Preface

This work was produced to conclude the DOGstime Fine Art and Design Bachelor at the Gerrit Rietveld Academie. It cannot, however, be read independently from my final year in the Cognitive Neuroscience Master at Radboud University. These are not separate credentials appended to the same person, but two interacting epistemic forces that have shaped the development of this work.

The text emerged from an exploration of different modes of knowing. Scientific, sensual, and speculative epistemologies are not treated as metaphors for one another, but as operative logics with their own permissions and affordances. Rather than attempting to unify these logics, the work allows them to interact, interfere, and transform one another. Through these lenses, it reflects on identity, autonomy, and reality, while attempting to respect the multidimensionality of these subjects.

In the course of its development, the text outgrew its initial intention. In parallel with its own sentiment, concerning the autonomy of systems and the stabilization of identity through differentiation, it began to enact those processes itself. Internal knowledges formed. The work developed and upheld its own coherence and should be regarded not as a vehicle for my intention, but as an object with its own internal logic.

In keeping with this position, texts and works that have informed this project are included in the bibliography without direct annotation, to resist the implication that knowledge can be cleanly localized, isolated, or traced back to a single origin. The work assumes that understanding is always already entangled: distributed across systems, traditions, bodies, and practices. To insist on precise attribution within the text would undermine the grounds in which the work was intended to grow.

Acknowledgements

In contrast, I would like to explicitly acknowledge my honest appreciation for the teachers who guided me through this education. In particular Willem van Weelden, for the supplementation of stimulating texts, insights, and encouragement that allowed me to create something that challenged and excited me, and Geert Mul, for his inspiring display of curiosity and artistic intuition, which consistently brought me clarity and confidence when the artistic process became cloudy. I would also like to thank Rob van Lier and Arno Koning at the Donders Institute, whose tolerance for- and genuine enjoyment of the ambiguous and exploratory made it possible for me to reconcile science with the arts.

Lastly, I would like to thank my love, not only for his relentless support throughout my education, but for his tender and unconditional attention to the small and mundane, which inspires me daily to acknowledge the exciting complexity of the world at hand.

I want to express appreciation for the safety and freedom in which this work was produced. It allowed for abstraction, fantasy, and wondering. This is neither self-evident nor universally accessible. Acknowledging it is part of recognizing the conditions that made this work thinkable at all.

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The lab is situated in the cellar of an old concrete building. All warmth is immediately sucked up by the moist soil pressing against the walls. The enormous weight lies heavy on my eyes. A mechanical arm grows from the ceiling and buds into a surgical lamp. It stares down at the dissection table with slight concern.

In an attempt to rephrase this room as something other than a place buried deep in the dark ground, the walls have been furnished with off-white plaster which muffles any light cast upon it. In contrast to my oily skin, which reflects and shimmers nervously.

A specialized purification system has neutralized the air to such an extent that there is no room left to sweat. Only a faint trace of formaldehyde rises from the tissue in front of me.

On the table the specimen has turned a stale, greyish hue. After putting on my gloves I carefully peel back the aluminium packaging, revealing a new, unblemished scalpel. A vibrating tension between the specimen and my blade fills the hollow air. There is no sound or smell I can make that doesn't enhance the polarity between the sterilely preserved dead and the slow, seeping life coming from my pores.

Quietly something starts to whisper. A small fantasy slowly gains ground.

Proceeding forward along the axis of time, we are able to move freely in three spatial dimensions. Under the pull of their enormous gravitational energy, or weight, black holes distort the fabric of four-dimensional spacetime. The closer you drift toward them, the more violently the dimensions of space and time begin to warp.

At the edge of the black hole, there is a moment at which reality warps to such an extent, that the only possible path leads forward. Just like we cannot move freely through the time dimension. Before that threshold, the event horizon, there is still a possibility to escape getting sucked in. Approaching light of nearby stars can still curve and slip away.

Behind the horizon, the trajectory toward the inside is certain. All possible futures of a system that passes the event horizon lead towards the singularity, a point at which all the knowledge we have about space and time breaks down.

