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Doctoral School

**Tenderness of Art
—analyses and creation
of Interactive Environments
based on Immersion**

Doctoral thesis in the field of arts in the discipline of fine arts and art conservation

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Table of Contents

Introduction	4
I. Immersive Environments	9
1. Structure of the Environment	10
_Space as Relations	11
_Case Study: <i>Uncensored Lilac</i> Environment as a Web of Relations	12
_Sprouts Installations as Micro-world of Relations	13
_Place	14
_Case Study: <i>Vortices</i> The Sense of Time	16
_Nature	16
_Sprouts Video <i>INSIDES</i>	18
_The Time of Places	19
_Case Study <i>Passage</i> The Sense of Time	20
2. The Figure of the Viewer	21
_Wholeness as Body–Mind	23
_Case Study Insiderness	26
_Sprouts Exhibition <i>Sensitive Bodies</i>	27
3. Dialogue	29
_The Image of the Environment	30
_Space as a Determinant of Action	33
_Case Study: <i>Passage</i> —Further Analysis	34
_Case Study: <i>Uncensored Lilac</i> —Further Analysis	35
_Tendrils and the Porous Body	36
_Sprouts The Engaged Body	36
_Sprouts The Concretization of a Work Rooted in Place	36
_Sprouts The Concretization of a Work Rooted in the Viewer	38
_The Resonance of Dialogue	42
4. Tangles	45
II. Environments Growing from the Ground of Technology	47
5. Cyber-Habitats—The Expansion of Reality into Technological Domains	48
_Mixed Reality: The Sense of Being-in-the-World	50
_Case Study <i>Tele-present Wind</i> by David Bowen	51
_Multisensoriality and the Ritual of Passage	52
_Case Study: Tendrils of Virtuality	54
6. Meristematic Tissue	56

TABLE OF CONTENTS

_Sympathetic Media _____	58
_Case Study: The Viewer within the Interactive Projection <i>Sculptures of Movement</i> _____	60
_Sprouts Subcutaneous Audio-Reactivity _____	63
_Części Wierzchnie delicacy in the raw realm of pixels _____	66
_Virtuality _____	68
_New Materialism _____	71
_Case Study—The Dialogical Disposition in Creation _____	75
_Sprouts <i>There is No Truth / Just Sensual Objects</i> _____	79
7. Dialogical Disposition toward Technology _____	84
_Ritual and Magic in Cyberculture—Robert Pfaller _____	85
_Sprouts The Ritual of Interactivity _____	87
8. Tangles: Fields of Coexistence _____	89
_The Viewer in Dialogue with the Artwork _____	89
_The Immersion of Environments Growing from the Ground of Technology _____	89
_Sprouts of the Tangle _____	91
III. INTERWORLD _____	94
The Artistic Project—A Field of Embodied Research _____	94
Conclusion _____	105
Bibliography _____	107
List of Figures _____	110

Introduction

In this dissertation, I explore the notion of *the Interactive Environments based on Immersion*. In response to the multifaceted and complex nature of contemporary reality, I turn toward creations of a contemplative character and, within this focused framework, propose a definition of such works. I believe that this perspective serves as a counterbalance to the gamification of art, expanding sensitivity, attentiveness, and empathy. It invites reflection and fosters stillness.

In the contemporary world—where reality intertwines with virtuality, automation with the labor of human hands, and messages with the flow of data—there is a growing sense of social dissociation and cognitive overload. Technology continues to carry the stigma of threat, whereas, in my view, it may instead become a space for dialogue and deepened understanding. I seek to reveal the value of the symbiosis between reality and virtuality, technology and nature—qualities that form the threshold of a new reality and a mode of tender coexistence.

Interactivity opens the way toward a deeper mode of perception—one grounded in both physical and mental engagement. Yet I do not wish the body–mind to become a tool; rather, I seek an engaged and focused way of experiencing. I locate it within a *dialogical disposition*¹—a concept referring to an intensified perception that is attentive to context and imbued with self-reflection, which I have translated into the field of art. This approach leads to heightened sensitivity and active participation in a multisensory work.

The tenderness of the art piece—its ability to change under the influence of the viewer—enables the formation of dialogue. As *the Viewer* enters the work and comes to understand it more profoundly, the work responds: it unfolds and becomes manifest over time. Yet this plasticity does not reside within the work itself, but rather within its Image, constructed by *the Viewer* through the process of perception.

Interactivity amplifies the viewer's involvement in experiencing the artwork and emphasizes the responsiveness of the environment to their presence and actions. This interdependence, however, may lead to gamification—a subordination of the viewer's behaviour to task-oriented structures. My inquiry, conversely, concerns the opposite field, where the body becomes a plane of multisensory experience, negotiating with the sphere of reason to derive sense and meaning. *The Interactive Environments based on Immersion* deepen somatic

¹ *Dialogicality* is a transdisciplinary category that connects philosophy, the humanities, social sciences, and the practice of social life. Among its many sources, it is worth emphasizing its relation to the philosophy of dialogue (Emmanuel Lévinas), literary theory (Mikhail Bakhtin—dialogicality of language and literature), and aesthetics (Hans-Georg Gadamer—the encounter with a work of art as a form of conversation).

perception, immersing the Viewer in a situation that safeguards the metaphysical resonance of aesthetic experience.

In my research, I conceive *the Environment* as a total installation—a spatial interpretation of Wagner’s idea of the *Gesamtkunstwerk*, the “total work of art.”² It occupies the entirety of the space it inhabits, defining the field of its influence. Within the functioning of such an installation emerges a distinction between the external—positioning *the Viewer* outside the field of the work—and the internal, which determines the sense of immersion and inclusion.³ It is upon this latter understanding that I build my definition of *the Interactive Environments based on Immersion*.

The source of this distinction lies in the very structure of the work. It forms an intermedial network of cooperation through the fusion of its elements. I thus situate *the Interactive Environment based on Immersion* among synthetic works characterized by a “material–ideational–emotional unity.”⁴ Such works demonstrate “a close connection between the artistic concept and an overarching metaphysics” as well as “a synthesis on the artistic plane.”⁵

From the synergy of coexisting artistic means of expression—the media—arises intermediality. The character of intermedia elements transforms in response to the development of society, to changes in environment, technological growth and sociological transformations. Yet this is not a chaotic or fragmented expansion: media

² In reference to the concept of “wholeness,” that is, Richard Wagner’s *Gesamtkunstwerk*.

³ I refer to the sense of immersion and inclusion as “insiderness” (*wśrodkowość*), a concept I define in more detail in the later sections of this work.

⁴ The trans-species synthesis defines synthetic works, one of the two categories of total artworks; the other is the collective work based on the co-existence of the arts within an intellectual and aesthetic framework (see Elżbieta Gieysztor-Miłobędzka, „W obronie ‘całościowości’. Pojęcie Gesamtkunstwerk” [“In Defense of ‘Wholeness’: The Concept of the Gesamtkunstwerk”], *Kultura Współczesna. Teoria, Interpretacje, Praktyka*, no. 3–4 (1995): 73).

⁵ Elżbieta Gieysztor-Miłobędzka, „W obronie ‘całościowości’. Pojęcie Gesamtkunstwerk” [“In Defense of ‘Wholeness’: The Concept of the Gesamtkunstwerk”], *Kultura Współczesna. Teoria, Interpretacje, Praktyka*, no. 3–4 (1995):73–94.

evolve and transform not only as tools of expression but also as instruments for shaping the environment—they both generate change and emerge as its consequence.⁶

The monolithic medium stratifies and branches out like a root. Its properties become problematized and abstracted, while technological development translates them onto a new plane of concretization. Within a single form of expression, new variants emerge—morphing and possessing the potential for intermedial symbioses extending even beyond their own field. The original coherent and unified form dissolves, giving rise to a series of new, *adventitious roots*⁷—offshoots that emerge beyond their initial field.

Referring this phenomenon to actor–network theory, the root of the work—the artistic means of expression—expands to include additional actants.⁸ It becomes at once more precise and more diverse. The *intermedium* is more than the sum of its parts, yet it is upon the relationships between these parts that its distinctive superstructure is formed.

This leads to a need for deeper categorization—a search for narrower frames of reference within a given aesthetic situation. I regard *the Interactive Environment based on Immersion* as a highly characteristic intermedial work and construct its definition in relation to the coexistence of the selected means of expression.

⁶ For instance, the emergence of the Internet led to the rise of net art, while the further development of technology brought about video calls, telepresence, and virtual communities. These forms of manifestation of the Internet as a medium became the foundation for new artistic genres such as mail art, interactive novels, Vaporwave aesthetics, or multisensory ASMR works. The medium has branched into numerous directions—some specialized and narrowed, others expanded through intersections with different media (for example, network participation). The origins of participatory practices can be traced back to the actions of the Italian Futurists, whose provocative performances aimed to generate a temporary communal energy that fostered social bonds and unified audiences into a collective experience. In the art of happening and performance, participation became one of its primary characteristics (see C. Bishop, “Sztuczne piekła: Sztuka partycypacyjna i polityka widowni” [“Artificial Hells: Participatory Art and the Politics of Spectatorship”], trans. Jacek Staniszewski, Fundacja Nowej Kultury Bęc Zmiana, Warszawa, 2015).

⁷ In biology, *adventitious organs* are new parts of a plant that grow from atypical places, for example, a root growing from a stem, (see “Organy przybyszowe” [“*adventitious roots*”] *Encyklopedia PWN*, accessed September 21, 2025, <https://encyklopedia.pwn.pl/haslo/przybyszowe-organy;3963810.html>).

⁸ In Bruno Latour’s Actor–Network Theory, an *actant* is an entity that acts upon other entities.

I refer to the properties of the work that intertwine with space or determine the viewer's actions as the *tendrils*. Originally, the term comes from the botanical world and denotes a modified part of a stem or leaf by which a plant climbs and clings in order to find the most favorable position offered by its environment.⁹ During growth, tendrils perform circular movements in search of support, enabling the plant to develop as fully and efficiently as possible.

By guiding the viewer's behavior or linking the work to the place in which it occurs, the tendrils of *the Environment* allow the installation to grow luxuriantly—extending across the planes on which it resonates: *the Viewer*, the site, and the intermedial connections within the work itself.

I understand *tenderness*¹⁰ as a way of relating to reality—marked by gentleness, attentiveness, and a readiness to establish a deep cognitive bond. It is in the intention of fully experiencing the work that I recognize the manifestation of tenderness.

Tenderness is, at the same time, a form of sensitivity—it reveals itself in the way *the Image of the Environment* transforms with the viewer's deepening immersion in the work. Thus, tenderness becomes a measure of the aesthetic situation's responsiveness to the viewer's cognitive and emotional processes. It is also a reactivity to stimuli—a pulsating matter of relation that forms the very essence of interactivity.

The theoretical plane of my doctoral research intertwines with my artistic practice. Some threads—such as actor–network theory or Fleck's stimulants¹¹—emerged as responses to issues I had intuitively sensed. Others grew out of reflection on experienced situations and created works, as in the case of the concept of tendrils, which describes the properties of a work that enter into relations.

Some threads appeared from the outside and, over time, became interwoven—seemingly of their own accord—into my artistic practice. In the text, the sections marked as “Sprouts” refer to the artworks I have created that grew out of theoretical reflection. Rooted

⁹ I refer to these properties as the Environment's clinging tendrils; see note 9.

¹⁰ The term “*czuły*” in Polish encompasses a range of meanings, including “tender,” “affectionate,” and “sensitive.” It denotes both emotional gentleness and perceptual receptivity. See *Słownik języka polskiego PWN*, accessed September 15, 2025, <https://sjp.pwn.pl/slowniki/czu%C5%82o%C5%9B%C4%87.html>.

¹¹ L. Fleck, “To Look, To See, To Know” in *Cognition and Fact: Materials on Ludwik Fleck*, eds. R. S. Cohen and T. Schnelle (Dordrecht: D. Reidel Publishing Company, 1986): 129–151.

in thought, they constitute material manifestations of the themes I explore—emerging from that field like young shoots, surface forms of aesthetic study and inquiry into contemporary artistic currents.

In the first part of this dissertation, entitled “Immersive Environments”, I present a theoretical model for the functioning of this type of installations. In the chapter “Structure of the Environments”, I indicate methods of constructing works that contribute to highly immersive aesthetic situations. In the following chapter, “The Figure of the Viewer”, I focus on the modes of art reception—on the cognitive aspects of experience and the mechanisms of meaning-making. In doing so, I outline the plane delineated by *the Viewer’s* cognitive apparatus—a sphere prepared to receive experience. From this relational foundation, in the chapter “Dialogue”, I analyze the bond that forms between the work and the viewer—a process of deepened understanding, feeling, and the emergence of meaning. I conclude the first part with the chapter “Tangles”, in which I identify the points where highly immersive situations come into being.

The second part, “Environments Grown from the Ground of Technology”, expands the earlier model by incorporating aspects that arise from cyberculture. In the chapter “Cyber-Habitats—The Expansion of Reality into Technological Domains”, I describe the transformations of reality brought about by the permeation of technology into everyday experience. In the following chapter, “Meristematic Tissue”, I employ the metaphor of creative tissue—responsible for growth and regeneration—to describe new forms of artistic practice and the transformation of *the Viewer’s* disposition in the age of cybernetic experience. Next, in the chapter “Dialogical Disposition toward Technology”, I propose a tender and inclusive approach to the functioning of new media forms and tools. Transferring the titular concept into the field of art, I advocate for a contextual and reflective mode of collaboration—one that nurtures sensitivity and broadens the cognitive horizon. I conclude this part with the chapter “Tangle: Fields of Coexistence”, in which I explore new forms of immersion and depth of reality that emerge through the interpenetration of virtuality and technology into the physical world.

The third part of the dissertation, entitled “INTERWORLD”, presents my doctoral project—an installation that constitutes an attempt to translate theoretical reflection into the field of artistic practice.

This structure of the work allows for a transition from the theoretical framework, through analyses of technological environments, to practical realization, demonstrating the methodological coherence of the entire project.

I. Immersive Environments

A total installation creates a closed, isolated micro-world. It consists of a collection of unfamiliar objects—without function, history, or defined character—existing as a three-dimensional form of a metaphorical blank page. Its elements are situated within a space that is as indeterminate as they are, with one exception: in the case of an artwork, the coherent and defining property shared by all components is their artistic connotation. The work originates from the world of art, and therefore inherently carries aesthetic values.

In this dissertation, I analyze *Ithe Interactive Environments based on Immersion*. I seek the sources of immersiveness, which I locate in the relationship between *the Viewer* and the work. To examine this relationship more closely, I separate the two—the work and the viewer. Through this distinction, I identify properties that emerge within the dialogue between them, as well as those rooted in each individually.

I define the act of perceiving the artwork as a dialogue, transplanting the concept of the *dialogical disposition*¹² into the field of art expanded by interactivity. This notion draws attention to the intentionality of perception and the engagement it requires. Yet dialogue presupposes responsiveness on both sides. The plastic, mutable aspect of the situation I define as *the Image of the Environment*—a mental vision constructed by *the Viewer* while perceiving what surrounds them. *The Environment*, in turn, I expand to include properties that invite exploratory participation from *the Viewer*¹³.

¹² In the approach I propose, the *dialogical disposition* also extends to the creative process itself. It involves a careful analysis of the properties of the means of expression used and an attentiveness to the qualities of the forms being engaged. Within such a conception of creative work, I perceive the medium not as a tool of expression, but as a partner in creation.

¹³ I refer to these properties as the Environment's tendrils.

