There is a closed door at the end of the corridor

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Contents

preface

The title for this thesis comes from an early memory. Without an abundance of organized memories, I still maintain a clear mental image of this corridor. It belongs to a first period of separation from reality, a generator of narratives intended to build sense. Building backwards the parameters for a Markov chain to generate the time sequence that predicts and explains the present.

The title sets up a journey of exploration, with a hidden aspect, and the intention of uncovering it. The story (if there is any) revolves around what is

behind the door, why it is closed, and what it means as a memory.

The corridor leading to the closed door is a path of self-discovery and confrontation of personal fears. It implies a setting that is limiting and confined, adding to an atmosphere of tension lived in Uruguay until the restoration of democracy in 1985. The closed door is the focal point of such tension. It represents a barrier between protection and isolation, between reality and imagination, history and fiction.

In this context, I explore the themes of curiosity, the fear of the unknown, and a tendency to be constantly drawn toward the off-limits. What is the the dark if not a manifestation of the unknown? It's a driving force for widening the senses and understanding the environment.

This book is the reflection of my current ongoing introspection, an exploration of the negative space of the memory, and an attempt to confront possible pasts in possible realities. As explored by Roland

Barthes in his essay "The death of the author"[Barthes, 1967], meaning in this thesis arises from intertextual relationships between chapters and ideas.

This book is written in LaTeX (tug.org) and managed as code. The written code can be found here: https://github.com/n2048-creative-technology/thesis

introduction

```
w = 'w = {}{}{}; print(w.format(chr(39), w, chr(39)))';
print(w.format(chr(39), w, chr(39)))
```

There is stubbornness in the craft of casting materials through mold making, despite how rewarding it can be. Its whole process makes it hard to allow for later changes. The mold is not the memory of a

piece, nor its essence, but it will define its final shape. Is the environment in which we grow and develop ourselves such a kind of mold?

I remember only fragments about my own past, but I've spent the last few years making stronger efforts to understand the ways in which I perceive my own "umwelt", why I react, and what I react to. What shaped this current way of thinking? Without an objective memory of my own history, creating versions of this multidimensional mold in which I've cast my way of perceiving has become an iterative process of re-creation.

% recursive alterations allow for a progressive reshaping of perception.

The small snippet of code at the start of this page is called a Quine. It is a program that produces its own source code as output, exemplifying a form of computational self-reference.

% The quine and implies a connection between software, computer models and a human tendency for self-replicating based on our current understanding of reality.

Gödel's incompleteness theorem proves that any formal system capable of expressing arithmetic contains statements that refer to themselves cannot be proven true or false within the system. It shows that a self-referential system cannot demonstrate its own consistency.

Perhaps the notion of a quine, or of a self-referential system, relates to the idea of creating our own model of the world, and the difficulty of interpreting the reality as something different than the one that is predefined in our brains.

memory

The military dictatorship in Uruguay that started in 1973 finally came to its end in 1985. By that time, I was 5 and carefully kept away from all the struggles and terrors that happened during that period. Even though I have no personal memories of

the dictatorship itself, the societal impacts of the regime had a significant influence. I don't know why I remember that corridor, or why that door was closed every evening. What's certain is that it divided the apartment in two separate realities. On mine, there's no sound. I can't avoid creating evolving narratives that reflect the fluidity of memory itself.

Many families of the children born around the 1980s were deeply affected by state repression. Parents who were political dissidents, union activists, or simply suspected of opposing the regime often faced imprisonment, torture, or exile. If not the near family, friends of any close connection to this situations would affect the dynamics of tension and increased anxiety. Political discusions where often avoided for protection, creating an atmosphere of silence and fear. Children of that era absorbed the lingering trauma of parents who had suffered under the dictatorship. This trauma could manifest in

overprotectiveness, anxiety, or suppressed anger in family dynamics.

The concept of "speculative remembering", where memories blur and predictions merge with present experiences plays a role in creating an "all-knowing" archive that adapts over time [Sonal Dutt, 2024]. In their 2024 article "The speculative memory: contextualising memory in speculative fiction" the authors emphasize how memory underpins personal identity by shaping narratives of self, as well as the ways in which traumatic memories disrupt perceptions of reality and identity.