A fantasy of life suddenly spilling everywhere. Long-lost possibilities rekindling all at once at the exact moment I slice into the fallopian tube in front of me. A tiny spark of enormous cosmic significance starting a blazing fire, burning my awareness to a crisp in a roaring blizzard, leaving behind nothing but ash.

But when my scalpel eventually cuts through the tough tissue, no existential revelation greets me. Instead, I find that the inner walls are just as grey as the outer, though tinted with a faint, fleshy iridescence.

I had thought about this tissue as something familiar. I had, somehow, expected to recognize the limp flat tube, not much longer than my pinkie finger. Even though I knew that I had no memory of being there.

Black holes themselves cannot be seen directly because no light can escape them. They can be observed through their effects on nearby systems. The distortion of light that just barely escapes, reveals their presence. Accompanied by the vast dark spot that appears through the other inevitable fates.

I recognize this fallopian tube the way you see the traces of a black hole. Not by its direct form, but by the fates that became inevitable at the horizon. As a site on which all possibilities either swerved around, or got sucked inwards on a path whose only direction is forward towards the present. Sometimes I see myself as nothing but a negative imprint made up of all these fates that just barely escaped me.

There seems to be little left of the structure this tube once was. It must have been more alive back when I was conceived. The light would have been filtered through layers of fat and blood-soaked muscle. The walls lined with fine hairs that trembled in the current of the ovarian fluids.

I like to think that before conception, everything was still possible. Not just the personal taste in music or preference for jasmine rice. The possibility to move over an unthinkable axis, to sense something that now escapes my imagination. Or at least, the possibility to escape the sight of my mother's dead body dissected in front of me.

Systems do not exist in a platonic sense. We cannot think about them as stable entities with predefined borders. Defining a system is a deliberate act of declaring a coherent unit. This act defines the relevant borders of an entity, and assumes its own development over time. It is done with the purpose of studying its behaviours and patterns, but should be understood as a methodological tool, and not as a demarcation of truth.

A wavefunction holds all information about a system. All their probable locations at a given point of time, and their chances of ending up there. Until the wavefunction collapses into one definite point, all fates exist together. It is interaction with another system that forces this collapse, that forces a choice.

The reality of it all appears more deterministic than I'm comfortable with. The fine hairs that line the wall of the fallopian tube are an evolutionary detail that suggests that conception had been a long time in the making. At least, the logic leading up to it has been refined over endless years of adaption, a logic that is perfectly understood by all these tissues.

I prefer to think about my chances of existing through the logic of a waveform. It gives me the opportunity to sensibly imagine a time where my existence and non-existence were true together in superposition.

When two systems interact, their wavefunctions gain a relationship and entangle. Possibilities shift; some grow brighter, others fade then flicker and die. In isolation, a system can hold endless possible futures. It is precisely the moment when two systems observe each other, that entanglement and coherence occurs, resulting in a definite state for both of them. It is the interaction of these systems that defines them. Their fates become inseparable, no longer belonging to one or the other. Incredible amounts of entanglement, continuously redefining the systems they involve, give rise to the appearance of a stable reality.

But in cruelly honest reflection I have to conclude that my entanglement with preexisting conditions at the site of the fallopian tube was inseparable to such an extent that the likelihood of conception was disproportionately large, especially when compared to the probability of ceasing to exist. In hindsight, of course, we can say that it happened indisputably.

Still, before this moment, the waveform had yet to collapse. The possibility of everything was still a fact on some hypersurface of time, and perceiving the unperceivable remained a suggestion on the table until the tissues realised my existence. Sadly, the very act of conceiving laid an entire field of futures barren.

If we consider a spherical system, divided into 16 equal (sub)systems, from any point it can observe either itself, or the outside environment. In the same way that we can only see the earth becoming sky, but not the form, beginning or end of our planet.

It is the start of most lives, a mere sixteen cell clump that lies here resting on the soft grass of the fallopian tube, rolling slowly toward a place to nestle. The morula, named after a berry.