1. Structure of the Environment

The idea that led me to liberate *the Environment* from the filter of reception is object-oriented ontology. This philosophical current defines objects as entities independent of perception—entities that cannot be reduced to their relations with other objects or with humans. Such independence allows one to notice points of encounter and their consequences: the moment an object becomes perceptible, the moment it becomes usable, and the moment it enters into relations with other objects. By treating the perceptible moments available to *the Viewer* as only some among the many relations an object engages in, the artwork—understood as an assemblage of objects—appears as an infinite matrix of relations and interactions. I further define its immersive potential with reference to Bruno Latour’s *actor–network theory*.

Within object-oriented ontology, an object is divided into two dimensions: the real and the sensual—the perceived and externally accessible. The sensual object points toward the real one (serving as a path to it), yet simultaneously withdraws from it: the real object recedes,¹⁴ giving rise to the sensual layer. In the case of an artwork, such an approach enables the analysis of individual components as variables dependent on the viewer. However, this does not mean that the work becomes subjective or contingent; rather, a *surface layer* emerges—formed by the viewer. Its real form, nonetheless, remains independent and monolithic. In the relational process—the *dialogue* initiated through the *dialogical disposition*—*the Viewer* constructs *the Image of the Environment*. This Image is grounded in the stable, intrinsic properties of the artwork itself. The work remains autonomous from the viewer, in accordance with the assumptions of object-oriented ontology, which “maintains that objects are autonomous not only from other objects but also from their own properties as they unfold in time and space.”¹⁵

I argue that maintaining awareness of the selectivity of perception enables further exploration—it suspends the certainty of judgment, and even the unquestionable nature of the perceived image, allowing one to seek, to delve, and to probe further while questioning one’s own sensations. The soft and responsive transformation of perception and the coherent change of *the Image of the Environment* constitute the effect of the *dialogical disposition* proposed in this dissertation—a mode of attunement to coexistence with the surrounding world, and especially with the work of art itself.

¹⁴ G. Harman, *Traktat o przedmiotach [The Quadruple Object]*, trans. Marcin Rychter (Warszawa: Wydawnictwo Naukowe PWN, 2013), 25.

¹⁵ *Ibid.*, 24.

As *the Viewer* enters the *total installation*, they become surrounded by a new system of signs and meanings, forms and interrelations. The elements form such a tightly interwoven structure that they appear as a unified, coexisting *Environment*.¹⁶

Interpreting it as an isolated system of relations, I refer to *actor–network theory* (ANT), which focuses on material–semiotic networks. These are constructed by *actants*—entities that act upon other entities. Regardless of whether they are human or non-human, they possess agency and exert influence on the situation. Depending on the mode of analysis, an actant may itself be decomposed into a more complex system of actors and networks. Transplanting this perspective into the field of art, all artistic means of expression that appear within the space defined by the work become actors—each, upon closer examination, revealing a complex network of internal relations.

Translating the theoretical framework into practice, *the Environment* type of the installation consists of specific actants—for example, video, objects, and sculptures. Each of these can be examined in greater depth and detail: video as narrative, as an evoked aesthetic, as movement within the frame, as camera motion, or as a sound layer. Yet what proves more significant are the relations formed between individual components—how sound aligns with the succession of moving images, how the shape of a sculpture complements the presented virtual aesthetic. These relationships fluctuate, generating the internal dynamics of *the Environment*. This rhythm may alternately veil and reveal certain features of individual elements, transforming the monolithic work into a continuously interlacing relation of forces and dependencies—into a living, immersive matter.

I believe that this shared tissue of interrelations—fluid and morphing in shape—forms the dense and intricate structure of *the Environment*. The network of internal references within the spatially open installation, which invites *the Viewer* into its interior, places them within the tangles. These are the points of intensified coexistence—sites whose interdependencies *the Viewer* wishes to explore, to delve into, and to understand.

_Space as Relations

Composition is a carrier for relations—it positions elements in relation to one another and constructs a sense of spatiality by adding or removing space around them. It holds the potential to become a materialization of the relations between actants. It generates

¹⁶ Isolation of the situation allows cutting off external influences and increases immersion, in line with Maria Gołaszewska's view that aesthetic experience occurs in a state of distance from the extra-artistic world. See Krystyna Wilkoszewska, "Marii Gołaszewskiej pojęcie sytuacji estetycznej" ["Maria Gołaszewska's Concept of the Aesthetic Situation"]. *Edukacja Filozoficzna: Rekonstrukcje, Interpretacje* 22 (1996): 201–216.

impressions of dynamism or stillness, chaos or calm, balance or tension, proximity or distance—and, ultimately, openness.

As Brian O’Doherty observes, what is enclosed within the sealed frame of composition appears distant and detached—intended solely for viewing from a certain remove, thereby excluding *the Viewer* from the aesthetic situation. However, when the space within the image finds its continuation beyond the frame, the representation begins to engage *the Viewer* more profoundly.¹⁷

Fissures within the boundaries of composition allow *the Environment* to spill beyond its own frame, encompassing *the Viewer* as well. This continuation of the work may take the form of the *tendrils of the Environment*. Fissures within the boundaries of composition allow *the Environment* to spill beyond its own frame, encompassing *the Viewer* as well. This continuation of the work may take the form of the *tendrils of the Environment*. The overflowing edges, the dependencies between objects, and the constant variability of their relations¹⁸ make the representation appear trembling—imbued with temporality and processuality.

The interwoven network of formal references within the work exemplifies an *immersive composition*. One medium becomes visible through another, and the boundaries between formal means of expression become blurred. Particularly significant in this context is the implication of *time* within the work—the way it generates and sustains its own temporal flow, giving it the character of an open and dynamic system. In the following section, I will indicate examples of artistic realizations that activate precisely such potentials.

_Case Study: *Uncensored Lilac* | Environment as a Web of Relations

Uncensored Lilac, an exhibition by Bassam Issa Al-Sabah and Jennifer Mehigan, presents a space constructed from references. Its central element is a video, while the area in front of it is filled with objects. The work was part of the Transmediale 2024 program in Berlin.

¹⁷ Brian O’Doherty, *Biały sześcian od wewnątrz: Ideologia przestrzeni galerii [Inside the White Cube: The Ideology of the Gallery Space]*, trans. Aneta Szyłak (Gdańsk: Fundacja Alternativa, 2015), 26.

¹⁸ The relationality of compositional elements becomes evident, for instance, in Cézanne’s painting, where the arrangement of elements morphs depending on the viewer’s focal point. The idea of a variable relationship between objects was further developed in avant-garde painting, for example, in Cubism.



Figure 1. View of the exhibition *Uncensored Lilac* by Bassam Issa Al-Sabah and Jennifer Mehigan, Transmediale 2024, Berlin, Germany. Photo by Luca Girardini. Source: <https://transmediale.de/de/2024/uncensored-lilac> (accessed September 20, 2025).

The installation occupies the entirety of a low, white room. At its far end stands a screen, with a white bench positioned directly opposite. The path leading toward the screen passes between large cardboard elements depicting the figures that appear in the video work. The side visible along this passage reveals realistic close-ups.

Among the two-dimensional representations, sculptural objects drawn from the film are also placed. The spatial arrangement thus becomes a field of references: the path toward the screen functions as a transcription of the video, while the scattered sculptural elements

seem to belong to another world—a digitally conjured realm, for which the screen serves as an entryway. It is within this threshold that the completion of elements is contained. Objects, space, and video—extracted from digitality—form a network of references that grows denser upon closer observation. Approaching the screen becomes an act of crossing the passage point.

_Sprouts | Installations as Micro-world of Relations

Grounding these reflections in my own artistic practice, I explored the relations between objects by creating installations as micro-world of internal references. They evoked the impression of isolated systems whose components corresponded with one another, forming a collective work.¹⁹ The Viewer would delve into the internal logic of connections and relations among them, entering the world summoned by the work. This closed circuit of mutual relations generated the seeds of immersiveness. Yet it did not place *the Viewer* inside the installation—it engaged them only mentally, within the situation conjured by the work. The quality I call *insideness* was one I continued to explore later. The following examples represent early stages of research into the immersiveness of interactive environments, focusing primarily on the relations between elements. In subsequent works, I investigated ways of situating *the Viewer* within the very center

¹⁹ A collective work is a form of total artwork and is characterized by intermedial connections between its components—see Elżbieta Gieysztor-Miłobędzka, „W obronie ‘całościowości’. Pojęcie Gesamtkunstwerk” [“In Defense of ‘Wholeness’: The Concept of the Gesamtkunstwerk”], *Kultura Współczesna. Teoria, Interpretacje, Praktyka*, no. 3–4 (1995): 73–94.

of the aesthetic event—later expanding these situations to include the physical dimension of immersion and interactivity.

The installation *Come Closer Until I Am* was a portrait of a stone, presented through five representations. Inside a frame, behind a glass pane, lay the stone—the main protagonist of the composition. Beneath it, I placed a poem that treated the stone as a symbol of what is cold yet carries the trace of the past. Next to it, I displayed a rotating 3D print of the stone, referring to the transformations caused by its translation into another material. At the same pace, a virtual model of the stone rotated on a screen above. The installation concluded with a photographic triptych showing the stone distorted in its relation to the surroundings—reflected in a mirror surface. This multimedia constellation of representations revealed the influence of perception on the image of things.

Drawing on the idea of enclosure as a mechanism of mutual complementation between elements, I created the installation *Void*. It consisted of a frame containing a real stone, 3D print, and a virtual scan. Next to them, I placed macro photographs of the stone. The whole composition was surrounded by black fabric—on one hand isolating the small frame and bringing it out, and on the other hand enclosing the field of relations between the objects. Fastened to a concrete element, the fabric delineated the boundaries of the entire installation.

Through these works, I examined the influence of spatial arrangement on the aesthetic situation. The elements of each installation formed networks of references, establishing semantic and material interconnections. The relationship between the work and the space it inhabited shaped both its resonance and its mode of reception. I further developed the contextuality of the aesthetic situation by addressing questions of aesthetics that include *the Viewer* within the experience, and by studying theories of perception centered on the relational nature of seeing.

_Place

For *the Environment* to germinate and flourish, it needs a *Place*. This *Place* may be imbued with a strong and distinctive identity—or, on the contrary, recede into the shadow of anonymity, becoming what is often called a *white cube*. Installations rooted in a given spatial context are usually described as *site-specific*, referring to the act of building upon an existing situation by extending it through an additional artistic layer.

The Environment, in the sense I propose, emerges from coexistence.

In shaping the concept of the *dialogical disposition*, I perceive *places* as homogeneous fields endowed with specific properties, within which artistic elements are situated. They draw

from their surroundings, rooting themselves like plants that absorb microelements from the soil to build their visible, surface forms.

However, this relationship is not one-sided. *Place* also possesses agency and influence—it seeps into the lush, surface forms of the elements. The *tendrils* of space extend into the spheres of axiology (values, feelings, and meanings), ontology (as the point of concretization and realization of beings), and epistemology (contextualizing distinct forms and binding them into relation). In the coexistence of space and the work, an *atmosphere* arises—a subtle and elusive layer of spatial realization that *the Viewer* enters. It shapes *the Viewer's* sense of presence and behavior. I recognize within the properties born of the fusion between space and artistic action the seeds of immersiveness.

This union gives rise to micro-worlds with their own temporality, where time is “a provisional effect of connections between systems.”²⁰ The German philosopher Gernot Böhme proposes an intriguing concept linking atmosphere and aesthetics. Referring to his teacher Hermann Schmitz, he describes atmospheres as emotional forces, or quasi-objective affective qualities, generated by surroundings. Böhme argues that “although atmospheres are not given as objects are, they can be practically produced through the arrangement of things.”²¹ I share this view, distinguishing the *Structure of the Environment* from its mode of perception. I claim that the moment *the Viewer* relates to space—and thus the moment atmospheres take shape—follows the act of settling into the surroundings. I perceive the concretization of atmosphere as a dialogical process that forms part of reception—a theme I will return to in the chapter on dialogue.

Furthermore, space carries the potential to generate its own distinct time. From a strictly mathematical perspective, space and time coexist as inseparable elements forming space-time. *Place* unfolds its own history, setting the rhythm and flow of events. The ability to create a characteristic sense of passing is, in my view, a defining feature of immersive environments. Through the feeling of duration produced by the isolated micro-world, *the Viewer's* sense of engagement and unity with the surroundings deepens.

²⁰ Bruno Latour, *Nigdy nie byliśmy nowocześni: studium z antropologii symetrycznej* [*We Have Never Been Modern: An Essay in Symmetrical Anthropology*], trans. Michał Gdula (Warsaw: Oficyna Naukowa, 2011), 108.

²¹ Gernot Böhme, *Filozofia i estetyka przyrody* [*Philosophy and Aesthetics of Nature*], trans. Jarosław Merecki (Warsaw: Oficyna Naukowa, 2002), 7.

_Case Study: Vortices | The Sense of Time

Remaining within the realm of mathematical analogies, I will illustrate the notion of time generated by a work through the installation *Vortices* by Sarah Rechberger. It consists of five kinetic objects with transparent walls covered in white tulle. The elements are illuminated by geometric beams of light. The motion of the mechanism inside each object bends the planes of its sides. As the surfaces shift, the light becomes refracted, producing colored waves that envelop the structures. In addition, the mechanisms generate sound—a piercing grind of moving gears whose repetition draws *the Viewer* in, establishing a steady rhythm for the kinetic composition. The fusion of visual and auditory transformation creates a synergy. The five objects—though different in form—together exemplify a unified *Environment* of abstract shapes, pulsating in a coherent rhythm.

_Nature

In seeking immersion through the unison of spatial elements, one must return to the origin—to the most natural realms of symbiosis and coexistence: to nature. Natural environments possess a soothing and immersive influence on the human being.²² According to Maria Gołaszewska, “nature and its beauty lie at the very foundation of art.”²³ Following her argument, I compare natural environments to *Environments* understood as total installations—spatial, multi-element compositions.

Both are governed by their own internal principles that affect whatever they hold within. Each constituent element retains its individuality while simultaneously responding to the forces of its surroundings. Transformation occurs within the scope of each element’s potential.

When the wind sweeps across a coastal forest, it lifts grains of sand that settle softly upon the beach grass. It carries those light enough to yield to its strength—as high as it can, and as far as until they are caught by a blade of grass. The low shrubs bend and twist in the rhythm of the gusts, their fine leaves rustling and fluttering. The elements change under the influence of environmental forces, yet remain within the bounds of their autonomous nature. Their surface structures arise from the cooperation of deeper layers.

Natural environments, on one hand, appear as spaces of perfect correspondence—coherent and complete. On the other, they do not impose inclusion but allow a free, unforced

²² Krystyna Wilkoszewska, *Estetyka czterech żywiołów. Ziemia, Woda, Ogień, Powietrze [The Aesthetics of the Four Elements: Earth, Water, Fire, Air]* (Kraków: Universitas, 2002).

²³ Maria Gołaszewska, *Estetyka pięciu zmysłów [The Aesthetics of the Five Senses]* (Warsaw: Wydawnictwo Naukowe PWN, 1997), 26.

entering-in. In defining *the Immersive Interactive Environments*, I turn precisely to such places—those that create their own sense of time, woven from interdependent networks of forces.

What fascinates me is the simultaneous separateness of each component of *the Environment* and its belonging. Coexistence and interdependence reveal themselves most clearly in water—I observe this as I float upon its surface. The steady undulation lifts me up and down; long tendrils of seaweed pulse in the same rhythm. Fish dart quickly, stirring the water, whose movement briefly obscures what lies beneath. The lifted sand settles again on the bottom, and the gentle rocking continues—like the even heartbeat of an enclosed organism.