Jean-Luc Godard's film "Here and Elsewhere" (Ici et Ailleurs, 1976) touches the themes of representation and history and reflects on the the political memory of images and the ways in which a non-linear and fragmented memory can be reassembled in different ways based on the context. The film questions the ethics of remembering through images, questioning the reduced representation of a true past.

This thesis is too an invitation to become more critical about our own processes of remembering, and how memory is shaped by media and context. It's important to note how personal and collective histories are remembered, forgotten and rewritten over time.

Memory behaves sometimes as an interactive installation, capable of recalling previous viewer interactions, layering them as part of the piece, altering and separating it from its original self.

In Camera Lucida, Roland Barthes distinguishes between the studium (the cultural, intellectual response to an image) and the punctum (its personal, emotional impact). He reflects on the role of the viewer in the construction of meaning [Barthes, 1993]. The memory of a closed door, the need for bridging the unknown with rational narratives, the context of my own neurodivergent experience. (Constructing meaning)

curiosity

commitment to struggle

As most people, I place some of my earliest memories in my childhood. It was a time where differences were particularly notorious, misunderstood, and punished. The dictatorship heavily controlled education to align with its ideology, promoting nationalism and suppressing critical thinking. As most children born in this period, I received an education shaped by censorship and limited intellectual freedom. Teachers and curricula avoided topics related to human rights, democracy, or the abuse of the regime.

I grew up in a society where trust in the government and institutions was deeply eroded. This mistrust certainly influenced my attitude toward authority and civic participation. In a context where discipline and normativity appeared as main values, I learned to defend my position on the right side of this equations:

curiosity = disobedience

curiosity = insubordination

curiosity = commitment to struggle

% Deconstructing the status quo against an institutionalized system of meaning making.

"All men by nature desire to know". This is the opening line of Aristotle's Metaphysics, highlighting curiosity as a fundamental aspect of human nature. However, I experienced that curiosity, as a "distracted learning style", is often rejected as a vicious form, as opposed to a virtuous one. Aristotle had an inclination to recommend being studious about one thing (monopragmosyne). Plato argued before that curious people suffer from an imbalance in the 3 parts of their soul: reason, spirit and appetite. [Arjun Shankar, 2020]

It became well established that being curious implies taking risks, failing, making mistakes, "die at least a few times" [Foucault, 1980]. Foucault reflects on the transformative power of curiosity, suggesting that it involves letting go of established ways of thinking and being open to change, which he metaphorically describes as a form of \dying."

Curiosity, in this frame, presents an invitation to explore boundaries and question all norms. The digital and other forms of artwork inspired by this can evolve in forms that resist being fully understood, requiring viewers to engage multiple times or from different perspectives to gain insight, embodying a commitment to struggle.

The exploration of unconventional media as a way to disrupt the status quo is a recurring theme in media theory. Several theories and philosophical perspectives address this phenomenon. McLuhan's "Understanding Media" [McLuhan, 1964], is a good example of this (The medium is the message). Artists using unconventional media are not just creating content, but they are defining new ways to experience and understand such content.

Deleuze and Guatari refer to the idea of deterritorialization, as the process of breaking away from established structures. Their concept of "rhizome"

emphasizes non-linear, decentralized forms of thought and creation [Gilles Deleuz, 1980].

Curiosity drives us to break away from familiar territories, whether intellectual, cultural, or artistic. It encourages us to explore "lines of flight", creating opportunities for new knowledge and experiences. Non-linear, interconnected ways of thinking and being, as opposed to hierarchical structures, allow for an open-ended exploration, where the process is as valuable as the destination.

neurodivergent

The holographic principle suggests that information about a volume of space can be encoded on its boundary, leading to a perspective in which spacetime within that volume, including time, is a projection. Thus, time might not exist as a fundamental property but instead as a result of interactions in

this deeper, more fundamental layer of reality.