The morula has no axis yet, no fixed point of reference by which to relate to itself. That is to say, the berry rolling down a tiny meadow that resides in everyone's causal past, is only able to entangle with-in itself, or with the substances that surround it. It lacks the directional heterogeneity to interact with its own form. It cannot observe where it starts and stops. It has no knowledge of itself as an object, as something that can be observed.

In the days before a late period is noticed, there was a moment when my existence slowly came into being, but no one outside of a few tissues was aware of it. Sure, the endothelium had started to strengthen and prepare for the nestling, but the system that I'd later call my mother, my father, a stranger, a dog or myself had not spend a single thought on me yet.

Better yet, the homogenous blob that would with certainty develop into me, wasn't aware it had a form to project a thought on. This comforts me as I stand here now looking over all the time that has passed since, all the forces that had their go at me, and the body of the mother that birthed it. Later, other subjectivities would entangle

Within the uterus, the undifferentiated clump of cells begins to change shape influenced by its surroundings. The interactions between the uterus and the morula give rise to the very first axis of differentiation. It establishes a dimension of self to other.

Exposure to the external environment of the uterine lining triggers the apical outer layer to specialize, forming the trophectoderm. This outer layer is responsible for transporting fluids into the interior of the morula, shaping it into a hollow structure. Within this cavity, a unilateral mass emerges: the inner cell mass, which will go on to generate the embryo itself.

themselves with mine. They would offer modes of identification I had never imagined. By observing me, by naming me, they would interlace our fates. My way of knowing myself would become dependent on the gradients through which I was seen.

Strictly speaking our systems were never not entangled. We could even doubt whether, at this point of development, there is any practical or philosophical reason to regard us as multiple systems rather than one. Nevertheless, the fantasy of a time in which my existence would roll around silently, in a place where nobody had yet spent a conscious thought on me, is a truth that holds enough power to be comforting, if I can imagine it.

The first axis of identification has been brought into existence by the trophectoderm. It melts together with the uterine wall. In doing so, it doesn't only represent the gradient between self and other, but brings it into existence. Creating the first structured relationship between my body and the external maternal environment. Its fate is one of sacrifice: it will develop into the placenta. A structure that, in most cases, is thrown in the container outside of the hospital.

The inner cell mass is affected mechanically: the flattening on the side of the uterus, combined with increased tension as the opposite side rounds, produces gradients of stress. These gradients form micro-niches of differentiation. Within these niches, cells entangle with their neighbouring cells, signalling them to adopt similar identities, while simultaneously communicating with distant cells to inhibit that same identity.

Two gametes came together as one, from which sixteen homogenous cells emerged, every cell equipped to give rise to my heart, nails or blood. From my omnipotent beginning, a large portion of myself spread wide and enveloped the other like a white blood cell engulfs anything that threatens the body. But it did not intend to trap and digest me, instead it constructed both a physical border as well as a conceptual scaffold for my independence. Half of my mass had taken on the role as the sacrifice, to make sure any ambiguity or entanglement regarding our separate bodies could be cast aside, left in an alleyway where nurses smoke. Part of my flesh already knows the path to die off, this soothes me.

A stable axis emerges from these feedback loops, reinforcing identity gradients and amplifying their strength over time. The spatial positioning of cells along this axis entangles with the waveform of their potential fates. Along the temporal axis, these waveforms collapse into three distinct certainties: ectoderm, mesoderm, and endoderm. Still, the wavefunction retains the possibility that these cells could end up on a laboratory table, dissected and rearranged.

As the trophectoderm became the first layer to touch maternal tissue, it exercised its power to bring a separation into being. By interacting with the uterus, it declared the physiological and conceptual border between what would become "mother" and what would become "embryo." It is a choreography of invasion, penetration, and truce. Both tissues understand that they must control their entanglement into one another. They know better than to share blood.

