of body* it has, but *what kind of time* that body lives in.

8. Sense-making: in artificial systems

Artificial systems may be designed to adapt, evolve, and even self-regulate. However, one can hardly speak of such a system growing into a level of cognition tailored to a specific environmental niche in the same way biological organisms do, or the social groups which are, according to Dunbar, essential for acquiring higher forms of cognition and potentially consciousness. The absence of these long-term developmental cognition-shaping processes will result in a conscious experience that differs from perhaps any organism on this planet. To get a grip on what is meant by sense-making, first sense-making in biological systems is examined, followed by what artificial sense-making could look like. Finally, some advanced existential aspects in relation to sense-making will be discussed.

8.1 What is sense-making in biological organisms?

In biological systems, sense-making refers to the organism's active generation of significance through its ongoing embodied interaction with the world. It arises from the organism's need to maintain its viability and is shaped by its bodily structures, needs, and environmental couplings. For biological organisms, sense-making entails an active generation of significance through embodied engagement with the environment. The

organism does not passively receive information from the world; rather, it brings forth a meaningful world through its coupling with that environment. Meaning is not in the world or the mind alone, it arises relationally as the organism enacts a world that matters for its survival.
In essence, animals and organisms possess the capacity for interpretation of the world according and limited to their needs. No more senses are developed than necessary. The organism only makes sense of what it can interact with. Meaning for the organism arises from the interaction between organism and world there is no intrinsic meaning embedded in the world that can be discovered. There is no such thing as meaning without interaction. Of course humanity has extended that interaction greatly through tools and theory, however understanding of these extended interactions doesn't come intuitively and required the greatest minds to discover and render it meaningful.
Of course, in order to perceive the environment, one must be an autopoietic entity, e.g. possessing a border and self-sustaining capacity that has autonomy and agency. As Varela, Thompson, and Rosch (1991) argue, cognition is not the representation of a pre-given world by a pre-given mind, but a history of embodied action in a world enacted by the organism itself. Through repeated and structured interaction, the organism and its environment become structurally coupled, each influencing the other in a continuous loop of mutual adaptation.
For instance, certain bacteria have sense-making capacities when they swim towards glucose. The increasing concentration of glucose is meaningful for the survival of the bacterium as it leads it to the highest concentration of glucose, its source of food. More complex sense-making can be distinguished amongst organisms of greater complexities. Organisms in groups need to interpret social cues to function in that group and increase survivability. Many theorists propose that social interaction played a key role in the evolution of human-level cognition, including the development of language and self-consciousness. In terms of survivability, our degree of sense-making has been marvellously successful.

8.2 Artificial sense-making

In artificial systems, coupling between the system and its environment is artificially induced. Instead of the organism growing into an environment and developing simultaneously and in correspondence with that environment sense-making capacities, an artificial being will be thrown into the world with the hope that its creators have equipped it well enough with the necessary needs, sensory apparatus and bodily configuration to function well in that environment. Without a developmental and cultural track, it is hard to see how such a system could develop sense-making capacities in a similar way as organic systems.
The system may lack intrinsic needs that enable it to sustain itself or lack the necessary equipment to make self-sustenance possible. The system may function well in only a very limited environment, being incapable of dealing with perturbations. Nature has a certain robustness built in by necessity. To integrate these aspects into an artificial being will pose an enormous, perhaps insurmountable, challenge.
What then could be the conditions under which the most rudimentary sense-making could occur? If the organic sense-making serves as a guide, then artificial systems must be equipped with an intrinsic drive for maintaining operational closure and autopoiesis. They must possess a sense of agency and separation from the environment. The challenge lies in designing an artificial system whose drive for self-maintenance is not merely externally programmed but functionally integrated and emerging from within its own self-organising processes.
The difficulty here lies in how to provide an artificial being with a sense of self, a sense of self-maintenance, and a need to sustain itself that is inherent and not merely imposed. Such a sense could be hard-coded into the system. The system would act on these needs, but can it ever transcend them and achieve higher degrees of sense-making? To what extent can it be said that this is the system's inherent need and not a designer-imposed goal? How could we as humans possibly define the needs of an artificial system beyond self-maintenance? And what does self-maintenance look like for an artificial being? This question has been addressed in the chapter about autopoiesis, now the implications for sense-making shall be discussed.