The idea of perception as a controlled hallucination suggests that what we see, know, and understand is no more than the most likely prediction made by our trained brains. A neural network in which an internal conflict arises between an error signal, indicating that what's in front of us does not match our expectations, and a massively skewed training dataset of memories, insisting that what we know from past experiences is the correct interpretation.

Neurodivergence is now better known and understood, but as a statistical minority, it is not well represented in the dataset of human interactions. It is only logical that it would be difficult to comprehend from the perspective of a neurotypical brain. The issue of skewed datasets is commonly addressed

in the context of AI and machine learning. However, while we can design datasets to balance the represented populations, a real brain learns from real interactions, and the statistics remain the same regardless of awareness.

Analytical acceptance, algorithmic forgiveness.

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% Intuition and "the big picture"
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For some neurodivergent individuals, time feels less sequential and more layered or interconnected, as if different dimensions of experience coexist and interact simultaneously. Much like a hologram contains a vast amount of information compressed into a simpler lower-dimensional form, neurodivergent cognition could compress complex timelines and experiences into non-linear formats, creating unique interpretations and associations across time. Neurodivergent cognition might operate by projecting internal mental states or processing vast amounts of sensory data into condensed forms like patterns, metaphors, or unique associations.

The holographic principle challenges the classical idea of locality, suggesting that information can have non-local representations. As a neurodivergent individual, cause-and-effect thinking strategies don't come naturally, favoring lateral connections and holistic insights that reflect non-locality in thought processes. Often a heightened awareness of details, turns into an intuitive grasp of the whole system encoded in parts, as kind of cognitive holography. Most attempts to uncompress this intuition often come across as confusing misunderstandings, since even language is made to reflect linear interpretations of reality through sequential narratives.

"Anything in the territory that resists attempts at modeling thus becomes, in the world of digital models, noise in the system" [Benasayag, 2019]. Benasayag addresses the issue of algorithmic bias, where neural networks may perpetuate existing social prejudices and inequalities. He underscores the need for critical

examination of the data and methodologies used in AI to prevent reinforcing discriminatory practices.

% Exist within the noise

RANSAC (RANdom SAmple Consensus) is an iterative algorithm used for estimating the parameters of a mathematical model from a dataset that contains both inliers (data points that fit the model) and outliers (data points that do not fit the model). It is particularly robust and capable of rejecting outliers and is widely used in applications in the presence of noise. We must define new non-probabilistic approaches to social norms and rules that includes outliers, or avoid the models and rules altogether, validating the richness of the full spectrum, avoiding the expectations of coherence to the known set.

% in relation to my installation work, and to this text:

I'm interested in multi-sensory installations, layered audio-visual compositions, or interactive works that allow viewers to experience various "time slices" of the piece, where events and emotions compress into a

single moment. Experiences of layered and non-linear time are certainly an inspiration to an approach that defies linear storytelling or straightforward interaction.

symbiotic contamination

failures with a serial number

In the current context of a neurotypical majority, forging the options and leading to a society that values selection over creativity, the creation of our own tools seems to be an appropriate choice to true creativity. Such practices allow to dig into deeper understanding of the final outcomes, and explore the equally rich properties of every step of a process.

perception

Loud drones, low frequency soothing sounds
Whispers louder than the loudest screams
A new detail that changed my day
The repetitive, unsettling touch
Tight knots, tight hugs
Invasive gazes that were not supposed to last
The faces, the mirrors, the shadows
Acoustics as the language of every surface

Self-Organized Criticality describes how certain systems naturally evolve toward a critical, highly sensitive state where small changes can lead to large-scale effects. This state of criticality is "self-organized" because the system doesn't require external tuning to reach this point. It naturally arranges itself into this state through its own dynamics. These models help describe the experience of sensory amplification, where the world can be perceived in vivid detail or with overwhelming intensity. [Adami, 1993]

For many, perception unfolds in ways that might differ from conventional understandings. It is often nonlinear and multisensorial, difficult to articulate but deeply felt. The context and balances between anxiety and relaxation shape the sensitivity to sounds and textures. Patterns and structures in an otherwise chaotic environment can be a comforting experience. Time feels non-linear, with moments stretching or

compressing, influencing how art and events are experienced.