This "knowing" is not metaphorical. It is perceptual, sensory, relational. A bio-logical epistemology that relies on movement. It is exactly the changes in the environment that the tissues attune themselves to in order to organize and create itself. A tensional logic: informed by the real-time distribution of forces. A way of perceiving that usually escapes reflective thought yet is entirely necessary for it. This form of knowledge lies at the basis of any other way of knowing we develop, it is the first wisdom we inherit.

In order to signal the cells to take on the appropriate identity, little epicentres spread different forces, morphogens, across a once-homogeneous mass, resulting in a multidimensional intersectional matrix of identity gradients. From this process, the three embryonic germ layers emerge. Stacked and interdependent on each other's differences for their own identity.

The ectoderm settles on the outside for now, but will eventually fold inward to form both the skin, the nervous system, the lenses of the eye. It becomes the layer that negotiates with the world. It dictates what passes through, what is sensed and what stays inaccessible, what is regarded as "self" or "other." In time, it will author the idea of the individual.

The mesoderm holds the center. It becomes the musculature and vasculature, the structures that actively resist entropy for as long as it is able to. It forms the structures that allow movement and circulation. It allows us to move forward in time, and keeps us from rotting away.

Considering the visceral entanglement between this fallopian tube and my own subjective existence, the white rubber gloves I wear begin to feel out of place, borderline disrespectful. The faint chemical whiffs of sterilized surfaces repress my impulses to tear the tubes apart and eat them, an act that feels more fitting than the way I'm handling them now. I lift them from the table with the tip of my scalpel. After tapping the rim of the yellow plastic waste bin a few times they slide off the blade and fall in.

Where the body meets the world most vulnerably, the endoderm lines the inner cavities with damp mucus. It becomes the lungs, gut, mouth and other intimate sites of exposure. It is the layer tasked with the exchanges between us and the environment that we need, for better or worse. It has the pleasure to do so usually unnoticed, and without intermingling of outside subjectivities.

The thickness of the uterine walls has always amazed me. Despite this, in this instance the air inside the theatre of my thoughts does not allow the uterus in front of me to exist as what it truly is: an immensely flexible and powerful organ.

Instead of the rhythmically pulsing muscular structure I see a steak that has been slowly cooked for too long in a cold pan slick with margarine, until the flesh turned lifelessly grey and tough.

I've recently earned the papers that allow me to work here. I can recall most of the histology and the activation patterns, pathologies and protocols. I have learned to keep on my gloves and that wearing sandals is considered disrespectful to the deceased. We call the animals sacrifices instead. I usually wear a facemask to keep my breath to myself.

The tissues are kept in the right concentrations of formaldehyde, but we rinse them off before the dissection to prevent us from breathing in the fumes. The moisture that's left, is dripping from the uterus. It is cold, but the powdered latex gloves prevent me from feeling any wetness.

I had come to know the gushing of the uterus differently. The pulsing and contracting muscles creating flows of warm, sticky blood smelling slightly of ammonia. It was a smell that had disgusted me as a child sitting on my mother's lap which I would only come to recognize years later and which I would never seem to detest any less. The drops on my hand lack any particularly enticing colour or viscosity.

Amid standardized protocols and rehearsed movements, I find myself coerced to stay in the conceptual space that this lab requires of me. To think of my own form in the language of histology. Tissues obeying mechanical laws, structures with operational functions.

The three germ layers turn a shapeless cluster into something that has orientation, purpose, and separate fates. The embryo built itself through gradients and tensions. Each layer depended on both its own identity and the inhibitory effect of another identity to uphold the autopoietic processes. Their choices are informed by genetic inheritance, location and momentum. They represent the earliest moments where local entanglements narrow possibilities into a definite form.

A field of potential futures collapses into the first certainties that will eventually become a body. With scaffolds of morphogenetic gradients holding the identity matrix upright, the once-homogeneous clump begins to differentiate. The identity matrix has emerged through local feedback, intercellular entanglement, and interactions with the surrounding environment. Shape emerges, and it allows for a new type of awareness: a limb brushing the surface that will become the chest, the chest offering resistance.