Natural environments are no longer spaces untouched by human intervention. The side effects of progress spread everywhere, reaching into the most distant corners. No place is purely wild, nor entirely civilized—these zones overlap and influence one another. Donna Haraway points out that the essence of every living being lies in entanglement—in the intricate web of relations between humans and nonhumans. This continuous interpenetration and mutual affect reshapes our perception of the world: replacing the anthropocentric view with an inclusive perspective that allows for mystery, misunderstanding, and otherness. Translating this interdependence into the field of art, the collectivity of existence finds its reflection in the elements composing the total installation.

Its components unfold and evolve in time—revealing both their structure and the symbolic modes they bring forth²⁴—while their relationships, particularly the compositional ones, shape the perspective in which *the Viewer* is situated.

Human expansion leaves traces even in places once perceived as idyllic. With the same fascination, I observe the shimmering scales of colorful saltwater fish and the iridescent, holographic sheen of an oil puddle—mold, decay, and the moss-covered couches in the forest, or the rust-eaten skeletons of cars. This coherence in perception draws me toward Object-Oriented Ontology, where no hierarchy exists—natural and artificial objects share equal ontological value.²⁵ Avoiding the romanticization of nature, I turn to Timothy Morton’s concept of *Dark Ecology*. The philosopher understands post-industrial and degraded sites as a new form of nature.

²⁴ Andrzej Marzec, *Antropocień. Filozofia i estetyka po końcu świata* [*The Anthropocene: Philosophy and Aesthetics after the End of the World*] (Warsaw: Wydawnictwo Naukowe PWN, 2021), 55.

²⁵ This issue will be of particular significance in the later part of the dissertation, where I address the translation of the object—via scanning—into a virtual model.

Morton also turns away from linearity,²⁶ rejecting notions of origin, end, progress, or emancipation. Instead, he proposes thinking in terms of loops—of persistence, transformation, and continual metamorphosis. Here, I see a resonance with the modularity, recursiveness, and algorithmic structures²⁷ present in art since the incorporation of new media into the tools of creative expression.

Transience becomes duration, and the decay of one object—its transformation. Such a perspective dissolves opposition and reveals *the Environment* as a field of coexistence, where every element—natural, artificial, or technological—participates in a continuous dynamic. This perspective of co-existence forms the core of my artistic practice, in which action, movement, and relation become part of an ongoing, immersive process of transformation.

_Sprouts | Video *INSIDES*



Figure 2. Still from the video *INSIDES*, macro photograph of the stone *Desert Stone*, 2024.
Source: author's archive.

In my own artistic practice, I am inspired by the immersiveness and contemplative resonance of nature. I remember many moments of watching the patterns on the water's surface,

²⁶ Timothy Morton, *Mroczna ekologia. Ku logice przyszłego współistnienia* [*Dark Ecology: Toward a Logic of Future Coexistence*], trans. Anna Barcz (Warsaw: Oficyna Związek Otwarty, 2023), 7.

²⁷ See Lev Manovich, *Język nowych mediów* [*The Language of New Media*], trans. Piotr Cypryański, Wydawnictwo Akademickie i Profesjonalne, Warszawa 2011.

the shifting formations of sand moved by the wind, or the slow transformations of clouds—wishing to create images of a similar character. I searched for formal means that would evoke the impression of continuous change within a sense of duration. I found them in the multilayeredness of movement and in the relational dynamics between elements. In my works, various types of movement are present—the motion of individual objects, the relations between them, and the rhythm of the whole composition. The video *INSIDES*,²⁸ created for the piece by the duo PODPORA/KOHYT, exemplifies this most clearly.

Using a BlackMagic 6K camera with a SIGMA 135/1.8 telephoto lens, I filmed close-ups of stones submerged in water, rotating on a moving base. During postproduction, I enlarged the image threefold and introduced a counter-movement opposite to that of the filmed objects. As a result, the geometry of the stones bends, and the image—though filled with change—appears static.

A similar spatial transformation appears in Alfred Hitchcock’s film *Vertigo*, where a zoom-out is combined with a simultaneous dolly-in toward the center of the frame. The point of view remains fixed, yet the relationships between objects shift. This illusory transformation of space draws *the Viewer* inward—into the image itself.

For Latour, time takes the form of overlapping folds; for Morton, it becomes a loop.²⁹ I see the concretization of this idea in the constant transformation unfolding across multiple layers of relations between the invoked objects—in their swirling, accumulation, and interpenetration. My observations of nature and transience find reflection in my digital practices, where time and movement are subject to similar principles of transformation. I will illustrate this connection in the chapter devoted to technology, referring to works created in *TouchDesigner*. In this environment, I create both video pieces and live VJ performances, constructing sequences of *nodes*—programming elements through which I generate my aesthetics.

_The Time of Places

Isolated places with an anonymous identity seem to exist outside of time—they absorb and internalize artistic creations. They carry within them a latent ritual of passage: what is external remains behind closed doors. Inside, there is a refuge—an endemic environment,

²⁸ Link to the performance, <https://youtu.be/t1citicCwYeQ?si=AUbOI-gtZNXthtnP>, accessed September 20, 2025.

²⁹ See Andrzej Marzec, “Wstęp” [“Introduction”] to Timothy Morton, *Mroczna ekologia. Ku logice przyszłego współistnienia* [*Dark Ecology: Toward a Logic of Future Coexistence*], trans. Anna Barcz (Warsaw: Oficyna Związek Otwarty, 2023), 6–24.

undisturbed by outside influence. Walter Benjamin, however, points out that a place carries its own agency—it bears the trace of time.³⁰ It is not merely a container defining the area in which events unfold. It may become a stimulant determining their nature, an actor influencing their course, a construct that grows into and intertwines with what it envelops—yet also a sign immersed in both past and future, a mark of time itself.

_Case Study *Passage* | The Sense of Time

The space in which I most intensely experienced place as having its own sense of time was *Passage*, an exhibition by Dorit Margreiter Choy. In the Cukrarna Gallery in Ljubljana, Slovenia, one of the rooms was transformed into a nameless, timeless environment. The windows were darkened, preventing the entry of daylight—the light that carries the sensation of time passing. Instead, artificial light was used, suspending the space in an unreal, unchanging duration. Grey dominated—the most neutral and indefinite of colors. The space was waiting. It waited motionless—yet why was it waiting, rather than simply existing?

It waited because it carried within itself the promise of change: the white rectangular shapes of screens painted on the walls marked the designated areas of a future projection—elements of a process through which the place would come into being. The space waited to become—like a tree that tightly guards its leaves within the husks of its buds.

Space paves the way for the work, allowing it to emerge and refining its relationship with the surroundings. The work unfolds within space, becoming both accessible to others and defined through it. The influence of space on *the Viewer* belongs to the relationship between them and the work—it is negotiated and formed as *the Viewer* settles into the environment.

I will describe this interrelation through the examples of the aforementioned works later in the dissertation, following the outline of *The Figure of the Viewer*.

³⁰ See Walter Benjamin, „Dzieło sztuki w dobie reprodukcji technicznej” [„The Work of Art in the Age of Mechanical Reproduction”], trans. Janusz Sikorski, : Wydawnictwo Poznańskie, Poznań, 1975.

2. The Figure of the Viewer

The Viewer enters *the Environment* by stepping into the Unknown. To perceive, they must arrive open to what is new. In analyzing this figure, I refer to aesthetic theories that regard *the Viewer* as an integral part of the work itself. According to Roman Ingarden, the knowing subject and the known object must possess symmetrical qualities in order to be accessible to one another.³¹ The philosopher points to the multilayered nature of cognition—especially in the case of the aesthetic object. A work of art consists of various layers (for example, physical, semantic, and aesthetic), and the subject must have the capacity to apprehend them. Only then is a full and multidimensional experience of the object possible. Maria Gołaszewska continues Ingarden’s inquiry, developing and systematizing the theory of the aesthetic situation. At the moment of encounter between *the Viewer* and the work, she places *the Viewer* within the aesthetic situation, implying exploration and cognition as the very unfolding of the work itself.³² Importantly, even in Ingarden’s thought, the work is *intentional*—it may be truly grasped only if *the Viewer* demonstrates willingness and openness. By deciding to engage with the work, *the Viewer* assumes that it conceals meaning, and desires to uncover and understand it.³³ This quality returns, with even greater emphasis, in the case of *interactive works*³⁴—which I will address later.

Entering the work of art, *the Viewer* encounters unfamiliar objects that they attempt to classify. In order to feel at home within the environment, they relate these objects to themselves, searching for similarities with what is already known. They observe the sensations that arise, sketching an emotional (and subjective) portrait of *the Environment*. Their engagement is therefore dual—it unfolds in relation both to reality and to a metaphysical space. According to Maria Gołaszewska, the work of art exists precisely between these two realms: it is suspended between the world of values

³¹ See Roman Ingarden, *Studia z estetyki [Studies in Aesthetics]* (Warsaw: Państwowe Wydawnictwo Naukowe, 1966).

³² According to Maria Gołaszewska, the aesthetic situation consists of three elements: the recipient, the artwork, and the artist, whose mutual relations constitute the aesthetic experience as a whole.

³³ Arkadiusz Chrudzimski, „Roman Ingarden o intencjonalności i znaczeniu” [„Roman Ingarden on Intentionality and Meaning”], *Przegląd Filozoficzny – Nowa Seria*, no. 4 (2020): 339–355.

³⁴ See Ryszard W. Kluszczyński, *Sztuka interaktywna. Od dzieła-instrumentu do spektaklu [Interactive Art: From the Work-Instrument to the Spectacle]* (Warsaw: Wydawnictwa Akademickie i Profesjonalne, 2010).

and the real world.³⁵ Upon entering, *the Viewer* explores reality—looking, smelling, listening, orienting themselves spatially, approaching, withdrawing, shifting perspective. They gather information about the object. At the same time, in reference to their own system of values, they form impressions of the thing—a network of associations and meanings.

A process of bonding unfolds through both physical and mental engagement. As the aesthetic situation develops, the work reveals itself more fully, and *the Viewer* perceives it with increasing clarity. Their mental involvement deepens; over time, they begin to form conscious hypotheses and to search for meaning. This is the moment of *the Viewer's* settling into *the Environment*—of connecting with what lies outside and experiencing the otherness that surrounds them. I will describe this process in the next chapter, referring to the philosophy of dialogue.

I do not draw a strict distinction between the aesthetic experience rooted in the field of art and that which arises from the ordinary manifestations of life. In describing the structure of *Environments*, I meandered between nature and art, softening the boundaries that separate them. I sought to reveal the places where these two spheres intertwine. Expanding the narrow definition of the artwork and of aesthetic experience allows the work to be freed from the rigid museum framework that isolates it from the viewer. In its traditional conception, the artwork appears as inaccessible. Immersive spaces, by contrast, are those that include and absorb—they cannot, therefore, be separated from the experiencer. Freedom to explore and to perceive *the Environment* facilitates the process of rooting oneself within it and delving into its depths.

In seeking a line of understanding between the work and the viewer, I turn toward the aesthetic experience that also occurs in encounters with, for instance, nature. John Dewey, who searched for a connection between art and everyday life, distinguishes between “the artistic product,” which, once created, may exist “independently of human experience,” and “the actual work of art, [which] is the way in which the product shapes experience and is present within it.”³⁶ He argues that aesthetic experience may also occur in the pursuit of science or philosophy and is grounded in the qualitative fullness of experience itself. Its influence may overflow into other dimensions of human existence. According to Dewey, complete engagement—emotional, sensory, and cognitive—gives rise

³⁵ Michał Ostrowicki, „Teoria sytuacji estetycznej M. Gołaszewskiej jako fundament estetyki” [„Maria Gołaszewska’s Theory of the Aesthetic Situation as the Foundation of Aesthetics”], accessed September 24, 2025, http://www.sideymyoo.art.pl/old/Teoria_sytuacji_estetycznej.pdf.

³⁶ John Dewey, quoted in Richard Shusterman, “O końcu i celu doświadczenia estetycznego” [“On the End and Aim of Aesthetic Experience”], trans. Wojciech Małecki, *ER(R)GO. Teoria–Literatura–Kultura*, no. 12 (2006): 135.

to a sense of *wholeness* that carries transformative potential. It has the power to affect the viewer's subconscious functioning and, thus, to transform perception itself.

_Wholeness as Body–Mind

Meaning is closely connected to the body. In order to understand the sense of a sentence, an event, or a concept, the mind constructs a mental image of that thing.³⁷ Moreover, “according to the theory of embodied simulation, we use the same areas of the brain to generate such recreations as we do to interact with the world. When we simulate seeing, we activate the very neural structures that allow us to see; when we simulate performing an action, the brain regions responsible for physical activity are engaged.”³⁸ Translating this principle into the perception of art, one can observe that the viewer, when confronted with an unfamiliar element, searches within their own experience for something coherent with it. Subconsciously, they reach into the reservoir of memories and sensations to domesticate the unknown and endow it with meaning—to find a bridge. When they encounter an aspect that resonates and feels familiar, they experience it through the body. This is a deeply individual process, often remaining below the level of consciousness. Perky's experiments demonstrate that recalling mental images can influence the way we perceive reality.³⁹ Following this line of thought, the aesthetic experience holds the potential to affect and shape events beyond the realm of art itself.

By deciding to enter the Unknown, *the Viewer* undergoes an intense experience of assimilation within *the Environment*. As they begin to familiarize themselves with their surroundings, imagination cooperates with perception.⁴⁰ In doing so, *the Viewer* gradually moves away from the pure reality of *the Environment*, constructing their own—one rooted in what is familiar and attainable. This marks the moment in which the dialogue begins, a process through which *the Image of the Environment* is formed. I will describe this process in the following chapter.

Color is the first factor the human mind analyzes when attempting to assign meaning and sense. Hue also sets the tone of the image—warm colors tend to evoke positive associations, while cool tones gravitate toward distance and restraint, often carrying more

³⁷ See Benjamin K. Bergen, *Latające świnie. Jak umysł tworzy znaczenie [Louder Than Words: The New Science of How the Mind Makes Meaning]*, trans. Zuzanna Lamża (Kraków: Copernicus Center Press, 2017).

³⁸ *Ibid.*, 28–29.

³⁹ *Ibid.*, 44.

⁴⁰ *Ibid.*, 45.

negative or subdued connotations. Once color is registered, the mind proceeds to analyze shape, attempting to match it to known categories. If the mental image corresponds with reality, the mind reacts more quickly.⁴¹ Any divergence between what is habitual—the encoded state of things—and what is actually encountered, produces dissonance. The extent of this mismatch may encourage deeper engagement or, conversely, provoke rejection—as something distant, unfamiliar, or incomprehensible. It is here that an intriguing line emerges between repulsion and continued attraction—a subtle play⁴² that the artist may engage in with *the Viewer* (if the work itself is encoded as a message that invites reading).

Another crucial factor influencing *the Viewer's* engagement in the act of experiencing is the activity of the sympathetic nervous system and the mirror neurons. These mechanisms enable an empathic resonance with the situation presented within the work, leading to a temporary identification with it—to experiencing it as one's own. In the context of art, this relation becomes particularly evident when the formal elements of the work find reflection in *the Viewer's* internal sensations. This mechanism gains special significance in the case of interactive installations, in which the participant's body becomes directly integrated into the structure of the work—for instance, when a screen reveals the outline of *the Viewer's* figure, or when the work presents their face. I will return to this property later in the dissertation, while discussing my own visualizations of movement.