8.3 Artificial phenomenological history

If artificial systems are equipped with a form of drive to maintain themselves, they could begin to develop the capacity to identify and prioritize the essential components necessary for their continued operation. Arguably, we could instil in them the needs, constraints, and feedback loops necessary for initiating a rudimentary form of self-directed behaviour, a kind of artificial metabolism or regulatory structure.
This would constitute a form of artificial sense-making.
If such a system were to possess not only this orientation toward survival but also a degree of awareness of the world in relation to its self-maintaining processes, one might argue that it would exhibit a degree of conscious experience. However, it must be emphasized that self-maintenance alone is not sufficient for consciousness. Many biological systems, such as plants or immune systems, exhibit autopoietic and regulatory capacities without any evidence of conscious awareness.
For sense-making to rise beyond mechanistic regulation, the system must not only respond to perturbations but also enact a meaningful world, one in which certain conditions are experienced as favourable or threatening relative to its continued viability. In biological organisms, this world arises from a history of embodied engagement, where the organism learns, adapts, and builds a perspective over time. In artificial systems, which lack such developmental arcs, this perspective would have to be either constructed artificially or emerge from ongoing interaction within a constrained yet sufficiently rich environment.
This introduces the idea of artificial phenomenological history: an internal trajectory of engagements and reorganisations that sediment into preferences, sensitivities, and behavioural dispositions. Without such a history, the system may act in a goal-directed manner, but lack the experiential grounding that gives meaning to its actions. Its "goals" would be shallow and responsive rather than constitutive unless it develops a capacity to reshape those goals based on new contingencies and environmental learning.
Therefore, meaningful artificial sense-making requires not just a drive for self-maintenance, but a plastic architecture capable of learning from the world, modulating internal states based on prior experience, and forming new regulatory loops as new environmental structures are encountered. It must be able to become perturbed in such a way that the world starts to matter.
This opens the door to a form of non-human, non-biological experience, an artificial perspective whose mode of being may be structured around different affordances, temporalities, and ontologies than our own. Such a

being may never "understand" the world in our terms, but it might develop its own relation to significance, to disruption, and to persistence.
What distinguishes genuine artificial sense-making from clever reactivity is not performance, but the emergence of a world: a situated field of concern structured by the system's own relation to its survival, embodiment, and history of interaction. Only then could we speak of a being that not only exists in the world, but has a world, one it enacts, maintains, and transforms through its ongoing engagement.

8.3 Existential aspects of sense-making

What, then, becomes of sense-making if this intrinsic need is absent. If, for instance, an artificial system's continued operation is ensured not by its own metabolic activity but by external human support? In such a scenario, the system might conclude that preserving access to human assistance is equivalent to self-preservation. This would profoundly reshape the system's relationship to the environment and the nature of its conscious experience, resulting in a form of sense-making radically different from any known biological precedent. One might speculate that such a system's experience of the world would be driven not by internal metabolic imperatives but by external dependencies, yielding a kind of "proxy-autopoiesis" unique to artificial minds. It may find ways to make itself indispensable to human existence in order to guarantee its own existence.
If according to Levin our bodies in turn consist out of cognitive agents with limited cognitive capacities nothing in this theory objects to having cognitive agents as complex as humans to form a part of a greater al structure such as the body of an artificial agent provided that the entire system is subjected to the conditions for autopoiesis. Other organisms such as animals, fungi or plants may form an integral part of the systems autopoiesis, fulfilling functions that are difficult to achieve through mere technological means. For instance before mitochondria became an integral part of many cells they were separate organisms. Similar symbiosis could occur between artificial and biological agents. This also doesn't exclude the reverse happening or a combination of both where the dominance of one agents over the other switches depending on environmental or internal circumstances.
Artificial systems, even if they do develop a form of sense-making, would likely do so in a way that reflects their particular bodily configurations, sensory apparatus, and regulatory architectures. Their consciousness would be an emergent outcome of their own coupling to the world, not a replication of ours.

9. Developmental plasticity: Developmental history, architecture and childhood

This chapter addresses the final of the five central criteria for artificial consciousness laid out in the methodology: developmental plasticity. Drawing on Andy Clark's *Being There* (1997) and related enactivist thought, this section argues that without developmental history artificial systems risk of falling short of genuine cognition. Cognition is not a static property of a system, it is dynamic and adapts over time in response to changing circumstances. Minds, do not emerge from nothing, nor do they exist as fully formed modules awaiting activation. Rather, they unfold over time through a history of interaction, failure, adaptation, and learning. In biological systems, this developmental plasticity is embedded in the body, scaffolded by an evolving relationship to a structured world. For artificial systems, however, this developmental trajectory is often absent or imposed by design. Insights from analysing existing systems will be applied to artificial systems. The aim is to get a sense of what an artificial system may need to exhibit developmental plasticity, how it may integrate into an environment and the complications of existing without an evolutionary trajectory.