Between the homogeneity of early cellular life and the first hints of recognizable anatomy, to the moment a primitive sense of self began to flicker, there is still room to believe I developed in isolation. At first, differentiation had been entirely internal, intimate, private. I could imagine myself as something unnoticed, a coherence known only to my own membranes.

That changed of course on one day in particular. Not because my entanglement with the environment began only then, but because, until that point, I could pretend it hadn't already been happening. Up until here, there was a sense of self privacy. The accessible technologies of me knowing myself were simply sensual: what I could sense is me; what lay beyond that sensory horizon belonged to the outside. The forces at play were merely sensual. Dimmed lights and vibrations.

Two sensations meet and entangle. They are inseparable. The embryo, for the first time, has a motive to sense itself as a system. The congruency of sensation forms a habit: a self emerges as it familiarizes with the patterns of congruent feedback.

The embryo does not yet distinguish self from other, but through these internal interactions, it begins to practice the act of demarcation. Just as the trophectoderm once declared a border with maternal tissue, these primitive limb-chest encounters draw the first boundaries between internal and external ecologies. The system is learning its own geometry, its own epistemology.

The embryo's early coherence is the first act of subjectivity: an enacted self as a sensory habit rather than identification, a system perceiving its own form, entangled with the surrounding world yet distinguishable.

Identification, in any other sense, was out of reach. Now, when sensemaking happens through language, through lines, syntax, accumulated truths, the older mode of knowing, the purely sensory coherence of a forming system, appears inaccessible.

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I wonder if we were both prepared for the implications of my birth.

In the interweaving of perspectives, relations, truths, a person can be made up. That is how you became a "mother." The moment of birth assigned you to that category, drawing you into its expectations and rehearsed normalities. In a sense I birthed you, my mother, too. And there it was, the gradient of a new identity that was not at all private, but existed between you and me, mother and child. Within moments I had gained two new dimensions of identity when the doctor made me a daughter.

I wonder what would have happened if we were sacrifices instead, unreachable by the usual subjectivities that transform one person into another. I imagine our selves to be purely sensual, understood in a way I can't reach right now. You would enact mother; I would enact child, because that was simply the relation the ecology dictated viable between us.

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I don't know how to write myself out of this lab

I put you back in the water and slide the tray into the fridge. The scalpel goes into the metal basin, and I fold my gloves into each other the way I always do, a small pink graininess trapped inside the latex, neatly folded into a sealed shape. I toss it in the bin where it lands with a soft thud.
I raise my hands to shoulder height, open the tap with the outside of my elbow, and press the soap dispenser with my palm three times. The foam smells friendly. I lather my palms, my forearms, the rims beneath my nails.
The building is all post-war concrete: dense walls, matte and heavy, swallowing every sound except the thin rush of the tap. No footsteps. No doors. No birds or rain. Just water running down my forearms, over my hands, my arms, my wrists, my hands.

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I don't know how to write myself out of this lab

I put the severed tissues in the yellow plastic bags. I catch the bottom of the left glove with my right hand and pull it inside out. The talc has dried the skin of my fingers. I hook my index finger under the rim of the second glove and fold both together into a compact bundle. My gaze stays locked onto the choreography that my hands are performing. I twist the top of the waste bag as if I'm flirtatiously twisting my hair and bring it into a knot. I carry it to the container. It is devoid of the usual muddy splatters and sandy residue on the wheels and when I lift the clean lid, there is no smell. There is no echoing of the alleyway with distorting voices. Only the swinging motion of the bag making its way into the container and the distinct thud that resembles "throwing something away in a container".
I wash my clean hands like I'm supposed to with big open eyes. I focus on breathing without expanding my chest, holding a tight posture in my throat and ribcage.

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I don't know how to write myself out of this lab

The flesh goes back into the yellow waste bin on the steel table. I've come to the end of my

dissection and close the labbook, in which I've described the structures and noted any abnormalities. I remove my gloves and mask and pocket them in my lab coat. Now I feel the wetness on my right sleeve from the moisture that had dripped from the specimen, resting against my wrist.

I place my index finger lightly on the cut edge of the open uterus.