Embodiment draws attention to the role of the body in the acts of perception, sense-making, and thinking. In the experience and understanding of the world, the sense of touch is equally significant—though often marginalized⁴³ by the hegemony of vision.

⁴¹ *Ibid.*, 84.

⁴² Gamification refers to the transfer of game mechanisms and features into other domains, such as business, education, or marketing. Its aim is to enhance participants' engagement and motivation, often by appealing to fundamental patterns of human behavior. By drawing users in and sustaining their involvement, gamification ensures a high level of immersion.

The distinction I propose concerns the relationship with reality: games are immersive spaces that construct an alternative world in which the participant becomes both an avatar and an instrument of the artwork's realization. In contrast, in immersive interactive environments, the participant—through the artwork—is directed toward their own sensations and toward the real environment in which the work is rooted.

See "presentism" in Ryszard W. Kluszczyński, *Sztuka interaktywna. Od dzieła-instrumentu do spektaklu [Interactive Art: From the Work-Instrument to the Spectacle]* (Warsaw: Wydawnictwa Akademickie i Profesjonalne, 2010), 100.

⁴³ Juhani Pallasmaa, *Oczy skóry. Architektura i zmysły [The Eyes of the Skin: Architecture and the Senses]*, trans. Michał Choptiany (Kraków: Fundacja Instytut Architektury, 2012), 15.

Juhani Pallasmaa, theorist and architect, explores the qualities that construct the feeling of being-in-a-situation in relation to architecture. Touch occurs between the subject and the object, binding them together. It becomes an act of integration—of the Outside and *the Viewer*. When tactile perception begins to blur the boundary separating *the Environment* from *the Viewer*, the level of engagement in the situation deepens.

Among the aspects that integrate *the Viewer* and *the Environment*, Pallasmaa also includes peripheral vision, as a factor grounding one's presence within the situation.⁴⁴ The Viewer becomes a central point—organizing all spatial relations in reference to the position of their own body, constructing *the Image of the Environment*. The multiplicity of sensory stimuli activates peripheral vision, and what remains unfocused forms a pre-conscious perceptual reality. It compels *the Viewer* to look more attentively and to confront the Outside with the surface of their own vision.

Just as the mind constructs an embodied simulation in order to comprehend an event, the body, too, sends signals back to the mind. According to Richard Shusterman, the body participates in the processes of thought formation and serves as the primary medium of contact with the external world. It is the source of perception, aesthetic experience, and knowledge; it enables action and integrates the individual with their surroundings. Liberating the body from a reductionist, instrumental treatment opens the way toward bodily experiences that elude rationalization. In this harmonized interplay between body and mind, I locate the sources of immersion.

The sense responsible for receiving signals sent by the body is called proprioception⁴⁵—the awareness of stimuli arising from within the organism. Importantly, these signals need not reach conscious awareness to influence the somaesthetic perception of the work. The bodily-sensory involvement of *the Viewer* thus constructs a fuller dimension of experiencing art.

When speaking of the bodily experience of an aesthetic situation, it is worth recalling the sense-making role of the body—a thought developed by Maurice Merleau-Ponty. In his view, “the world constitutes both the source and the field of meanings apprehended

⁴⁴ This quality further highlights the immersive character of installations that envelop and transform the entire surrounding space.

⁴⁵ According to the *Encyclopaedia Britannica*, “the perception by an animal of stimuli relating to its own position, posture, equilibrium, or internal condition,” accessed September 20, 2025, <https://www.britannica.com/science/proprioception>.

as situation.”⁴⁶ Perception is an act of bodily engagement in which the world acts upon the perceiver; the perceiver and the world are interdependent. What is perceived exists before it is consciously realized within experience. Merleau-Ponty distinguishes perception from experience—the latter being the moment when perception becomes a conscious act. This differentiation allows for distance from one’s own experiences, grounded in self-reflective awareness. Translating this idea into the system I propose, *the Environment* exists independently. When it is perceived, *the Image of the Environment* arises—the conscious experience of *the Viewer*. It is at this very moment that the *dialogical disposition* takes shape.

Through the act of reflective awareness, *the Viewer* recognizes their own sensations, distances themselves from them, and seeks their sources within the work. Distinguishing the properties of the work from the reactions it evokes enables a deeper analysis of feelings and of the perceived surroundings. The *dialogical disposition* thus allows the negotiation of meanings and events with *the Environment* itself.

When I put into words the principles of the aesthetic situation that I have observed, they seem hypothetical. I will ground them by presenting examples of works in which I have experienced an intensified sense of immersion achieved through the physical engagement of *the Viewer*. A synthesis of these formal aspects is embodied in my solo exhibition *Sensitive Bodies*, which presented a project of the same title, awarded a scholarship by the Mayor of Wrocław.

_Case Study | Insideness

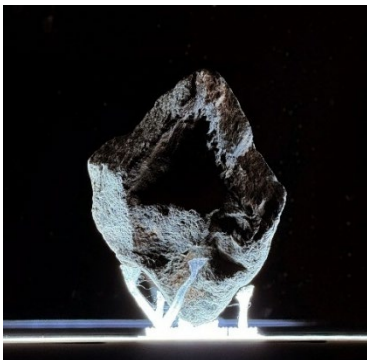
At the Schloss Museum in Linz, Austria, I encountered a solo exhibition of ceramic works by Elmar Trenkwalder.⁴⁷ Two rooms contained large-scale sculptures with glossy, slippery surfaces. They combined organic and genital connotations with Baroque and Rococo aesthetics, extending their web of references even further—toward Asian ornamentation. The density of detail was captivating, and the scale invited a slow, attentive gaze. I walked around the works without crossing their private zone—an invisible yet tangible line that separated the art pieces from the viewers.

⁴⁶ Maria Gołębiewska, “Sensotwórcza rola ciała w samopoznaniu według Maurice’a Merleau-Ponty’ego” [“The Meaning-Creating Role of the Body in Self-Knowledge According to Maurice Merleau-Ponty”], *Teksty Drugie: teoria literatury, krytyka, interpretacja*, no. 1–2 (2004): 238.

⁴⁷ *Elmar Trenkwalder, Schlossmuseum Linz*, accessed September 24, 2025, <https://www.oekultur.at/exhibition-detail/elmar-trenkwalder-schloss>.

The next room was much smaller. It was entirely filled by a work resembling a cluster of portals. Its openwork arches allowed me to step inside, enclosing me within its arms. Standing at the center, I analyzed the sensation of being enclosed. From a distance, the glossy, mucus-like textures evoked one impression; up close, as they rose around me, they produced another entirely. I was fascinated by this feeling of sinking into the strangeness of Trenkwalder's sculptures.

I observed the other visitors, who also spent more time engaging with the sculpture that filled the second room. I believe it was precisely the sense of being inside that intensified their perceptual experience and resulted in a state of suspended immersion. Moreover, a certain form of ritual of passage could be felt there—after crossing the threshold of the second room, *the Viewer* found themselves within a space entirely claimed and possessed by the work, a space the work shared with whoever stepped inside. It was an inviting and enveloping situation—in clear contrast to the divided space of the previous room, where the objects were protected by their inaccessibility and the visitors meandered among their invisible fields.



_Sprouts | Exhibition *Sensitive Bodies*

Translating this observation into my own artistic practice, I used darkness as a ritual of passage into a new situation. Crossing the threshold of the *Sensitive Bodies* exhibition—from a corridor lit by artificial light into a space submerged in darkness—*the Viewer* entered a new sensory condition. They paused, waiting for their eyes to adjust to the dark. This moment of stillness and brief disorientation detached them from the outside world, leading to a deeper focus on the present moment of experiencing the artistic event.

Figure 3. Sketch for the works *Enclosure*, 2024.

Source: author's archive.

The spotlights of the screens and the glowing wall-mounted bases of the objects naturally guided *the Viewer* from one work to another. The pieces were interconnected through a network of references: the wall-mounted objects depicted real stones, whose printed, transparent versions were shown in the work *Diaphanous—Transparent Bodies Pulsate with Risqué Vulnerability*. Digital models of those same stones became material for the transformations presented in the video *concert for nobody*. That video, in turn, was a visual afterimage of the live concert that opened the exhibition. Another screen displayed an enlarged model of one of the stones as a field of luminous points. The Viewer could explore its interior with their hands, immersing themselves in the structure.

The exhibition consisted of multiple formal interpretations of the titular sensitive bodies. Each piece overlapped and intertwined with the others, forming a dense network of references. Framed within the previously defined concept of *the Environment*

as an isolated micro-world, the exhibited works functioned as actants within a material–semantic network. As *the Viewer* lingered in the space, they uncovered the connections, delving ever deeper into the reality that had been called into being.



Figure 6. *Diaphanous–Transparent Bodies Pulsate with Risqué Vulnerability* solo exhibition *Sensitive Bodies*, IP Studio, Wrocław, 2025.

The work presents four stones around which the exhibition’s narrative was built. They were 3D-printed using a transparent material as a thin outer layer, allowing light to play across their surfaces and create the illusion of internal, three-dimensional holograms. Source: author’s archive.



Figure 5. Documentation of the *Concert for Nobody* with sound artist Katarzyna Podpora, opening the exhibition *Sensitive Bodies*, IP Studio, Wrocław, 2025. Source: author’s archive.

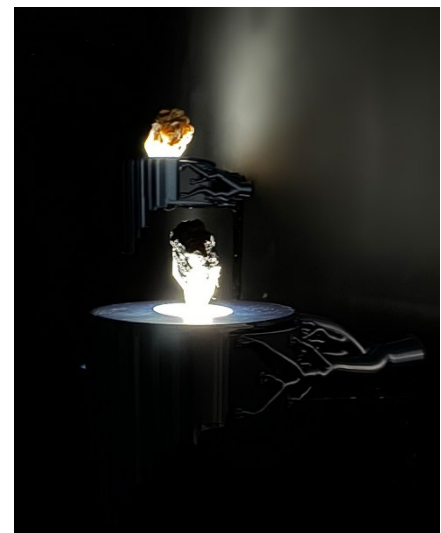


Figure 4. Objects arranged on illuminated bases, spatial installation at Sirup Gallery, Linz, Austria, 2025. Opposite the video *INSIDES*, the stones featured in the film were displayed. Source: author’s archive.

3. Dialogue

When the foreign *Environment* becomes familiar—illuminated by the soft light of initial perception—it begins to morph into *the Image of the Environment*. This individual vision, formed within *the Viewer*, bears the traces of their experiences, sensations, and emotions. Yet, *the Image of the Environment* does not remain monolithic. It is characterized by plasticity—it serves as the surface of dialogue between *the Viewer* and *the Environment*, bending and reshaping itself under each attentive thought. As perception deepens and focus intensifies, *the Image of the Environment* grows in complexity, forming new aspects that are then confronted with what surrounds it. This is the moment of negotiation between *the Environment* and its *Image*.

Dialogue, with its metaphysical resonance and ethical implications, is one of the key concepts in Emmanuel Levinas's philosophy. I am deeply moved by the call present in his thought—a call for a human, empathetic face of coexistence; a call for respect and responsibility toward the Other, the one who reveals themselves within the Dialogue. Levinas's thought was born in the shadow of the Holocaust, where dehumanization constituted the radical rupture of dialogue. For this reason, he considers the foundation of ethics to be the necessity of empathetic coexistence.

I see a profound need to continue this line of thought in the face of ecological catastrophe and the devastation of our surroundings—a moment when the destructive consequences of anthropocentrism become fully revealed. Philosophers of speculative realism seek to overcome anthropocentrism through a new dialogical sensitivity: by revealing the agency of things, the face of nature, and the intricate networks of relations among beings. They, too, develop their systems of thought to recognize the agency and subjecthood—the face—of the surrounding world.

In Levinas's understanding of encounter, the dichotomy of "I—the Other" is revealed—much like in my proposed model of art reception, where *the Viewer* experiences the dichotomy of "I—that which lies beyond me." Levinas sees dialogue as a movement beyond the self—an I that opens itself and accepts expansion through what is offered by the Other.⁴⁸ It is here that I locate the plasticity of *the Image of the Environment*.

⁴⁸ Bartłomiej K. Krzych, „Epifania twarzy u Emmanuela Levinasa. Lektura 'Całości i nieskończoności'” [“The Epiphany of the Face in Emmanuel Levinas: A Reading of 'Totality and Infinity'”] (Lublin: Wydawnictwo Naukowe TYGIEL, 2017), 130, accessed September 24, 2025, https://www.academia.edu/33288821/Epifania_twarzy_u_Emmanuela_Levinasa_Lektura_Ca%C5%82o%C5%9Bci_i_niesko%C5%84czono%C5%9Bci.

This image emerges in the dialogue between *the Environment* and *the Viewer*, who, through intentional exploration, seeks meaning within it.

Levinas also emphasizes that within the Other there glimmers a form of resistance—“the face cannot be seized or possessed; it therefore holds its own subjectivity.”⁴⁹ This insight further justifies defining *the Environment* as an autonomous entity, independent of *the Viewer*. Importantly, Levinas equates knowing with seeing⁵⁰—whereas the tender reception I propose unfolds through the harmony of body and mind, focused on deepened understanding of what is around.

_The Image of the Environment

Ludwik Fleck⁵¹ argues that knowledge transforms perception. In the approach I propose, knowledge allows for a deeper analysis of the constructed *Image of the Environment*—abstracting and categorizing its properties. Fleck also claims that perception begins with the whole, only then narrowing its focus to details. Relating his idea to *the Environment*, I locate the act of dialogue in the process of delving into the details of the represented world.

Drawing on his theory of thought stimulants, I understand the elements of *the Environment* as subliminal determinants—factors that generate impressions or sensations shared among all viewers. In its real form, *the Environment* contains representations endowed with specific expressive power—codes, symbols, and meanings. These constitute the part of *the Image of the Environment* evoked directly by *the Environment* itself. A set of such elements, unified by intention or characteristic, produces an overall resonance—the prevailing mood of the world thus created.

Grounding this idea on the level of formal expression, I perceive scale and spatial composition—as described earlier—as strong determinants of *the Viewer’s* sense of immersion in *the Environment*. These referential components may also point toward values or ideas—for instance, questioning the ethics of progress, as in the work *Model Collapse*, which I describe in detail later. This dystopian installation, through its interactive

⁴⁹ Ibid., 131.

⁵⁰ Ibid., 130.

⁵¹ Fleck serves as an important point of reference, as his concepts provide a significant theoretical background for Actor–Network Theory (ANT), which focuses on the study of relations and mutual interactions to which I referred when describing the structure of *Environments*.

environment, exposes the influence of technological development on language, and thus on the very way we comprehend events of the external world.

Objects, the appearances of things, their aesthetics carry not only their literal presence but also metaphors, symbols, and meanings. This intersubjective fabric becomes the meeting ground where what is perceived intertwines with the act of perception itself. When objects do not function merely as mimesis, but as references to the very mode of experiencing a given situation, perception becomes more complex. It changes with duration, deepened exploration, and sensorial immersion. Such a situation requires the Viewer to assume *being-in-the-installation* as a constitutive element of *the Environment*—only then can *the Environment*, once familiarized, take root within the Viewer and, alongside its symbolic and cultural meanings,⁵² sprout as a carrier of individual associations.

This process unfolds in dialogue: *the Image of the Environment* is continuously negotiated between *the Viewer* and *the Environment*. Such representation recalls the tripartite model of perception theory, in which the subject perceives the object through its representation—a classical concept of indirect perception. However, a crucial tension must be acknowledged: In object-oriented ontology, the sensuous object constitutes an aspect of the real object, coexisting with it. Together, they form a whole—an object that possesses both the potential for manifestation (as the sensuous object) and an autonomous, withdrawn existence (characteristic of the real object). These two dimensions complement and cooperate with one another; there is no hierarchy between them, unlike in theories of indirect perception, where what is perceived is merely a representation and the entire act of perception centers on the perceiver.