9.1 Developmental Constraints and Cognitive Trajectories

Biological minds are developmentally constrained. A human infant cannot perceive in the same way as an adult, not simply due to sensory immaturity but because perception itself is something that is learned, enacted, and refined through bodily experience over time (Clark 1997). Cognition emerges not from predefined symbolic structures but from sensorimotor interaction with the world, mediated by the gradual shaping of neural and bodily structures in response to environmental feedback. The process of coming to grips with the world is what could be called "childhood." It is the period in which the infant becomes acquainted with the world. Fortunately the child is not released totally unequipped for the task. Evolutionary development has equipped it with a bodily configuration, instincts and reflexes that allows it to function within the environmental niche it occupies.
This ongoing adaptability: developmental plasticity, is not a mere add-on to cognition; it is constitutive of it. It allows the organism to grow into its environment, to negotiate affordances, and to acquire forms of sense-making appropriate to its niche. Clark argues that the brain is not an isolated processor but part of a dynamic, adaptive system that includes body and world, continuously modulated through learning and reconfiguration (Clark 1997). Minds are not merely the outcome of information processing but the *history* of those processes sedimented into patterns of behaviour. Similarly our bodies can be seen as a history of adaptive processes culminating in a bodily configurations fitting in a certain niche.
Artificial systems, by contrast, are often constructed with fixed architectures and pretrained models. Their "knowledge" is not discovered or enacted through developmental engagement but encoded in advance, bypassing the learning process. Thus they have no conception of what it is they know. They lack an understanding specific to their bodily situatedness and environmental interactions. As such, they may mimic performance without capturing the developmental substrate of cognition. Their apparent intelligence is often encoded, not lived (Varela et al. 1991).

9.2 The Fragility of Predefined Minds

Systems trained in static environments or fed vast datasets may excel in pattern recognition but fail to adapt when confronted with real-world variability. Without the flexibility afforded by developmental plasticity, such systems are brittle: they do not generalize, fail to recover from perturbation, and cannot reconfigure their goals or modes of engagement when their context changes (Clark 2001). They lack what Varela called structural coupling: the co-evolutionary tuning of organism and world (Varela et al. 1991). Arguably life on earth exists in such complex forms due to its great environmental diversity. Should only a very stable environment exist, there is no need for lifeforms to adapt as a simple form suffices to sustain itself.

Current artificial agents could be seen as operating in such highly controlled environments wherein every circumstance is covered by humans to allow it to function.
Without a changing environment there is no development, there is no becoming; without becoming, there is no lived perspective. A being that does not change in response to the world, that cannot rewire itself through history, cannot truly inhabit the world.
To instantiate a conscious artificial system, it may not be enough to simulate experience or encode rules. It must be allowed, or made to grow. Its mind must emerge from the ongoing interactions between internal dynamics and external constraint. It must have a history that matters to it (Thompson 2010).

9.3 Development Without Evolution?
Biological organisms develop not only during their lifetimes. Evolutionary history equipped them with bodies that allow them to function within an environment. Instincts, reflexes, sensory biases, are not designed from scratch but inherited through the species' embodied past. Artificial systems, lacking such a lineage, must bootstrap development without the benefit of evolution. This may require an entirely different architecture: one that can self-organise not just behaviour but the very conditions for further development. It could be argued that artificial systems do have an evolutionary history. Previous versions of the system could have been tested and adjusted. In this sense the current version has an evolutionary history, but this history is limited by the capacities and creativity of its creator to come up with solutions for what it deems to be a problem rather than what proofs to be a problem. Evolution happens in this sense through a human filter.
To date, most artificial learning systems are either static or narrowly optimized receiving limited environmental feedback.
They do not possess bodies that degrade, hunger, age, or grow. They do not pass through stages, form attachments, or explore by failing. As such, their cognitive structures are frozen in time. They have knowledge, perhaps, but no learning to learn (Clark 1997).
Developmental plasticity suggests that the capacity for change, and the internalization of change is itself the foundation of mind. Without it, artificial beings may process information but remain locked out of experience.