Immersive or interactive art forms, such as installation art, allow for the direct engagement of multiple senses, mirroring how individuals process the world, translating complex inner experiences into tangible forms. Sensory overload or hyperfocus can transform the relationship between body and world, defining new ways to conceptualize subjectivity.

From a physics standpoint, perception can be understood as a signal processing system, where sensory organs act as transducers, converting energy from one form to another. Interacting photons, wavelengths of a restricted spectrum, pressure variations converted into electrical signals, molecules binding and interacting with receptors, mechanical interactions of skin cells, electromagnetic repulsion, preventing matter from collapsing into itself.

Physics reveals that human perception captures only a small fraction of reality. Neutrinos, dark

matter, infrared and ultraviolet light, gravitational waves, and radio signals are imperceptible to us, but part of this reality can be detected with specialized instruments. Can the use of such instruments alter our perception? Is it possible to amplify and alter the ways we relate to the environment by increasing the reach of our perception?

Technology expands our Umwelt by allowing us to access phenomena that are otherwise absent from our perceptual sphere. From infrared imaging to quantum computers, from microscopes to large language models, technology acts as an extension of our perceptual apparatus, expanding our boundaries into previously inaccessible domains.

According to the philosophical approach of post-phenomenology, technology is not neutral. It transforms the nature of perception and experience. Instruments shape what and how we perceive, influencing the object of perception as well as the perceiver.

Our brain is remarkably adaptable and capable of incorporating non-biological sensors into its perceptual framework. This phenomenon is supported by research in neuroscience, cognitive science, and philosophy, particularly in the domains of neuroplasticity, sensory substitution, and embodied cognition. The inclusion of non-biological sensors introduces entirely new dimensions to human perception, effectively expanding the "self."

The extended mind hypothesis, proposed by the philosophers Andy Clark and David Chalmers, argues that tools and technologies can become integral parts of our cognitive processes. Non-biological sensors present in wearable technologies provide continuous streams of data, which the brain learns to process and integrate. This suggests that perception is not confined to the brain and body but extends into the tools we use, fundamentally altering our experience.

If perception relies on external tools, the distinction between "human" and "machine" becomes less

clear, leading to a hybridized (cyborg) perception that transcends biology. What counts as "real" if our tools mediate all new experiences? Can the brain adapt to perceive entirely artificial data streams, such as simulations or virtual realities, as seamlessly as it does natural environments?

An overwhelming visual stimulation can sometimes be managed via a calming sound or a specific type of pressure. Since the world is evolving into larger and larger amounts of information and stimuli, it's interesting to wonder if the inclusion of new types of non-biological sensors in our perception will provoke further overstimulation or present opportunities for relaxation based on new calming sensations. Perhaps soon, focusing on calming fluctuations of cosmic microwave background radiation will provide a mental shelter from saturated visual and acoustic inputs in our present environment.

hypervigilance

Stochastic resonance is a phenomenon in which a signal that is normally too weak to be detected by a sensor can be boosted by adding white noise

Whenever I take a walk, I don't just stroll from A to B. I'm constantly monitoring every obstacle, every moving object and person around, everything that can be moved by the wind or shifted by the weight of raindrops. I calculate the next position of every object, adjusting my trajectory to account for the space needed for myself and my companion, when there's one by my side. I walk, and I am in the near future as much as I am in the present|more than most people I've discussed this with.

I observe what everyone else sees, and I analyze the changes in their motion patterns and facial expressions, curiously attempting to predict their intentions, possible thoughts, and probable actions. I play out their actions in my mind like a game of chess. I'm here and now, yet I am also everywhere before and after. I'm everyone in my own form, simultaneously avoiding and seeking connection.

The brain's "signal detector" operating in an overly sensitive state, amplifies both real and

perceived threats. Constant monitoring, responsiveness, attention to subtle changes, amplified details that go often unnoticed.