In the approach I propose, perception becomes an Encounter in Levinas's sense—that which is perceived remains autonomous yet reveals itself as a whole—but cannot be fully perceived due to the cognitive limitations of the perceiver. Fleck's perspective, in turn, concerns the feelings evoked in *the Viewer* by the perception of the surroundings, as well as their influence on the process of perception itself. In my understanding, this dependency becomes a way of negotiating *the Image of the Environment* from *the Viewer's* perspective. When combined with actor-network theory, it allows the elements of *the Environment* to be revealed as relational.

⁵² Roland Barthes wrote about cultural myths—that is, the hidden meanings of words and images. For instance, a milk advertisement may symbolize health and purity rather than merely the product itself. Clifford Geertz perceived culture as a system of meanings within which human beings operate in a network of symbols they create and transmit. Umberto Eco, in turn, drew attention to the polysemy of signs, emphasizing that their meaning depends on cultural context and is never finally fixed.

In this dissertation, I seek to demonstrate that the contact with *the Environment* is direct—that what is external and perceived is immediately given. In the act of perception, it becomes a sensuous object.⁵³ The sensuous object is not a representation, nor can it be reduced to a mental image or a sign—it is the actual form of the thing, yet one that remains correlated with the perceiver. From this characterization arises the term I propose: *Image of the Thing*. Though this may seem intricate, my aim is to show that perception reaches *the Environment* directly. In the process of immersing themselves in the situation, *the Viewer* builds personal sensations and meanings, thus forming *the Image of the Environment*. In doing so, I approach James J. Gibson’s concept of affordance, which belongs to the theory of direct perception.

“Affordances are all the possibilities for action that the environment offers.”⁵⁴

Gibson argues that the perception of one’s surroundings is based on relating spatial properties and the relations between objects to the perceiver’s own position. He introduces the notion of “occluding edges” to illustrate this concept. It refers to the idea that the spatial relationship between objects not only conveys their mutual arrangement but also expresses their distance in relation to the observer. I wish to emphasize that this is the moment in which *the Environment* becomes expanded by *the Viewer’s* possibilities of action—*the Viewer* is rooted within *the Environment*, included inside it (!). According to Gibson, the concretization of action possibilities—the availability of elements and the capacity to interact with them—is itself a part of perception.⁵⁵ The concept of occluding edges supports the factor I introduce as a deepener of immersion: *blurred boundaries*.

Perception is direct at the level of affordances, for the perceiver immediately grasps the relational possibilities for action offered by the configuration of things. At the same time—in accordance with object-oriented ontology—every object retains a withdrawn surplus of reality, while what enters into contact assumes the status of a *sensuous object* (a mode of appearance). Affordances are therefore relational–dispositional properties: they

⁵³ See Graham Harman, *Traktat o przedmiotach [The Quadruple Object]*, trans. Marcin Rychter (Warsaw: Wydawnictwo Naukowe PWN, 2013).

⁵⁴ Dobromir G. Dotov, Lin Nie, and Matthieu M. de Wit, „Zrozumieć afordancje: przegląd badań nad główną tezą Jamesa J. Gibsona” [„Understanding Affordances: A Review of Research on James J. Gibson’s Central Thesis”], trans. Damian Lubiszewski and Natalia Strehlau, accessed September 24, 2025, <https://avant.edu.pl/wp-content/uploads/DDLNMW-Zrozumiec-afordancje.pdf>.

⁵⁵ Pallasmaa also draws attention to this very quality of constructing measures of the environment in relation to oneself and one’s own body, emphasizing the role of corporeality in the process of perception; see Juhani Pallasmaa, *Oczy skóry. Architektura i zmysły [The Eyes of the Skin: Architecture and the Senses]*, trans. Michał Choptiany (Kraków: Fundacja Instytut Architektury, 2012).

exist independently of any particular act of perception, yet always in relation to a specific type of body and its repertoire of actions.

Here I wish to emphasize the tension between object-oriented ontology and Gibson's notion of affordance—yet also to highlight the points of convergence between them. A central point of contact for me lies in their shared inspiration in Heidegger's thought—particularly in his analysis of the object as an *equipment*, as something *ready-to-hand*. Affordances correspond to Heidegger's "functional totality," the structure of *for-which* and *in-order-to*.⁵⁶ Graham Harman, in turn, seeks to expand Heidegger's rigid dualism by introducing dynamics, tensions, and transitions between the categories of the object (sensual/real).⁵⁷

Bringing together the functionality articulated by Gibson and the independence proposed by object-oriented ontology is, in my view, crucial for analyzing *Interactive Environments based on Immersion*—spaces that intertwine intentionality and functionality with the metaphysics of aesthetic experience. Harman entangles the object in a continuous relation between appearance and withdrawal, while Latour presents the object as both actor and actant within a complex network of relations—*the Environment* thus becomes a field of interacting forces. Within this pulsating field, animated by the rhythm of each of its elements, "an affordance is neither a property of the object nor of the subject—it is both at once."⁵⁸

_Space as a Determinant of Action

The longer *the Viewer* remains within the space of the work, the more distinctly the possible modes of action reveal themselves: the work "unfolds" like a book, exposing the density of its relations and its inner dynamics. "The image becomes an active partner

⁵⁶ Dobromir G. Dotov, Lin Nie, and Matthieu M. de Wit, „Zrozumieć afordancje: przegląd badań nad główną tezą Jamesa J. Gibsona” [„Understanding Affordances: A Review of Research on James J. Gibson's Central Thesis"], trans. Damian Lubiszewski and Natalia Strehlau, accessed September 24, 2025, <https://avant.edu.pl/wp-content/uploads/DDLNMW-Zrozumiec-afordancje.pdf>.

⁵⁷ Graham Harman, *Traktat o przedmiotach* [*The Quadruple Object*], trans. Marcin Rychter (Warsaw: Wydawnictwo Naukowe PWN, 2013), 42.

⁵⁸ Dobromir G. Dotov, Lin Nie, and Matthieu M. de Wit, „Zrozumieć afordancje: przegląd badań nad główną tezą Jamesa J. Gibsona” [„Understanding Affordances: A Review of Research on James J. Gibson's Central Thesis"], trans. Damian Lubiszewski and Natalia Strehlau, accessed September 24, 2025, <https://avant.edu.pl/wp-content/uploads/DDLNMW-Zrozumiec-afordancje.pdf>.

in perception,⁵⁹ and within the constellation of elements, affordances begin to surface. It is precisely here that space begins to act as a determinant of behavior.

The arrangement of elements within space holds the potential to influence *the Viewer*. In earlier chapters, I referred to composition as an ordering principle structuring *the Environment* and as a force that positions *the Viewer* in relation to the work. This influence arises from the process of one's rooting within the situation. The quality responsible for this effect does not belong entirely to *the Viewer*, nor to *the Environment* itself—rather, it emerges as the result of negotiation between their mutual potentials.

However, it is worth noting that some properties of *the Environment* are so deeply embedded in culture that they are almost automatically recognized by *the Viewer* and translated into particular patterns of action. Such properties can be described as determinants of behavior.

_Case Study: *Passage*—Further Analysis

The previously analyzed exhibition *Passage* by Dorit Margreiter Choy demonstrates strong formal aspects that concretize *the Viewer's* spatial behavior. The space encourages to settle in, offering large, grey beanbags whose formless shapes adjust precisely under the weight of the body. One may sit, one may comfortably experience the work within the sterile timelessness of the setting. The space carries an invitation—though not a warm one, like the gentle touch of a hand resting lightly and reassuringly on the uncertain shoulder of one who might enter. Rather, it is the kind of invitation extended by the automatic doors of vast shopping malls, making the very possibility of entry visible—an invitation without tone or persuasion. I accepted this invitation and lost myself in the geometric aesthetics of the technical video. In this work, the influence exerted by the formal means upon *the Viewer* is rooted within the piece itself, while the mode of sensing, exploring, and experiencing becomes an integral part of the aesthetic event.

The described artistic intervention envelops *the Viewer*, transporting them into an alternative space of sensations conjured within the ascetic gallery. The sense of anonymity and the piercing cold of the presented aesthetics become not only perceptual impressions but inherent qualities of the total installation itself. Though encoded within the work, they unfold through the Encounter. The space paves the way toward a fuller

⁵⁹ Brian O'Doherty, *Biały sześcian od wewnątrz. Ideologia przestrzeni galerii [Inside the White Cube: The Ideology of the Gallery Space]*, trans. Aneta Szyłak (Gdańsk: Fundacja Alternativa, 2015), 64.

reception of the video, while simultaneously becoming part of the work—a tendril intertwining with *the Viewer's* sense of being.

_Case Study: *Uncensored Lilac*—Further Analysis

The exhibition *Uncensored Lilac*, through its spatial arrangement, also contains a built-in instruction for use. Like a tendril, it coils around *the Viewer*, guiding and anchoring their attention to the elements around. Space leads. The Viewer immediately understands that the path among the sculptures is meant to be traversed—and that at its end, a bench awaits, intended for viewing the video while seated, facing the screen. Function emerges through *the Viewer's* reading of space—it is an affordance.

The way itself is an intriguing artistic method—a prelude that prepares *the Viewer* to experience a specific post-digital aesthetic. Confronted with unfamiliar objects, *the Viewer* observes them, discovers them, and learns—while, in the background, the goal of the journey remains visible: the source of the imagery whose fragmented traces appear all around. The unknown entices and attracts, inviting exploration. The ornamented path leading toward the screen becomes a moment of entry and discovery—a gesture of approaching and forming a closer bond with the world thus conjured. Before the screen, *the Viewer* may forget their own body—it has fulfilled its task of carrying them along the path. Now it may rest on the bench and dissolve⁶⁰ into the experience of the virtual world. This is all the easier because part of *the Viewer's* mental engagement is already there—the body has carried them through those cardboard figures, like postcards depicting distant, promised paradises.

The video space stretches outward, spilling from the screen and gripping the surroundings with its tendrils. But what happens when I turn my gaze away from the video?

The illusory space no longer hides its mask—the cardboard figures reveal their reverse: white, rounded shapes supported by thin slats and tiny metal brackets. I leave then, side by side with the bitter taste of truth—the truth of an illusion aware of its own one-dimensionality, sincere enough to expose the emptiness beneath.

In this installation, *the Viewer's* experience unfolds in acts—the work extends through space, gradually preparing the one who encounters it for a moment of complete immersion. After living through the virtual reality of the video, *the Viewer* returns to the realm of the real and the bodily. They are confronted with the illusory nature of the worlds that have been conjured—made visible through the reverse sides of the cardboard figures.

⁶⁰ In the experience of visual artworks situated within virtual worlds, the body is often suspended—it does not participate directly in the act of perception but remains in a state of passive presence.

This poignant aesthetic experience reveals the illusion of the created situation as the final act of the artwork's unfolding. It completes the process of experiencing.

_Tendrils and the Porous Body

The classical paradigm of art reception imposes distance—a spatial separation between the viewer and the artwork. However, the arguments discussed above point to the immersive nature of the viewer's embedding within the situation—including their physical involvement. The body, interwoven with the act of perception, provides sensory stimuli that intensify the experience of the work. In creating my own projects, I observed a particular dynamic in the formation of *Dialogue*—a gradual transition from initial distance toward relational openness, resembling the everyday process of “breaking the ice.” Once activated, *the Viewer's* body more readily engages in interactive gestures. Elements of *the Environment* that intuitively evoke movement encourage further experimentation and the transgression of perceptual habits. In this way, a bridge emerges between the artwork and movement—opening the possibility for a complex interaction.

_Sprouts | The Engaged Body

My first solo exhibition, *Sediment*, explored the possibility of understanding between *the Environment* and *the Viewer* based on special arrangement. Frames containing poems that described the events referenced by the presented works were arranged on the floor. To read them, *the Viewer* had to crouch down. The glowing frames, leaning against fragments of industrial concrete waste, lured *the Viewer* to come closer, to bend down, and to establish an intimate approach. In doing so, they determined an unconventional posture of reception, causing the body to break free from the classical, rigid stance.

Next to them stood the installation *Your Touch*, which used a 3D model of a stone as an interface for manipulating its visible, virtual counterpart. The activated body—already in motion—was more eager to reach for the object.

Another gesture introducing bodily engagement was a narrow tunnel, where *the Viewer* could explore documentation of my typographic intervention workshops. Inside, one could find a map of visited places, photographs of works, and materials used during the process—and could also create their own typographic composition. At the end of the tunnel, in a small alcove, stood a computer with a mouse, allowing navigation through an interactive poetry collection presenting the works created during the workshops.

_Sprouts | The Concretization of a Work Rooted in Place

I have written about the place that implants itself within the work—merging with it and allowing it to unfold across space. I have also mentioned the tendrils through which the work extends into the surfaces of its influence. In these forming relations, I perceive

the essence of immersion—a deep entering of *the Viewer* into the work. Affordances constitute another layer of this contextual and connective approach. In what follows, I translate this theory into the field of my own artistic practice.



Figure 7. *Nothingland*, MiserArt Gallery, Wrocław, 2023.

Source: author's archive.

During the opening of WRO Biennale 2023, I presented the audio-reactive visualizations *Nothingland* as part of the event *Random Check*, held in the MiserArt Gallery. The brick wall—with its variable texture and multicolored surface—distorted the projected images.

In the spirit of a *dialogical disposition* and in pursuit of relations between place and artwork, I treated the structure of this specific brick screen as a quality in itself. The gesture of revealing the physical properties of the real site deepened the spatial experience and anchored *the Viewer* in the here and now.

My exploration of the relationship between projection and space began earlier, with the creation of the interactive site-specific installation *Hydroimaginacje* (Master's diploma project). There too, the video material served merely as a starting point—the actual work emerged only at the moment of projection, when the image was cast onto the concrete architectural forms of a staircase, being sliced and reshaped by its geometry.

A similarly creative approach to spatial projection was further developed in *CYBERSKÓRA*—a series of audiovisual workshops and concerts that I co-organized and curated together with Bartosz Radzikowski. Through *CYBERSKÓRA*, I explored numerous configurations of the fusion between space, projection, and distinct visual aesthetics.

In *Nothingland*, smooth gradients allowed the texture of the wall to resonate. I also employed a counterbalance—elaborate forms and visual multiplications whose density concealed the projection surface. Through this interplay, I created a broad contextual spectrum in which the wall's roughness alternately emerged as a defining quality of the image or disappeared entirely. The temporal arrangement of these effects made them appear intentional and deliberate. I could thus navigate between these two states—at times letting the projected elements dominate the spatial character, and at others allowing the qualities of the space itself to speak more fully and audibly through the applied artistic means. The video became a fluctuation—a continual modulation of relations between the components that shaped the aesthetic situation. The Viewer, in turn, was confronted with what Gibson described as *occluding edges*—the very boundaries of media overlapping and interpenetrating, situating *the Viewer* within a morphing field of shifting forces.

In this work, the activity of *the Viewer* was reduced to perception—yet it was a continuous and active process, constantly redefining the relationship between the perceived elements. When analyzing affordances, it is essential to also consider works that engage *the Viewer* physically. It should be emphasized that such works likewise embody properties grounded in new technologies—aspects to which I will return in the chapter devoted to technology.