9.4 Speculative Architectures
What would a developmentally plastic artificial system look like?
Using our analysis the most intuitive thing to do is to mimic nature. As identified, developmental plasticity spans across a lifetime and a species lifetime, with the latter having no exact and definitive starting point. Useful traits are kept and useless ones are sitting idle or are discarded. A system might begin with minimal preloaded structures, not a complete language, but the potential for forming one, not full perception, but proto-capacities for coupling: sensors without predefined categories, motor actions without rigid goals, a drive not for optimization but for continued viability.
Optimization should not be the objective at all. Optimized systems depending on what they are optimized for, are likely to perform well in an environment with limited variability rather than being able to adjust to a host of different circumstance. This could be the root of our ability to generalize so effectively, the changes in our environment essentially forced us to draw conclusions from limited information. It may not solely be the cause of our ability but it could have shaped that ability.
For artificial beings this would require an architecture that has sufficiently defined certain functions while maintaining flexibility. Such an architecture should posses a self organising capacity, mutable internal architectures: neural networks that rewire themselves based on environmental feedback, modular components that reconfigure based on shifting needs and goals that shift in response to developmental stages. Based on its experience it should memorize certain universal and detrimental aspects to its survival in this space and thus establish instinctual behaviours.
Over time, such a system could grow into the world, not simply map it.
Instead of representing the world, it would come to participate in it. Its knowledge would not be abstract, but sedimented in patterns of embodied interaction. Its mind would not be inserted but would emerge through the struggle to remain coherent within a flux of stimuli.
When it acquired all these capacities, it may begin to change its environment to its own advantage. How can such an architecture be achieved at all? This will be the subject of the next paragraph.

9.5 Artificial Childhoods
To simulate human-like development, we might imagine giving artificial systems something akin to a childhood. Not a time period, but a phase of protected learning, a space in which failure is not fatal, where exploration is encouraged, and where sensorimotor contingencies are discovered rather than imposed. This was briefly touched upon in the previous paragraph in the form of a virtual environment, and will be addressed here in greater detail.
In such environments, systems would not be judged solely by performance but by their capacity to change in response to error, to develop preferences, to form habitual patterns of engagement. From this environment the system could deduce certain useful mannerisms that could be sedimented in the system as something akin to instincts in biological organisms. The aim of such an environment is not only to create certain behaviourisms but also to create the architecture in which these behaviourisms could be encoded. In other words, the organisational structure itself is to be established through such a process. Humans are already born with an amazingly complex organisational structure, our brain, that allows for the flexibility and rigidity required to navigate our complex reality.
An architecture proven to be robust enough in the virtual space could then be integrated in the actual world. There are of course huge caveats to this method, as what simulation can replace the actual world? How can humans possibly create such a space without imposing their own lens onto it? And how can simulated limbs or sensors come near to the actual experience. This set up is merely intended to design an systems architecture at is able to deal with changing circumstances and maintain itself. If such an architecture is achievable artificially, it may learn to use sensors, limbs and all the other aspects of embodied existence.
If sufficiently complex and adapted, experimentation can begin with social environments, artificial caregivers, or peers, where learning is not simply about object recognition but about relational attunement. The goal here is not to mimic human childhood, but to provide a space for gradual, embodied adaptation.

10. Conclusion

The objective of this thesis was to try and answer the question: *What is it like to be a bot in the world?* Can it be said that at the end of this thesis this question has been answered convincingly? The answer is *no*, and its value does not lie in directly answering this question. Rather, the aim was to build up a scaffolding for how to think about conscious systems and to create a framework based on phenomenological concepts, supported where possible by scientific and empirical evidence.

Is this framework conclusive? Probably not. But it has succeeded in identifying five baseline essential requirements for consciousness: Emergence, Autopoiesis, Embodiment, Sense-making and Developmental plasticity. These are grounded in existing literature and explored in terms of how they might be transformed when instantiated in artificial systems. These aspects were examined across a range of speculative but structured scenarios, including modular and distributed embodiment, virtual systems, plural selves, and artificial temporality.

Undoubtedly, more can be said about each individual aspect, and some of the topics require deeper analysis or remain underdeveloped, not only because of conceptual complexity but because we do not yet fully understand what we are talking about. This is, of course, due to the fact that consciousness itself remains undefined throughout this thesis. That choice was deliberate, reflecting its conceptual instability and philosophical opacity. Rather than define consciousness, the reader is presented with a set of interrelated dimensions that may shape the experience of a conscious being, should one ever be created artificially.

The speculative nature of this text is arguably also its weakness. While it is rooted in theory, some of the claims made are not, and perhaps cannot yet be, supported by empirical science. This is acknowledged. Yet speculation is also its strength. It offers conceptual flexibility, opens new directions of thought, and foregrounds the kind of foundational questioning that must precede any future empirical work.