In circles my finger slides over the cooled rubbery surface.

In between my bare thumb and finger I feel its wetness as I rub them together. Now all my fingers are exploring the grooves occasionally digging my nails into the flesh.

My hands move along the cut I've made, I bring my face closer and trace the slit with my nose, my tongue. I press my red-hot cheek in the tough tissue and I feel a bead of fluid trail the side of my lips and trickle into my mouth.

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I don't know how to write myself out of this lab

The manure that's left on the hooves smells earthy against the backdrop of fresh blood and sterilized tools I close my lab book. The body hangs upside down from thick chains that clink sharply when it sways. The inside of the ribs lie exposed, the porous inside of the bones catch my gloves as I run my hands over them. Salty tears slip inside my mouth and the taste spreads over my tongue. I remember lying on your back, legs draped along the width of your hips, arms spread wide open, my body resting on the slow side-to-side rhythm of your movement. Your short grassy hide would sooth me.
At night, I pressed my bare skin against you to steal warmth, your breath rose in great, fogging volumes. I wanted to feel it, the breath. I tried to press my body as close to you as possible. Under the hypnosis of your weight I feel the futility of the fluttering voice inside my head. The ground beneath me drinks the heat from my feet faster than my restless heart can send it. My toes turn a dim, aching blue. There is no way for my body to be here, but there is no way for me to leave.

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Reality appears stable through repetition, through reconstruction and habit of coherence. But fantasy often vanishes without a trace.

At the site of its conception a fantasy knows nothing of itself. It carries no contour, no orientation, no rules to which to abide and can be shielded from outside subjectivities that are there to observe it. As an object existing in a conceptual dimension, it has the possibilities to extend to a physical realm, if given the opportunity. The object enters into its own form of morphogenesis.

Through a series of events, misunderstandings and decisions, its internal gradients sharpen, the object starts to occupy a niche of its own, in or outside our four-dimensional spacetime. The thing starts to recognise itself from the inside. A slight tilt in language becomes a hill. An accidental phrasing becomes a valley. A consonant becomes a spine. The difference between the fantasy and its realisation is often spoken of as error, deviation, failure of technique by the one who aided it into physical existence. But that assumes the fantasy was always to bow to the rules of another's intentions. Intention can be a starting point and a direction, but one should be careful not to let it become a dictator.

What I had thought of as mistakes are nothing more than the earliest signs of its autonomy: places where its inner logic begins to run ahead of me. At some point the work stops responding to my intention and begins responding only to itself. It enters the autopoietic phase where the object maintains its own boundaries, reinforces its own gradients, solves its own tensions, if you let it. Momentum accumulates. The system closes around itself just enough to persist, but stays open enough to draw from me what it still needs.

The fantasy is not trying to get away from me, it was never meant to stay within my control. It simply becomes the only configuration in the system that can persist, and my role as an author, a mother becomes progressively less viable. Instead of forcing my way back into authorship by constantly reclaiming the object, or attempting to remain in power by assuming the differentiation is due to a hidden process that went on inside me, I can accept its autonomy and independence.

In return, instead of the illusion of an expressed identity, a shadow of an artistic intention. The object grows its own identity, and allows us to relate on new axes together. It is both an entity and epicentre of becoming, new points of departure for further exploration. The opportunity rises to use the work as a scaffold of new identifications, ones I had never imagined.
The object has decided what it is, and it is my job to find the niche in that ecology left for me, a new landscape that can be explored. I slide into the shadow of the object I realised. It has outgrown me in a foreign territory. It is my job and my pleasure as an artist to explore the surface and find my relevance in this landscape so both the subject and I can live in sovereignty in the landscapes we occupy. If I deny its internal rules, its subjectivity, I risk becoming an excess in its territory, and it in mine.

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Key words

Entanglement, Intra-action.
Artistic intention. Embodied cognition.
Making a person up, Normativity.
Autopoiesis, Self-maintaining systems.
Consciousness and physics.
Morphogenesis.
Subjectivity, Phenomenal world