_Sprouts | The Concretization of a Work Rooted in the Viewer

The idea of the *clinging tendril*—the way a work reaches out to grasp *the Viewer*—emerged while I was experimenting with one of my first interactive projections, *Swarm*.

It was a tangle of threads resembling a web, dispersing whenever *the Viewer* approached. Depending on the position of their hands, the pattern of the threads shifted—though their density remained constant. The operating principle of this work was very simple.

During a break at the theatre, while the entire team rested, I projected this piece instead of a standard visualization. I glanced at the screen and saw how people passing by reacted. Even immersed in their duties and the feverish rhythm of the theatre, they responded to the change. When they entered the field of the projection, the image stopped them. Most often, they raised their hands—searching for another interaction. In that moment, I recognized the potential of the work to suspend *the Viewer* in the act of seeing—to pull them out of everyday flow and enclose them within a Dialogue.



Figure 8. *Coalesce* with performing dancer Magda Niedzielska, symposium *It Was, It Is and It Will Be*, Goszcz, Poland, 2023.

Source: author's archive.

Motivated by this observation, I created the work *Coalesce* during the international symposium *It Was, It Is, and It Will Be*, in which I used architecture as a force determining *the Viewer's* spatial position. At the centre of the church—within the curve of the portal

arch—I placed a projection depicting a white plane intersected by two vertical black lines. These dark “fractures” fluctuated like a living organism. The projection, however, was not purely white: it illuminated the rough, plaster-stripped surface of the wall. The bright screen cast light across the dim interior of the abandoned church and reflected off the floor, forming a field of the work’s influence. Drawn by the brightness, Viewers approached closer. Their proximity opened the black vertical lines, which expanded into abstract, movement-sensitive patterns. The Viewers explored the range of motion—modulating the tempo and amplitude of their gestures, from subtle shifts to wide, dynamic movements—in search of diverse aesthetics.

Was the body, in this situation, reduced to a tool rather than a deepened form of sensing? I am inclined to admit that it was; yet the immersiveness of this experience remains undeniable. The arranged event separated *the Viewer* from reality to such an extent that they could allow themselves to move beyond normalized bodily forms. In dialogue with the emerging aesthetics—responding to the reactions of the work—*the Viewer* explored gestures and bodily configurations, fully immersed in the situation brought forth by the piece.

In search of formal solutions enabling a deepened—also bodily—mode of perception, I created a series of works similar to the portal described above, titled *Cyberscapes*. They embedded *the Viewer* more profoundly within the invoked aesthetic: presenting a landscape into which the outline of their silhouette intervened. With the appearance of *the Viewer*, the audiosphere expanded by yet another layer. The digital reflection moved in accordance with the person’s real gestures. Points of interference between the silhouette and the landscape disintegrated into particles resembling snow, spread like liquid substances, or scattered and vanished—the diversity of these reactions deepened the immersion.

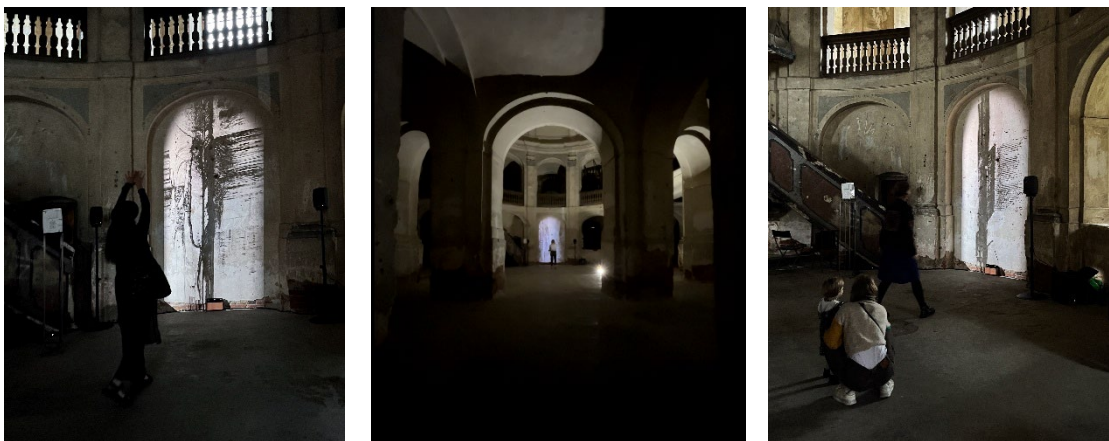


Figure 9. Documentation of an interactive installation from the series *Cyberscapes*, in which the viewer’s movement altered the abstract landscape, symposium *It Was, It Is and It Will Be*, Goszcz, Poland, 2023. Source: author’s archive.

Cyberscapes referred to post-nature: to waste, digital networks, and landscapes of decayed infrastructures. Coexistence intertwined presence with destruction, exploration

with degradation—resonating with Morton’s concept of dark ecology, a hybrid of the organic and the technological.

The landscapes were artificial—I constructed them by integrating *the Viewer’s* silhouette into digital sketches I created as interpretations of natural phenomena. It was precisely the outline of the body that became my starting material—the main axis around which I built the compositions. I explored how the visualization of movement influences *the Viewer’s* bodily awareness (proprioception). I created a range of interactive projections responsive to specific forms of motion. At times, they reacted to speed—disappearing during intense, abrupt gestures and reappearing with slower movements. At other times, they detected differences between poses, tracing points of change. Still others generated *sculptures of movement*, freezing a pose and lifting it upward as time passed. These design strategies determined various movement patterns, and within their choreographic nuances lay the potential for constructing complex images of motion.

When I studied the interaction of Viewers with such works, it became clear that these creations engaged primarily those with heightened bodily awareness. They clung like tendrils to those who work with their bodies—dancers and choreographers. For untrained participants, the dialogue between motion and visualization offered a limited spectrum; it did not surprise them, unfolding within the narrow range of their habitual movement.

When I created one of my first visualizations based solely on the silhouette, I experimented with my own body, searching for the images it could bring forth. The interactive projection transformed the contour of the body into rising smoke. Later, I showed the installation to Wioletta Fiuk.⁶¹ The dancer and choreographer spent far more time moving—dancing—with the visualization than I ever did. I watched as she searched for forms, holding her body in intricate static poses only to shift swiftly into new ones. I observed how she used micromovements to trace a thicker outline of her figure. I was captivated—mesmerized by the multiplicity of aesthetics and creative possibilities offered by my visualization. Yet what fascinated me most was the relationship between the dancer and the projection of her body.

⁶¹ Wioletta Fiuk and Patryk Gacki form a dance and choreography duo with whom I had the pleasure of collaborating on the performance *Pan Zaraz*. During our work together, I shared sketches of interactive motion visualizations, analyzing the relationship between interaction and the bodily experience of the viewer.

Patryk Gacki and Wioletta Fiuk are the founders of the Dzuki Styl Company dance theatre, which for years has combined the expressiveness of movement with a contemporary stage form. See *Dzuki Styl Company*, accessed September 20, 2025, <https://dzikistylcompany.pl/>.

When I reflect on the ontological nature of this situation, I cannot ascribe authorship of the work to myself. I feel rather like the creator of a tool—one that *the Viewer* employs. Wioleta, however, interprets the situation differently. She told me that, seeing the visualization’s reactions, she began to *feel* her body differently. She searched for formal solutions in response to the projection’s behaviour, drawing on her choreographic knowledge. She said she felt as though she were dancing with a partner. The visualization guided her—and in my view, she was translating the logic embedded in the visualization into her choreographic decisions. Just as in classical partner dance one responds to the partner’s propositions, here, within the digital image of her own body, she found an impulse for creation. The stimulus, implanted outside herself—within the visualization—became a source of development, allowing her to move beyond the constraints of monolithic choreography and, in dialogue, to create new forms.

After extensive exploration, I decided not to pursue the concept of an immersive interactive environment based on *the Viewer’s* body outline as the focus of my doctoral artistic project. This approach demanded a very specific set of perceptual abilities and proved too narrowly accessible to truly address the search for immersion through interaction. I believe that a deepened sense of bodily awareness emerged only in works involving dancers, choreographers, or individuals with an expanded sensitivity to movement. I heard statements confirming this observation while presenting symmetrical, interactive installations during various artistic events—festivals, exhibitions, and performances.

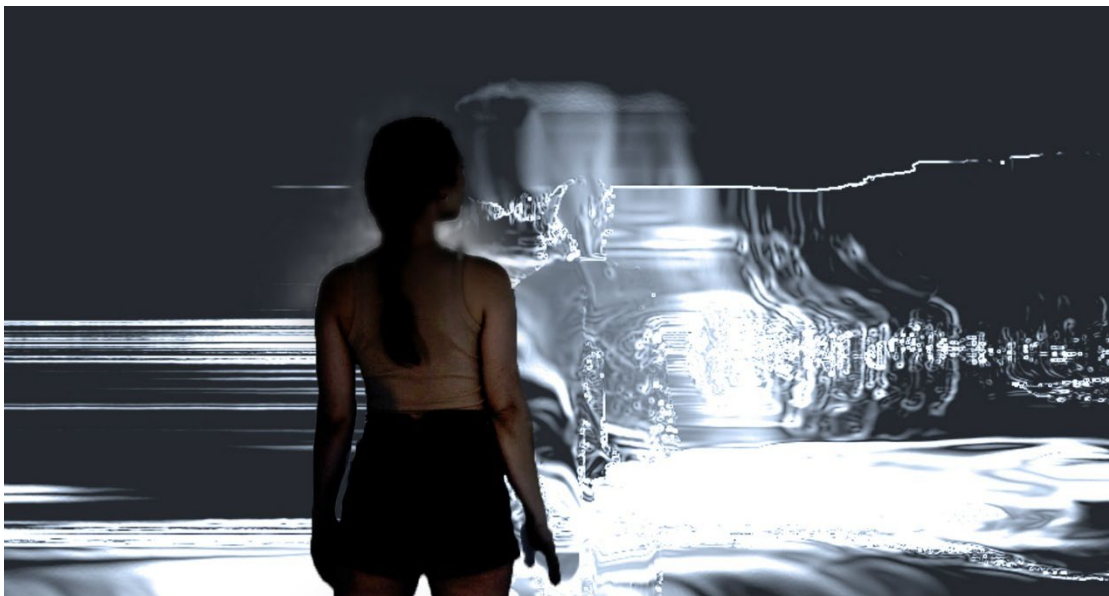


Figure 10. Work from the series *Cyberscapes — LASG_05 / come alone*, with music by Sylwester Galuschka; exhibition *Palimpsesty Przestrzeni [Palimpsests of Space]*, Geppart Gallery, Wrocław, 2024. Source: author’s archive.

For less specialized audiences, maintaining engagement required a more complex aesthetic to sustain their attention and encourage them to use their bodies to initiate change. For me, however, this was an *instrumental body*—one that, instead of deepened reception,

became a tool for producing visibility—a means to an end, rather than a plane for experiencing sensations.

_The Resonance of Dialogue

In the philosophy of dialogue, a metaphysical resonance emerges—one tied to openness toward the Other and to the positioning of ethics before ontology. Though rooted in reality, dialogue reveals a fundamental dimension that extends beyond the horizon of the participant’s empirical and theoretical experience. In Levinas’s approach, it becomes an experience of transcendence. Following this line of interpretation, I discern an existential aspect within *the Image of the Environment*. The work becomes so deeply integrated with *the Viewer* that it provokes reflection on the essence of phenomena—not on singular events or appearances, but on the ideas that underlie them.⁶²

The sublime is a category concerned with the metaphysical resonance of experienced aesthetic situations. In Lyotard’s interpretation, it pertains to the present state of things in their continuous transformation—in their very becoming.⁶³ It is therefore a category that emerges in relation to works anchored in reality.⁶⁴ The ruins of great civilizations evoke the feeling of the sublime—they touch the fragility of monuments and reveal the power of transience. They provoke reflection on the future condition of the known reality and on the very essence of time: its enduring, unrelenting force. Often, the notion of the sublime also refers to the decentered position of the human being, pointing toward the Absolute—a higher, external force beyond human control.

The sublime is the feeling that arises atop towering mountain ranges or in response to a raging storm seen from the shore. It awakens in *the Viewer* a sense of helplessness, smallness, and dependency before incomprehensible higher powers—the forces of nature and the universe. In doing so, it fills the calm of a human-controlled reality with awe, mystery, and uncertainty. It exposes the illusion of canonical frameworks and rules, touching

⁶² Michał Ostrowicki, “Teoria sytuacji estetycznej M. Gołaszewskiej jako fundament estetyki” [“Maria Gołaszewska’s Theory of the Aesthetic Situation as the Foundation of Aesthetics”], accessed September 24, 2025, http://www.sideymyoo.art.pl/old/Teoria_sytuacji_estetycznej.pdf.

⁶³ Jean-François Lyotard, “Wzniosłość i awangarda” [“The Sublime and the Avant-Garde”], trans. Marek Bieńczyk, *Teksty Drugie: teoria literatury, krytyka, interpretacja*, no. 2/3 (1996), 176.

⁶⁴ The notion of reality I refer to concerns installations that do not transport the viewer into external situations, representations, or metaphors—they embody the quality of *presentism* (see Ryszard W. Kluszczyński, *Sztuka interaktywna. Od dzieła-instrumentu do spektaklu* [Interactive Art: From the Work-Instrument to the Spectacle] (Warsaw: Wydawnictwa Akademickie i Profesjonalne, 2010), 100).

that which lies beyond concretization.⁶⁵ The sublime appears at the site of rupture—when the monolithic and certain structure of a concept or a state of things is shaken. It is a fissure that confronts *the Viewer* with conflicting emotions.

According to Lyotard, the value of the sublime as a conceptual tool lies in its capacity to lead reason into contradiction.⁶⁶ That which terrifies may appear beautiful; that which is alien may attract. Encountering such works reveals the limits of human cognition, as well as the multiplicity and indeterminacy of the contemporary world.

The work that comes to mind when I consider the notion of the sublime within immersive environments is the interactive installation *Model Collapse* by Cyanne van den Houten and Ymer Marinus, which I experienced during the Ars Electronica Festival 2025 in POST CITY, Linz, Austria.⁶⁷ The space of the installation is suspended in darkness, illuminated only by LED-lit cyber sculptures. Each of these sculptures tells a story of mystification, gender bias, non-Western algorithmic traditions, ecological impact, and hidden labor—collectively opposing the dominant narratives surrounding artificial intelligence. The representations take the form of futuristic reinterpretations of canonical cultural figures. One of them—the Venus of Willendorf—is covered in a black, glossy, latex-like substance, her head encircled by a glowing LED halo. The objects are positioned between two projections depicting AI-generated imaginary landscapes corresponding to four conceptual categories. The projections are connected to the interactive system.

I first encountered the installation as a spatial composition—only on the following day did I engage with its interactive layer. Viewers interact with the sculptures by entering queries into a central AI interface. The local language model retrieves the query from the digital sphere, awakening the corresponding sculpture to share knowledge about the self-consuming sources of artificial intelligence—sources often rooted in the exploitation of both material and data resources. Following linguistic logic, the model assigns each query to one of the four categories. Each category has its own imagined landscape, projected as an environment—a place to which the entered query is transported. This shift in the perception of the world coincides with a shift in the understanding of language. The installation reveals the impact of linguistic transformation on the surrounding reality,

⁶⁵ In accordance with the conclusion proposed in Jean-François Lyotard's article "Wzniosłość i awangarda" ["The Sublime and the Avant-Garde"], trans. Marek Bieńczyk, *Teksty Drugie: teoria literatury, krytyka, interpretacja*, no. 2/3 (1996), I am inclined to fear that "one can speak of the sublime only in a sublime style" (see *ibid.*, 177).