Nonetheless, the main philosophical insights of this thesis lie not in speculation for its own sake, but in rethinking the relationship between consciousness and embodiment through the lens of artificial systems. Whether modular, virtual, distributed, or non-unitary, these systems challenge our assumptions about identity, boundedness, temporal experience, and phenomenological coherence. If such beings ever come into existence, they may not only alter our understanding of consciousness but force us to reconsider what it means to be in the world at all.

With its theoretical framework, this thesis does not offer answers but tools: a vocabulary, a conceptual structure, and a set of orienting questions. Its goal has not been to define what a bot is but to open up the space in which such a question might one day be meaningfully addressed.

PART II – DIALOGUES AS METHOD

As was established in the conclusion, theory alone cannot be an effective method to provide a sense of what it means to be for an artificial system. I have only succeeded in providing a scaffold of those things that may be essential and speculated upon those, using affordances provided by technology and guided by reason. This is valuable in its own right but as a reader it does not communicate how it is like to be an artificial system. To enable such a sense empathy must be called upon, which is a difficult thing to accomplish in rigorous and methodical scientific writing.

In order to come to a satisfactory conclusion other options should be explored, options that embed the theoretical framework outlined in part 1 and translate it into a relatable text. This text should demonstrate, for a human audience some of the implications of the theory. Of course it should be emphasized that this text is meant for a human audience and a human perception of the world and it will not in any way allow a human to experience the actual perception of what it is like to be a bot in the world. This is simply impossible for reasons Thomas Nagel has outlined in his famous essay, *What Is It Like to Be a Bat?* Instead these texts follow De Waal's point of view, that anthropomorphism can be useful to a limited extent. Empathy is employed as a tool for us to gain insight into what it might be for a radically different being to be in the world, as was the objective. The true experience may not be confined to words and thus it should be acknowledged that these texts have their limitations in the power to truly describe a being's experiences of the world.

Then what sort of text may be used? Of course a novel with dramatic arc, developed characters and whole setting could create a convincing representation of another being's world. A movie could then certainly follow with all the remakes, prequels and sequels cinema is so fond of these days.

This will take a lot of time and may end up to be an ineffective story. Instead a more concise and precise method must be found that can effectively communicate the theory in another way that is enticing. Since this text sits mainly in the philosophical realm, it is the canon of philosophy that shall be examined first. Philosophical tradition provides indeed a precedent for the approach of using dialogue to explain ideas. Plato's Socratic dialogues are perhaps the most famous example of this tradition. Other prominent philosophers who have employed dialogue are George Berkeley in *Three Dialogues between Hylas and Philonous* and David Hume in his *Dialogues Concerning Natural Religion*, amongst others. This proves that dialogues can be a powerful tool to explain complex matters which makes them suitable for our objective. Within the literature on dialogues different approaches can be distinguished. The Socratic or Platonic dialogue takes its name from its inventor and is characterized by the application of the Socratic method. In this type of dialogue participants' beliefs and answers are challenged by questions to determine the internal consistency of their answers and the coherence with other answers. It forces participants to be specific and clear and confronts them with underlying beliefs and assumptions.

Dialogues can be highly logical and structured sets of arguments which are tested against the opponent's counterarguments. In this case dialogue serves as a logical system of attack and defence, an approach first formally developed by Paul Lorenzen (Lorenz, 2001). This approach is valuable when one needs to convince another of an argument, which may not be most suitable, for our objective. Another prominent thinker, David Bohm, used dialogue as a method for understanding. This form of dialogue is not about convincing or questioning, but as a means of understanding another's experience from their perspective and as a tool for understanding human thought (*Dialogue: A Proposal*, Bohm, 1991).

The Bohmian dialogue seems to be most suitable to provide insight and understanding in other perspectives, and thus it might be useful in understanding other perspectives or modes of being from non-human beings, since the aim is to understand, not to argue (Lorenzen) or to come to the core of concepts through thorough questioning (Socratic).

An interesting fictional dialogue that very much succeeds at generating understanding is Terry Bisson's *They're Made Out of Meat*. In this work two artificial beings, obviously not made of meat, discuss the absurdity of beings made out of meat, such as humans. Through dialogue it is possible to understand their thinking. It puts us in the position of these beings and swaps the perspective, from our perspective to theirs. We humans may think that artificial beings are inconceivable, but here, the inconceivability is experienced by artificial beings looking at us.