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% How could I share a hyper-experience?
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In their article, Wiesenfeld and Moss emphasizes the counterintuitive role of noise in enhancing signal detection and transmission in nonlinear systems [Kurt Wiesenfeld, 1995]. Individuals with ADHD and autism often show heightened response to sensory input which could be seen as a form of "enhanced signal detection". By framing hypervigilance as a system response to noise, this model emphasizes the potential for both challenges and strengths in neurodivergent sensory processing.

Laplace's demon

$$\frac{d\mathbf{x}}{dt} = f(\mathbf{x}, t)$$

Pierre-Simon de Laplace conceived a thought experiment involving a hypothetical intelligent being with knowledge of the current state of everything and the capacity to process all that information. Under the hypothesis of a deterministic universe, such a

being would know both the past and the future, thereby eliminating the perception of time, since everything that exists now would also reveal what was and what will be.

In a much more limited context of both space and time, the constant monitoring of microscopic changes and patterns places me in a position to predict possible futures and assume causality from potential pasts. I live without a normal perception of time, burdened by the overwhelming anxiety of processing all possible realities with the same intensity as the "here and now." Predicting an experience and experiencing the predictions. Presuming a cause for every effect.

Sense belongs to the realm of Aion, not Chronos. [Deleuze, 1969]

In the context of the digital arts, the idea of predictability often manifests itself in a form that simulates control while embedding elements of randomness and chaos, allowing the viewer to experience the tension between determinism and uncertainty.

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% science fiction
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wave function collapse

$$a \propto E$$

Anxiety is proportional to the entropy of a situation.

Entropy, quantum mechanics and puzzles

The algorithmic way to solve a sudoku puzzle is to find the cells that present minimum entropy. This means, find the cells where the number of possible options is smaller. When a possible solution is presented to this cell, the cells around them will in turn decrease their entropy.

According to quantum mechanics, the wave function represents the probabilities of different coexisting realities, that is, until a measurement is made. At the moment of measurement, chance is replaced by actuality. The wave function collapses, and reality is set.

Every unknown in life, every decision still not made, creates a multitude of possibilities, a distribution of parallel potential realities, simultaneously existing in a high entropy state.

Making a decision, or a discovery, will collapse all possibilities into one, reducing entropy and in

consequence reducing the associated anxiety for the unknown.

% Observing as a Constructive Act

Observation is never passive. When we observe, we frame, filter, and interpret phenomena through the lens of our preconceptions, cultural codes, and technological mediations. McLuhan suggested, in the context of media ecology, that what we observe is shaped by the tools and contexts of observation.

The act of looking is an active engagement. The technologies used for observation, such as cameras, screens or algorithms, affect the observed object by framing and introducing layers of abstraction, transforming the observer into both a participant and a subject of the observation. Media plays an important role, as it pre-selects and amplifies certain aspects of reality and ignores others, conditioning our gaze.

Michel Fucault discusses how, in relation to the panopticon, observation also defines a relationship between the observer and the observed. The awareness

of being watched, creates self-regulation and transforms behavior. % surveillance [Foucault, 1975]

Engaging with a moment

Observing regardless of consent

Collapsing, creating reality

emulation

Human beings are creatures who practice and train, creatures who are free to reach beyond themselves in the process of becoming.

Peter Sloterdijk [Sloterdijk, 2014]

I spent years understanding what this means to me. I learned about the mask I put on unknowingly Ƶ014 to fit in, to attract less attention, to avoid conflicts and misunderstandings. I learned the consequences of wearing this mask.

Living often feels like running a sophisticated emulation program on a computer. On the surface, the emulated environment mimics a typical operating system, seamlessly performing tasks and following expected protocols. However, behind this facade of normality, a complex system is working overtime to replicate behaviors and responses that come naturally to others. Constantly striving to appear organized, focused, and in control, while battling distraction, impulsivity, and a torrent of unfiltered thoughts.

Just as an emulated system can lag or crash when overloaded, I often become overwhelmed and fatigued by the continuous effort to conform to neurotypical standards. The emulation requires immense

mental resources, leading to burnout and a sense of disconnection from my authentic self.

This section questions the boundaries between imitation and authenticity. Just as in an imperfectly emulated operating system, deeper layers can only be revealed by interaction. While imitation seeks to replicate a style or a pattern, emulation aims to recreate functionality based on different technical resources.