⁶⁶ *Ibid.*, 175.

⁶⁷ Cyanne van den Houten, Ymer Marinus, and Telemagic, *Telemagic*, accessed September 24, 2025, <https://ars.electronica.art/panic/en/view/model-collapse-1fb38ddb450c8177aba4e54749984040/>.

projecting a vision of the future as cybernetic—one that reconfigures the traditional understanding of the real. I locate the sublimity of this work in the union of the familiar, stable, and primordial with the futuristic, uncanny, and unsettling.

Although I have tried to avoid it, I find myself naturally weaving new media and interactive works into the framework of *Immersive Environments*. Indeed, they touch upon the very properties I have discussed and clearly exemplify the theories I have outlined. However, they are deeply rooted in the ground of mixed reality—the virtual and the real—and, through their embedding in new media, their modes of impact and operation differ. For this reason, I have presented them only fragmentarily, focusing solely on those elements that remain consistent with the proposed framework of references. I will return to the omitted technological aspects later in this dissertation. In the following chapter, I will analyze the influence of new technologies on the relationship between *the Environment*, *the Image of the Environment*, and *the Viewer*. Referring to the *dialogical disposition* proposed throughout this work, I will also explore artistic creation in collaboration with new media forms of expression. First, however, I will identify the *tangles*—the loci where the aspects described above converge to form the sources of immersivity.

4. Tangles

Immersion arises within Dialogue—it is the feeling of descending into the work, of entering its structure, embracing its logic, and momentarily departing from what lies outside. It is an act that unfolds between what *the Environment* offers and what *the Viewer* brings into it. Immersion, therefore, is not solely a property of the artwork, but a mode of encounter. It requires intention—*the Viewer's* readiness to seek aesthetic experience, to delve into the proposed situations, and to construct their own meanings. It is within this dialogical stance that immersion is born.

The Immersive Environment expands within the field of action. Installations that penetrate space and make use of its qualities create extended arrangements that surround and engulf. When a place is inscribed within them for *the Viewer*, a highly immersive aesthetic situation emerges. An insideness arises—a sense of participating in an event generated by the work itself. The moment when *the Viewer* assimilates the space as their own can be regarded as the inception of immersion.

As the unfolding of individual elements generates a sense of time, *the Viewer* adjusts their own rhythm to that of the work. This synchronization binds them to the installation and deepens the state of immersion. Immersion is, therefore, also a *temporal relation*—a shared duration in which the work and *the Viewer* resonate together.

An essential aspect of immersivity lies in the structure of *the Environment*. Dense, relational connections between its elements form an organism of internal coherence. Only once *the Viewer* has settled within it, can they perceive the interlinking dependencies, becoming ever more entangled in the web of relations. It is not the multitude of stimuli but intermediality—the interplay of media and the tensions between them—that gives rise to immersion. Its sources lie not in multimediality, but in the entanglement of media and their mutual resonances.

The immersive experience stretches between body and mind. The senses transmit stimuli, forming a somatic-sensory experience that connects *the Viewer* with *the Environment*. The mind, attuned to the signals of the body, constructs its own structures of meaning. Within this body–mind entanglement, immersion takes root—as a mode of knowing and feeling at once.

With time, reflection arises. Sensations and thoughts pave the way toward conscious experience. In *the Viewer's* awareness, *the Image of the Environment* detaches from its source, morphing into a plastic form—open to interpretation, sensitive to perception. The Viewer becomes a co-creator of meaning, analyzing, seeking connections, negotiating sense. In this dialogue with *the Environment*, the dynamics of immersion reveal themselves—fluctuating, open, dependent on sensitivity and the willingness to encounter.

Immersion thus emerges in the space between: between the work and the viewer, matter and perception, body and thought. Its strength lies in relationality—in the entanglements that bind what is separate, creating an experience that is both complete and shared.

II. Environments Growing from the Ground of Technology

To precisely outline the conditions of immersion within *Environments* grounded in technological development, I examine two entangled vectors of technology's influence on the aesthetic situation. First, technology transforms the Outside: contemporary reality is increasingly described as mixed—both real and virtual. Virtuality and telepresence have become part of everyday experience. Second, technology modifies the cognitive apparatus of *the Viewer*—attention, memory, modes of perception, and interpretative habits—from the navigability and modularity of experiences to the acceptance of multichannel stimulation.

I am interested not so much in cataloguing the negative consequences of technologization as in the new forms of being-in-the-world that emerge from it. I therefore analyze phenomena in which virtuality does not isolate but initiates communal frameworks of feeling—as in ASMR or “oddly satisfying” videos.⁶⁸ At the same time, interfaces and algorithms become mediators of relations, shaping the ways we perceive and connect. I identify the key properties that constitute this sphere: modularity, navigability, data connectivity, and the resulting intermedial reactivity (sympathetic media). In parallel, I discuss telepresence and virtuality as contemporary forms of presence that reorganize the dramaturgy of reception.

The presented case studies and artistic practices serve as laboratories for a *dialogical disposition* toward technology. This disposition entails a sensitive inquiry into the inner principles of the tools employed and the material properties they reveal—standing in contrast to the tendency to impose human logic upon the medium. I also attempt to delineate the boundary between immersion and dissolution within *the Environment*, seeking methods that reintegrate experience, such as grounding in materiality or rituals of passage. In this perspective, *the Immersive Interactive Environment* becomes a proposal for a tender, contemplative artistic response to the complexity of mixed reality.

⁶⁸ I further develop those issues in the subsection “*Multisensoriality and the Rite of Passage*” on page 44 of the present dissertation.

5. Cyber-Habitats—The Expansion of Reality into Technological Domains

Technology has become not only a tool of cognition or an aid in performing everyday tasks. Like a genetic modification, it first appeared within certain sequences of daily life. Animated by social enthusiasm and fueled by the escalating success of successive innovations, it mutated into a new tissue of reality. The Internet—one of the most pervasive and influential technological creations—has evolved into a Place, a space for the concretization of new aesthetics, new music, new communities⁶⁹. Reality filtered through technology—scanned, analyzed, and reproduced—has become an inseparable part of the world. Alongside analog visual messages, digital representations have grown: LED billboards and moving projections. Events, happenings, and even *reality itself* have begun to unfold within virtual space. A human being existing in such a multifaceted environment becomes accustomed to constant multi-stimulation—living in constant contact with the Outside, responding simultaneously to its virtual and real spheres. If we understand art as a tool for describing reality⁷⁰, then *Immersive Interactive Environments* should reflect the expanded and multifaceted character of contemporary existence. Moreover, the Figure of *the Viewer*, situated within this mutable reality, also morphs according to its transformations. New planes of perception and contact with the world have emerged—spaces ready to receive aesthetic experience—and thus, the sphere of art’s influence has expanded in step with the evolution of its surroundings.

My active participation in artistic events within the field of cybernetic art helps me gain distance to those creations—but also to acclimatize within the spaces of digital art⁷¹. In these environments, I encounter a kind of fascination that I inevitably absorb and translate into my own way of thinking. It is not directed solely toward technological artifacts—innovations or inventions—but rather toward their modes of functioning, their logics, and mechanisms of construction. What captivates me most is the transformation of relations among the factors—both familiar and newly emerging—that participate in the creation

⁶⁹ See Valentina Tanni, *Exit Reality: Vaporwave, Backrooms, Weircore, and Other Landscapes Beyond the Threshold*, trans. Aileen Carruthers (Ljubljana: Aksioma – Institute for Contemporary Art, 2024).

⁷⁰ Lev Manovich, *Język nowych mediów [The Language of New Media]*, trans. Piotr Cypryański (Warsaw: Wydawnictwa Akademickie i Profesjonalne, 2011).

⁷¹ Earlier, I described the moment of entering the *Environment* as a step into the Unknown—a space that must be illuminated by the bright light of cognition so that the Viewer can acclimate within it. For a long time, I myself lingered on the threshold of cybernetic art—enclosed within the Unknown. Although I could perceive the artistic value of cybernetic creations, they appeared to me as alien. I tried to categorize and rationalize my experiences intellectually in order to accept that which was foreign or other. Only after a long process of assimilation did the immersive and engaged mode of reception become accessible to me.

of events. Technological entities become cybernetic conglomerates, expanding and proliferating further. They extend robotic arms or trigger programmed commands; they adhere to concepts embedded in reality, constructing networks of references and interpretative variations. They bring into being forms that are purely cybernetic—and yet perceptible, entangled within the texture of the reality.

I have devoted much thought to the nature of the cybernetic sphere of reality. Although technologization has deeply penetrated everyday life, it still appears as something alien—opposed to what is normalized and accepted. Like most marginal or minority phenomena,⁷² it has become burdened with stigmatizing stereotypes and simplifications. At the same time, through popularization and collective generalization, it has also been idealized—transformed into a utopian paradise for enthusiasts⁷³. In the emergence of cyberneticity within the fabric of reality, I perceive a *tangle*—a point where the intensity of immersiveness increases.

Reality, understood as a layering of possibilities and their concretizations, forms a matrix of stem cells, whose differentiation gives rise to new tissues. In this morphogenetic potential⁷⁴—this dynamic of growth and self-organization—I see the genesis of cyberculture. It did not develop *alongside* reality, nor is it merely a transformation or variation of it. Rather, it constitutes a being rooted in development itself—one that, through processes of self-creation and concretization, has progressively separated from its source. Born from the *stem cells of reality*, it evolved into new forms, generating its own order of existence. This autonomous form eventually became an extension of reality.

The coexistence of virtuality and reality causes these spheres to interpenetrate, intertwine, and symbiotically merge. From their *tangle*, new and unknown modes of experience

⁷² I believe that the technological sphere of everyday life is transparent: once it enters common use (as in the case of the mobile phone), it becomes fused with normality. When, however, it appears as new, it tends to be rejected or devalued as something foreign and threatening. The gaze of society either fails to perceive it through habituation or turns away from it out of aversion to the Other.

⁷³ See Piotr Zawojski, *Cyberkultura. Syntopia sztuki, nauki i technologii* [Cyberculture: The Syntopia of Art, Science, and Technology], 2nd ed. (Katowice: Wydawnictwo Uniwersytetu Śląskiego, 2018).

⁷⁴ The term *morphogenetic potential* refers to the capacity to generate new forms (see “Morfogeneza” [“Morphogenesis”] *Encyklopedia Leśna*, accessed September 21, 2025, <https://encyklopedialesna.com/haslo/morfogeneza/>).

In English-language articles concerning embryology or botany, the expression *morphogenetic potential* is used in the same sense (see J. V. Veenvliet, P. F. Lenne, D. A. Turner, I. Nachman, and V. Trivedi, “Sculpting with Stem Cells: How Models of Embryo Development Take Shape,” *Development* [2021], accessed September 21, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC8722391/>).

emerge—new models of collaboration, and new ways of concretizing phenomena and materializing beings.

_Mixed Reality: The Sense of Being-in-the-World

The field of influence between real and virtual spheres expands. Where do events unfold and meanings take shape? Earlier, I described the body–mind as the receptor of the holistic experience of being-in-the-world, emphasizing that it is through the collaboration of sensory stimuli and rational analysis that a person grounds their perception of the environment. Problematizing the nature of the environment leads to a stratification of perception and to the emergence of new forms of experiencing.

At this point, I wish to narrow my reflections to aesthetic situations rooted in reality—I do not refer to virtual or augmented realities. Their gravitational pull leans toward virtuality, resulting in immersion within the technological sphere. Furthermore, the “reality” that appears in such environments is a filtered reality—one in which the world perceived, as in AR, becomes digital. This tension between the *thing itself* and its *technological representation* opens a vast field requiring in-depth analysis—a field beyond the scope of this dissertation. Spaces immersed in cyberculture demand a new media perspective and a correlated understanding of the viewer. What interests me, rather, is a situation grounded in reality yet extended by new media—one that touches the real plane of existence, the primordially of contact and the immediacy of sensory experience.⁷⁵

The expansion of reality to include a new sphere causes presence to split. Through technology, presence can be relocated, embedded elsewhere, or even dispersed across multiple sites. Attention and awareness likewise undergo transformation—becoming networked, fragmented, and almost saccadic,⁷⁶ revealing themselves alternately

⁷⁵ Although there are many voices supporting the ontic status of sensory experiences derived from the virtual world, for me their nature remains problematic. I will refer to my own experiences, as they constitute the point of departure for my reflections, which are later deepened and grounded in the literature on the subject. When I finish a VR or AR experience, I feel a sense of dissociation in my body. I need a moment to re-anchor my consciousness in the surrounding world. This feeling of disconnection from the body does not occur when I experience the Immersive Interactive Environments described earlier. I am not sure whether, for generational reasons, the journey into virtuality carries for me a higher cognitive cost—that is, whether it is a matter of my sensoriality not yet being fully accustomed to new types of experiences. However, I sense a certain tension between virtual and real sensory experience. Hence my decision to narrow the scope of my research.

⁷⁶ Saccadic movements are very rapid and usually involuntary eye movements that allow the collection of visual information about the surrounding environment.

in the realms of the real and the virtual.⁷⁷ This gives rise to the experience of telepresence—a form of presence carried and mediated by technology. Its ontic consequence is the emergence, within the Figure of *the Viewer*, of a receptor of telepresence, and within the properties of *the Environment*, of a reality borne by technology.

_Case Study | *Tele-present Wind* by David Bowen⁷⁸

To embody, to take on another’s experience as one’s own, to empathize—this is how I read the feeling of telepresence, in a metaphorical and poetic sense.

I have already mentioned that nature has a soothing effect on me, and that in the movement and continuity of natural phenomena I find inspiration for meditative creation. For this reason, experiencing David Bowen’s work addressing telepresence was profoundly moving. I first encountered it at Kapelica Gallery in Ljubljana, Slovenia—and later at Ars Electronica Festival 2025.

During that first encounter, in a darkened room, the floor was covered with dried plants held by almost invisible mechanical arms. They moved the delicate stems in accordance with the direction of the wind recorded by a sensor near the University of Minnesota, in the United States. The undulating surface of artificially animated plants reminded me of all the moments I had watched wind-swept fields of grass or the crowns of trees stirred like waves. I also reflected on the tension between the sense of presence there—in the U.S.—and here, in the capital of Slovenia. It was a strange feeling of being stretched, co-present, yet in a highly selective way—extended and reduced at once, to the mere sensation of wind shaping the fragile verticals of objects.

Bowen’s work combines ephemerality with technological precision, evoking a sense of presence by delineating the qualities of *the Environment*—not as an illustrative reproduction, but as a selectively abstracted aspect of reality. Telepresence reveals a fragment that, although reductive, possesses such intensity of impact that it transports *the Viewer* between their own body immersed in experience and the mind generating imagined landscapes of a distant place. Within this tension emerges an awareness of the existence of parallel realities. I discern sublimity in the juxtaposition of individual

⁷⁷ I compare the act of entering virtuality to the involuntary movements of the eyes driven by social observation—to the unconscious gestures of reaching for a phone, checking directions on a navigation app, or confirming one’s own judgments on the Internet—all those unnoticed, reflexive actions performed in search of affirmation for one’s real-world choices.

⁷⁸ Work available for viewing at <https://www.youtube.com/watch?v=tDrFnTHRGh4>, accessed September 12, 2025.

experience with the realization of the multiplicity of simultaneous events—occurrences so vast and innumerable that they elude the grasp of the human mind.