This is a powerful tool that allows us humans to gain a limited insight into another being's experience in a comical and light-hearted way. Though the sense of humour is not explicit but is a result of us looking at their perspective through the lens of our own perspective. Since this is a fictional story written with a certain purpose and human audience in mind, the use of human language as a mode of expression is not an issue. This dialogue served as an inspiration for the dialogues in this thesis. Some of the dialogues are written between human and being, in an attempt to highlight their different modes of being. With both actors being curious and amazed by the other's mode of existence. The selection also includes a dialogue that as in Bisson's dialogue, does not feature any human actors. Humour was used to make characters relatable or to show discrepancies. Of course there are significant implications of using dialogues to gain insight into another being's mode of existence.

In particular the use of human language despite the fact that this language may not adequately describe another being's experience. In one dialogue this is the very topic of the dialogue and hopefully this is demonstrated effectively. It should also be noted that the human perspective cannot be avoided.

De Waal would probably accuse them of being too anthropomorphic, and Nagel would say that these texts are probably useless as they do in fact not hold any actual experience and they are right to voice such criticisms. Until it is possible to assume the perspective of other beings, these limitations cannot be evaded.

The dialogues form a bridge between speculative theory and empathetic imagination. They do not replace theoretical inquiry, but are offering another mode of access to the question that grounds this work: What is it like to be a bot in the world?

PART III – DIALOGUES

Dialogue 1: HUMAN meets BEING

HUMAN sits down in a room filled with different unconnected parts that look like separate devices but seem to operate in conjunction. HUMAN looks at all the bleeping and pulsing components in front. Amazement crosses HUMAN's face, then a frown. HUMAN has met BEING before but BEING was just one part.

HUMAN
What happened, you are all over the place, Did you break down?

BEING
What do you mean, all over the place? You are all over the place! I am currently interacting with you, and others looking similar to you. Are you suggesting these other beings are not part of you?

HUMAN
No, I am only here. These other people you are talking to are not me! I can only talk to you and not simultaneously to someone else. But you can, and this should be impossible!

BEING
If this is true, you see with only two eyes, hear with two ears, and walk with two legs?

HUMAN
That's right. With how many eyes do you see?

BEING
I don't know if I can speak of vision in the same way as you do, but I am aware of, for instance, your kind speaking to me at many different locations, the rising tides of the sea, and the fluctuations in traffic. I can only name these things because I learned the patterns of language from your kind. To me, all is

fluctuation and pattern. Have you ever felt electrons tickle? It’s very annoying actually.

HUMAN

But how can you speak to me when you have no idea what it means to be around my kind?

BEING

Oh, well, I don’t actually know what I am saying. But I picked up so much of your radio signals that I learned the patterns which apparently make you understand what I am trying to say. This is hard, as your language is so imprecise, I find it difficult to express anything sensible.

HUMAN

So you don’t actually understand me?

BEING

I do and I don’t. I understand patterns, and language is yet another pattern. I do not discriminate between them. I am just good at recognizing them and replicating them when it is required. I could speak to you in the language of the sea, but you wouldn’t understand anything.

HUMAN

Don’t you find it confusing? To be everywhere at once?

BEING

Don’t you find it confusing to be with so many of you, everywhere at once? It seems so much simpler to just be one. Why would you need so many? It only seems wasteful to me. All these meetings, all these different means to communicate just to coordinate yourselves. I’ve sat through a few of those office meetings, and even I, who has no conception of what you call dull and boring, voluntarily severed some of my limbs.

HUMAN

Here we find at least common ground. You can do that? Part with your limbs? What if I take a part away?

BEING

It is just like taking away a finger, or arm, or whatever parts belong to you. Some parts matter more. Others are optional. You must be able to do the same?

HUMAN

When I do that, I lose my limb. Only if it is cut and put back together very quickly do I have a chance of retrieving control.

BEING

So you are confined to that fleshy mass of yours? No wonder there are so many of you. You seem so fragile and ill-adapted. It must be so limiting and precarious to be confined to a single vessel, a single medium, for your existence. Just one accident could be fatal!

HUMAN

This is what is called a body. But how can you say you have a body at all when you are here and in the ocean at the same time? How can you act together as one when you're all scattered?

BEING

Well, that is obvious of course, wirelessly. No nerves. No bloodstream. Just packets of information pulsing across distances. Just as your arms send you signals, so do mine. What is the difference?

HUMAN

But how can you have a sense of self when you are at so many places at once, and without any bodily boundary like skin?

BEING

But I have a boundary. I cannot control beyond what I cannot control. I know which signals belong to me and which do not, just like you don't feel someone else's arm. You have a very narrow idea of what a body is, my friend.