In his essay *The Work of Art in the Age of Mechanical Reproduction*, Walter Benjamin describes the uniqueness of a piece as its *aura*, and argues that mechanical reproduction diminishes the aura of an original work of art, affecting its authenticity [Benjamin, 1935]. The rise of digital art and AI technologies further complicates the discussion on authenticity. In the digital realm, the ease of replication and distribution encourages a reevaluation of authenticity. The available tools contradict the

traditional criteria for what constitutes an original piece, and the notion of what adds value.

The writing of this book has been assisted by a state-of-the-art large language model (LLM) that seeks to emulate human responses. LLMs are powerful examples of emulation in action, imitating human-like language production while simultaneously challenging traditional notions of originality and authenticity.

Large language models are trained on gigantic datasets of text to emulate human language. They predict and generate text that mimics human communication, often indistinguishable from content created by people. LLMs emulate linguistic styles, cultural idioms, and intellectual processes by identifying patterns in existing data. This parallels how an emulator replicates the functionality of hardware or software.

LLMs as a tool gave rise to *prompt engineering*. With clear directions, it is possible to establish a form of collaboration between humans and AI,

potentially enhancing (and enhanced by) pre-existing research tools (internet, books, lectures, other people...). Through the creative writing of prompts as the conceptual foundation, the user curates the AI's emulation capabilities.

The interaction between user and model creates a feedback loop, where the human evaluates, adjusts, and improves the AI's outputs, validating them through external resources and utilizing preexisting knowledge to focus the attention of the generated text.

If authenticity lies in the human origin of a work, AI content lacks it. However, if authenticity is tied to the experience of the audience, LLMs can produce texts that feel authentic, even if not created by a human. AI operates by recombining existing data in patterns that make sense from a linguistic perspective rather than originating ideas independently. I would argue that human brains do the exact same thing. Most innovations, whether in art, science, or technology, are recombinations or extensions of existing ideas.

The difference resides in the fact that when we, ̃2014 biological algorithms ̃2014 recombine ideas, we do so with intent and purpose, often driven by emotions, curiosity, or specific goals, as well as the ability to reflect on our thought processes. This intentionality adds layers of meaning that is (currently) not present in any piece of software.

While examining the interplay between imitation, authenticity, and emulation, we find parallels not only in art and technology but also in human behavior. One example is the phenomenon of *masking* in neurodivergent individuals, where individuals consciously or unconsciously emulate neurotypical behavior to navigate social environments. This behavioral emulation aligns conceptually with the workings of LLMs and raises questions about authenticity in human interaction.

Masking involves the effortful emulation of socially expected behaviors, often by suppressing or adapting natural tendencies. This is common in individuals with autism, ADHD, or other neurodivergent conditions

as they adapt to environments shaped by neurotypical norms. It can be understood as a form of emulation, the execution of a learned social script to fit into expected patterns.

Like LLMs, I often rely on a database of observed social behaviors, recombining them to produce contextually appropriate responses, often without a real understanding of a deeper meaning and without feeling an intrinsic connection to the behavior.

Am I authentic?

decay

$$n \rightarrow p^{+} + e^{-} + \bar{\nu}_{e}$$

When an atom has an unbalanced number of protons and neutrons in its nucleus, it becomes unstable. When an element is unstable, it decays. If there are additional neutrons, making the atom heavier and disrupting the internal nuclear forces, a neutron

can transform into a proton by emitting an electron and an antineutrino. This type of decay is known as beta-minus decay.

Just like a carbon-14 atom, with an extra pair of neutrons, we carry the weight of indecision, of uncertainty, of forces that throw our lives out of balance. And just like that carbon atom, we decay, emitting electrons and antineutrinos|massless and imperceptible particles we leave behind, transforming. And just like the resulting nitrogen-14, older and stable, we find rest.

In this chapter I explore transformation and impermanence. Glitches and dynamic pieces capable of degrading over time to evolve into new forms. I pay attention to pieces that simulate the decay of (digital) memory and the breakdown of stability.

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