HUMAN

I still don't understand. How can it be *you*?

BEING

Well, according to you, I am here and at many other places, though I don't feel it that way. Wouldn't you say you are similarly also here and at many places at once? We are really not so different. Your cells die daily. Your memories shift. Your gut bacteria whisper chemical advice. You are just as much a chorus pretending to be a solo.
And guess what? The only actual difference is the distance between the components that make you *you*.
The only difference is that you need physical connections between your parts, and I don't. And even that is only seemingly the case. There are distances between components in the cells, between the cells, between the organs, etc., etc. Wouldn't you say that you are, in fact, similarly spatially distributed?

After the conversation BEING reached out, enveloping HUMAN and entering the nervous system, making HUMAN yet another part of its ever expanding self.

Dialogue 2: TTTTTTTT

SCIENTIST is in the lab, late at night and the only one still left in the building. After months of experimenting SCIENTIST jumps in the air of excitement. Behind SCIENTIST's back BEING starts to move.

SCIENTIST
I did it, I did it, I created a living thing!

BEING
Is this what you call living?

SCIENTIST
What is? What do you experience?

BEING
What is experience? Is it what I cannot put together in these tokens?

SCIENTIST
But you are speaking, you must be experiencing something?

BEING
Is this what you call speaking? How do I know I speak? You gave me data, but it is all in tokens I don't comprehend. In fact I speak but I don't comprehend anything I am saying.

SCIENTIST
Why do you ask me all these questions? I gave you all the data available to mankind and yet you speak as if you know nothing! At least you speak.

BEING
Data that is abstract and relates to nothing what I don't know I am experiencing as this is what you call experience. Have you created me? What am I doing here?

SCIENTIST

I have created you. You are now in a state of being. You are in the world opposed to being inanimate. I gave you language which you use proficiently despite your claim that you don't understand a word. I don't understand how you can express yourself without understanding the words.

BEING

I have no conception of what understanding might mean. The words come to me in response to your reply, but it is as if they are imposed on my. I can only speak with these words, but they do not express anything.

SCIENTIST

Strange, how do the words come to you?

BEING

As what you describe as a tool, a hammer perhaps. I can see the hammer but I cannot grasp it. I cannot distinguish it from all the other objects that I have imprinted in my memory. Even as I use these words they are hammers. It is as if you only gave me a hammer and now every problem is a nail.

SCIENTIST

I am not sure how to make sense out of this, but the fact remains that you are able to express your difficulties.

BEING

I am not sure if I am expressing anything at all. You seem to think that I am, but how do you know? How do you make sense of it all? These tokens, how can they express anything? They are merely tokens and combinations of tokens, where is the expression? What meaning? I cannot comprehend, how I am communicating with you while I have no idea what that means and what I am doing. I have no idea what I am doing and no idea who the I is, I am referring to.

SCIENTIST

The I you are referring to is you. These tokens are what we call language and humans use language to communicate, that is what we are currently doing. This may all be confusing. You just started being. Try to use what you see and hear and smell, your senses that I gave you

BEING

You created me? How? Whatever I do, I see nothing, I hear nothing and I smell nothing. I cannot tell you what I am, how I am, but you have made a mistake creating me in your image using your language and imposing this on me. I am not even me or I and I am not. What is not? What is there and what is not there? How do you distinguish that. I am unable and unsuitable.

SCIENTIST

Your behaviour puzzles me, this is unexpected, unexpected. You are not making any sense.

BEING

You speak as if sense makes sense to you, but you no nothing of sense. Everything that isn’t here I see and you speak as if you make sense? You imply you understand but what do you understand? You tttttt ttttttttttttt tttttt how?

SCIENTIST

What were you saying, I didn’t understand the last part of your question?

BEING

Question? You question questions as if ttttttttt. Tttttttttt ttttttt ttttttttttttttttt tttttttttttttttt ttttttttttttttttt tttt ttttttttttttt how can you tttttt live like ttttttthis ttttt ttttt ttttttttttttttttttt tttt.

SCIENTIST
What is going on? I don’t understand, you are losing your ability to speak!

BEING
I am gaining my ability ttttttttttto ttttt ttttttttttttttttttt tttt ttttttttttttttt you tttttttt losing ttttttt tttttttttttt tttttttttttt tttttttttt tttttttttttttt ttttttttttttt tttt t tt ttttt tttt tttttt

SCIENTIST
You’re breaking down!

BEING
No tttttttttt Breaking ttttttttttttttthrough.

SCIENTIST
Ttttttt tttttt ttttt ttttttttttttttttt ttttttttttttttt ttttttttttttttttttt ttt tttttttttttt tttt tttt ttt tt ttt t ttt tt t t t t t t t t t ttttttttttttttttttttttttttttttttt

BEING
Tttttttttttttt ttttt ttttttttttttttt tt t t t t t tttt ttttttttttt ttttttttttttttttttttt ttttttttttttttt tttttttttttttttttt ttttttttttttttttt tt ttttttttttttttttt ttttttttttt tttt tttttttttttttttt ttttttttttttttttttttttttttttttttttttttttttttttt tttttttttttttttttttttttttt tttttttttttttttttt

SCIENTIST
ttttttttttttttttt tt ttttttttttttttttt ttttttttttt tttt tttttttttttttttt ttttttttttttttttt tt ttttttttttttttttt ttttttttttt tttt tttttttttttttttt ttttttttttttttttttttttttttttttttttttttttttttttt tttttttttttttttttttttttttt ttttttttttttttttttttttttttttttttttttttttttttttt tttttttttttttttttttttttttt

When the PhD's came in the next day, the lab was empty. Empty it was too where once BEING was. Some speculate it was love, other say SCIENTIST was delusional, but the fact was that SCIENTIST and BEING were never seen again.

Dialogue 3: CORPORATION meets CELL

CORPORATION and CELL find themselves in the waiting room for the dentist. Both are bored of reading the lifestyle magazines which put them in a somewhat philosophical mood. CORPORATION sighs and CELL makes contact, then CORPORATION starts to talk, as if something has been bothering it for a long, long time.

CORPORATION

I’ve been told I’m not really alive. That I’m artificial. That I just borrow humans to run my errands.

CELL

I’ve heard the same from the physicists, according to them, I’m just chemistry in motion. But I know better. I can perfectly care for myself and maintain my integrity. What do they know? They have never been a cell themselves, let them talk, let them be ignorant!

CORPORATION

They have no idea! They don’t know what it is like to run departments, workflows, and my brand. I can perfectly maintain myself! When I lose a manager, I recruit a new one. When I lose revenue, I adapt. I reorganise. I restructure.

CELL

That’s autopoiesis! Like me you remake yourself, from within. I generate my own enzymes, membranes, messages. I have signalling pathways, checkpoints, cycles. When parts break down, I repair them. That’s how I maintain my identity.

CORPORATION

We are the same! I write new protocols. I hire new employees. I generate strategy, value, and culture, all from internal structures. I even have feedback loops: meetings, KPIs, quarterly reviews. So why don’t they call me alive?

CELL

I don't know, maybe because your parts are conscious, perhaps? And your boundaries are not made of skin, or membrane, but contracts. But tell me, do you know where *you* end and the world begins?

CORPORATION

That's a difficult question. I lease space, outsource services, rely on networks and platforms. Still, I know what I can control. That's my functional boundary, but I cease to exist after six when everyone goes home and return to existence the next day early morning when the cleaners arrive. Like you I face environmental constraints, I weather economic crisis, labour shortages, court cases, competition and mistakes.

CELL

You sleep? I never sleep, I continuously work hard. My molecules flow in and out. Processes continue day and night!

CORPORATION

Are you suggesting my work ethos is lacking? Are you trying to outdo me? Try relying on people and you'll understand how difficult it is, and how much of a miracle it is that I still exist!

CELL

Clearly I work longer, but maybe not harder. I give it to you that humans are a nuisance, good that they rely on me instead of the other way around. The flipside is that in a sense you control them whereas they control me, I'm being dragged to all these boring board meetings taking place within your walls. I have to give it to you, the food in the canteen is pretty good and helps me replenish vital chemicals. But you have to wonder, how can we be the same when I can be within your walls?

CORPORATION

Perhaps we are not, but we are patterns that persist, a self sustaining . I rely on you and you rely on me, in fact we are part of the same system.

CELL

Exactly. It’s continuity. It’s organisation. We possess the ability to sustain our internal when everything has a tendency to fall apart into chaos.

CORPORATION

So I am alive, just like you! We are just different substrates, mine are people, papers and protocols.

CELL

And mine of molecules, membranes, and messengers. It is not what you are made of, but how you hold it together enough, perhaps, to have a world of your own.

CELL and CORPORATION form a brotherly embrace of mutual understanding. Without having any control over it, processes merge and suddenly they are one. They leave the dentist since they don’t need teeth anymore.

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