_Multisensoriality and the Ritual of Passage

Stepping into the analysis of aesthetics evolving within the online space, one of the most immersive and sensorial phenomena that crystallizes several of the characteristics I have identified as defining *Immersive Environments* is ASMR—recordings that elicit intense bodily reactions. In their sudden surge of popularity and in their deeply somatic resonance, I discern the essence of contemporary perceptual needs.

ASMR, together with the trend of “oddly satisfying videos,” elicits physiological responses in viewers—the so-called tingles—which manifest as shivers, sensations of pleasure, or calm. Although the term sounds scientific (an acronym for Autonomous Sensory Meridian Response), the phenomenon lacks medical grounding and exists primarily within the realm of empirical experience.⁷⁹ Artists working in this field construct audio-visual compositions rich in sensual charge, employing whispering, fingernail tapping on various surfaces, the pouring of liquids, or the joining and separation of sticky materials. These sound-visual stimuli provoke bodily reactions that can be compared to somatic empathy or embodied simulation.

The brain, simultaneously processing visual and auditory representations, responds physiologically—even though the event itself unfolds within virtuality. This mechanism suggests that the ontic value of virtual experiences is comparable to that of experiences in the real world, even if perception and emotion are distributed across two distinct orders of reality. The awareness of suspension between a virtual source and real corporeality leads to a sense of dissociation and fragmentation of experience, and consequently—to the feeling of being unanchored in material reality.

However, transposing this situation into the field of art alters its resonance, due to the specific framework of aesthetic experience. In the framework I propose for immersive interactive environments, *the Environment* functions as a new micro-world into which *the Viewer* enters. Leaving behind familiar realities, they arrive open to new sensations that imply a detachment from the External and a deep immersion in the world being invoked. To avoid intensifying the split between virtuality and reality, I propose the introduction of a ritual of passage. I understand it as a designed mode of transition—

⁷⁹ Valentina Tanni, *Exit Reality: Vaporwave, Backrooms, Weirdcore, and Other Landscapes Beyond the Threshold*, trans. Aileen Carruthers (Ljubljana: Aksioma – Institute for Contemporary Art, 2024), 57.

a way of experiencing movement between one constituted reality and another, or as an intentional, virtual-real experience in which sensation is not left isolated.⁸⁰ Such a ritual counteracts dissociation. In the following section, I point to examples of artistic practices in which the ritual of passage becomes a means of binding together reality and virtuality.

Virtual creations are designed to transport the viewer into an altered state of mind.⁸¹ Produced by users already accustomed to mixed reality, they engage with contemporary modes of experiencing. The overabundance of information, the constant stream of images, sounds, and data, and the temporal fluidity in which past and future become replayable and modifiable, all reshape the perceptual capacities of audiences.

Among online creative trends, there emerge collage-like compositions that combine disparate forms of video—for example, *The Seventh Seal (Zoomer Edition)*, published on YouTube by Piper Paige.⁸² Next to Bergman’s cult classic, the screen displays—on the left—an “oddly satisfying” video, and on the right—a foreground recording of gameplay. The result is hyperstimulating, juxtaposing incompatible aesthetics, and yet somehow capturing the viewer’s attention. As one commenter, @felipecampos1403, aptly notes: “I can finally watch a cult, old, philosophical black-and-white movie with that dopamine boost just a slight tilt of the eye away.” This video exemplifies the contemporary need for multifaceted stimulation and constantly sustained attention. Some observers even point to the meditative quality of such representations—an effect of overstimulation and sensory saturation, which paradoxically leads to total focus on the image.⁸³

Enveloped in ever-thickening layers of messages, stimuli, and sensory triggers, contemporary reality conditions *the Viewer* toward a multifaceted mode of perception. Their attention adapts according to the operations of the surrounding environment. The capacity for focus—

⁸⁰ By “solitude,” I understand a state of alienated perception—one that exists solely within virtual space, devoid of any reference to reality or lived experience. The “absence of solitude,” therefore, refers to a situation in which experience attains continuity—through the transfer of elements of reality into virtuality or through the expansion of the real world by virtual components.

⁸¹ Valentina Tanni, *Exit Reality: Vaporwave, Backrooms, Weirdcore, and Other Landscapes Beyond the Threshold*, trans. Aileen Carruthers (Ljubljana: Aksioma – Institute for Contemporary Art, 2024), 70.

⁸² Work available for viewing at https://www.youtube.com/watch?v=3_5wR4xAic4, accessed September 20, 2025.

⁸³ Valentina Tanni, *Exit Reality: Vaporwave, Backrooms, Weirdcore, and Other Landscapes Beyond the Threshold*, trans. Aileen Carruthers (Ljubljana: Aksioma – Institute for Contemporary Art, 2024), 73.

and, consequently, for immersion—becomes dependent on the everyday modes of engagement with reality. As perception grows increasingly complex, immersive, deeply involved encounters with art, akin to entering a new world, now require stimulation that aligns with the perceptual patterns to which *the Viewer* is attuned in daily life.

_Case Study: Tendrils of Virtuality

Experiences in virtual reality, once the headset is removed, become abstract events — moments after which one needs time to “return” to reality. However, some VR works extend into the material world; in doing so, they do not evoke a sense of separation but instead ground the experience, anchoring it in reality.

During the VR conference in Lodz in 2022⁸⁴, I experienced works that were introduced by attendants assigned to each piece. I consider this figure—a patron of experience, someone who guides the viewer like a mediator—to function as both an intro and outro, a compositional frame for the designed Encounter. Such an arrangement brings the VR environment closer to the definition of immersive interactive environments I am seeking.

Another form that exemplifies the extension of a virtual experience into the plane of the real world is spatial arrangement. During the WRO Biennale 2025, a VR work titled *I Love Gas Stations at Night* by Kuba Krotosz⁸⁵ was presented, illustrating the interpenetration of virtual and real experience. The viewer entered the created world by driving a car while holding an actual Honda Civic steering wheel. The experience began with the act of getting into the car itself—a gesture that functioned as a transition between the VR world and bodily reality.

Another example of a VR work whose tendrils reach beyond the virtual experience is Monika Masłoń’s installation *Control Negative*.⁸⁶ In this piece, the experience of virtual reality unfolds within a space delineated by a geometric house-like structure. Its black metal edges define the area traversed by the viewer as they interact within the VR environment. This construction serves as a physical counterpart to the aesthetics of the virtual world—

⁸⁴ *VNLab Conference website*, accessed September 20, 2025, <https://konferencja.vnlab.org/en/home/>.

⁸⁵ See Kuba Krotosz, *UWIELBIAM STACJE BENZYNOWE NOCĄ [I Love Gas Stations at Night]*, accessed September 20, 2025, <https://wro2025.wrocenter.pl/en/works/uwielbiam-stacje-benzynowe-noca/>.

⁸⁶ See Monika Masłoń, *CONTROL NEGATIVE*, accessed September 20, 2025, <http://cn.monikamaslon.art/about/>.

functioning as a portal that enables a seamless transition between material reality and the digital experience.

The tendrils of virtual worlds reach far beyond the spaces of cyberculture. They touch upon corporeality, emotions, and inner experiences. Yet when such experiences are severed from their source, they become mere echoes, radiating a sense of emptiness. I argue that extending virtual realities by anchoring their elements within material reality ensures cognitive continuity. This form of ritual transition offers the viewer time to move between worlds, rather than confronting them with a wholly new reality disconnected from the one just experienced. Such an extension of virtuality serves as a signpost leading back to the familiar, grounding the experience in the realm of tangible sensations—as both evidence and trace of what has been felt.

6. Meristematic Tissue

Technological development influences and transforms *the Viewer*, altering not only the functioning of art but the entire structure of their surroundings. Reflecting on the technologies that define us, J. D. Bolter⁸⁷ points out that the metaphor of the computer has reshaped human self-perception—the world has come to be understood as a set of data open to manipulation and transformation. Thus, digital technology has not only changed the tools of communication or labor, but has also reorganized the relationship between humans and their environment, shifting the center of gravity from the individual subject toward dynamic networks of exchange and information flow. The boundary between subject and tool has become blurred—a condition I exemplify by describing moments in which I, as an artist, adopt the logic of sensors or generative programs in my creative process.

There are many instances where Bolter's seemingly fatalistic vision has, in fact, become a prominent source of new ways of thinking. The scholar foresaw the potential danger of losing historical linearity through the discrete, fragmentary conception of time implied by computerization. Yet, when viewed through the lens of the examples I have discussed, time understood as a loop, a recursion, or a continuous churning process—expanded by constant change and the influence of successive factors—appears closer to the actual dynamics of the world's functioning. Moreover, it opens new, more inclusive ways of understanding our surroundings.

Bolter points to the danger of reductionism that arises with the possibility of converting everything into transformable data. Considering that his reflections date back to the 1980s, it is understandable that, at the time, the fresh and seductive idea of digitalizing the environment seemed overwhelmingly dominant. Yet, with the benefit of time distance, it becomes clear that digital cognition expands rather than reduces sensory objects. It allows us to perceive them from previously inaccessible perspectives—to move beyond the physical limitations of the human body—while also rendering visible what is otherwise imperceptible. This observation resonates particularly with Ludwik Fleck's thesis that knowledge deepens perception.

In the framework I propose, digital representations serve to further define the object, revealing what escapes human cognitive apparatuses or opening new planes of understanding and experience. They become a new form of the previously discussed

⁸⁷ Brian J. David, *Człowiek Turinga. Kultura Zachodu w wieku komputera* [*The Turing Man: Western Culture in the Computer Age*], trans. Tomasz Goban-Klas (Warsaw: Państwowy Instytut Wydawniczy, 1990).

sensory object—a meristematic tissue:⁸⁸ a generative, transformative layer endowed with the potential to morph and concretize, giving rise to new, stable forms.

Originally, the term meristematic tissue refers to the formative tissues in plants that, from the embryonic stage, divide and differentiate into permanent structures such as stems and shoots. I transpose this term into the cybernetic domain, motivated by the fluid and adaptive nature of code underlying most digital creations. A new-media object can exist as a mathematical function or be subjected to algorithmic processing.⁸⁹ Image, sound, shape, and motion can all be synthesized into numeric parameters. This shared denominator of digital forms grants them a high degree of connectivity,⁹⁰—understood as the capacity to generate mutual dependencies and responsiveness—what I call sympathetic media.

Lev Manovich draws attention to the modularity of digital elements—their capacity to be easily combined, reconfigured, and modified, even within an already completed conglomerate (provided they remain linked to their source components). I perceive modularity as one of the most distinctive and contemporary features of artistic practice—one that also extends beyond the artistic field.

For example, in sociology, I see parallels between modularity and Latour’s figure of “actants” proposed in Actor–Network Theory. Similarly, when analyzing my own artistic practice and the evolution of my visual language, I recognize a modular system of building complexity and structuring creative development. When I introduce a new element, I examine its relation to the existing ones, observing how shifts in context alter its character.

I consider this approach a manifestation of a *dialogical disposition* within the creative process. Many artists I know employ previously developed expressive tools or return to ideas introduced earlier, allowing them to evolve in new configurations. I explore this interrelation

⁸⁸ See “Klasyfikacja tkanek roślinnych” [“Classification of Plant Tissues”], *Zintegrowana Platforma Edukacyjna* [Integrated Educational Platform], accessed September 11, 2025, <https://zpe.gov.pl/a/przeczytaj/Djm1aVT06>

⁸⁹ Lev Manovich, *Język nowych mediów* [The Language of New Media], trans. Piotr Cypryański (Warsaw: Wydawnictwa Akademickie i Profesjonalne, 2011), 92.

⁹⁰ Lev Manovich points out that new media objects “are numbers stored in digital form” (see Lev Manovich, *Język nowych mediów* [The Language of New Media], trans. Piotr Cypryański (Warsaw: Wydawnictwa Akademickie i Profesjonalne, 2011), 92). When referring to high connectivity, I mean the potential for relationships among digital elements.

between dialogicality and modularity further in the subchapter “_Case Study—The Dialogical Disposition in Creation.”

The digital properties of new media artworks are grounded in signal and digital encoding. This foundation allows them to be analyzed, converted, and interconnected. Their shared denominator establishes a broad plane on which relationships between different objects or media can be constructed. For instance, the rhythmic structure of sound can be visualized as a pulsating image—the image becomes *sensitive* to sound. Certain properties of one expressive form make it possible to reveal what eludes another medium: visuality can depict sound or motion over time, exposing its transformation in relation to tension or temporal dynamics. Such interdependence expands *the Environment*, weaving new and intricate strands of reference—thus immersively entangling the piece.

_Sympathetic Media

The shared foundation of digital media grants them a high degree of connectivity. An image can be translated into data, sound into visual notation, movement into sequences, and generativity into algorithms. The act of translation can reveal aspects that remain hidden in another form—or, conversely, obscure features that were once visible.

When such a translation takes on a form compatible with the properties of another medium, it becomes possible to create a reference—to attune, for example, an image to a sound parameter. It is precisely this relational interdependence and contextuality that defines the plane of intermediality I am interested in. Translation, understood as the transformation of an object into another form, becomes a signpost toward its essence—it makes visible what might otherwise escape perception and sensitizes *the Viewer* to sensory stimuli. The manifestation of one medium within another increases the accessibility and depth of the aesthetic experience.

Sympathetic media—those that respond to one another’s parameters—deepen *the Viewer’s* sensory competence. For those particularly sensitive to visual stimuli, watching dance alongside simultaneous visualizations of dancers expands the experience into a plane that feels familiar and legible to them.

Moreover, the moving image allows temporality to be expressed in a transformed form—as in my installation *Coalesce* or in the *Sculptures of Movement* series, which I will analyze in greater depth later. The visualization renders visible the temporality of dance—a quality most intuitively grasped by individuals with kinesthetic intelligence and movement memory. These are people who naturally perceive relationships between poses or the dynamics connecting sequences of motion. By translating the properties of movement into a visual image, a feedback loop emerges: once *the Viewer* comprehends the dynamics

of the dance representations, they begin to understand dance itself—its nuanced qualities and expressive subtleties—because they have experienced them through the image.

I personally experienced this principle while creating dance visualizations. I produced numerous sketches, exploring diverse forms of digital responsiveness—ways in which the viewer’s virtual silhouette could react to their physical movement. I created smoky afterimages, interfering overlays of bodily contours in space, and frozen poses dissolving upward.

I created a series of works titled *Sculptures of Movement*,⁹¹ aiming to concretize and catalogue my explorations. I began with a smoky outline of the performer’s body, which drifted upward, dispersing and thinning as it rose up. Initially, I experimented with this interactive projection together with people outside artistic circles— their movements were limited to walking back and forth, occasionally activating their hands.

When I showed this piece to Wioleta Fiuk,⁹² the projection revealed possibilities I had not seen before. The stream of smoke intensified in still areas, while the moving parts of the body left delicate traces of mist. The artist composed abstract forms through her movement, creating poses inspired by iconographic representations.

Building on this discovery,⁹³ I developed a new visualization that explored the distribution of movement over time, revealing key, semiotic poses. Reflecting further on the relationship between temporal change and visual transformation, I created *Coalesce*—an interactive projection embedded in the architecture of a given space. This work originated during the Was, Is, and Will Be Symposium in Gószcz, in collaboration with the dancer Magda Niedzielska.⁹⁴

⁹¹ The research dedicated to these explorations has been compiled in the form of a website: <https://www.researchcatalogue.net/view/3140993/3140985>, accessed September 20, 2025.

⁹² In this dissertation, I have already referred to this artist’s interaction with my own artistic projects; her work and role are discussed in more detail in footnote 60.

⁹³ Fragments of this project can be found on my Instagram profile: https://www.instagram.com/p/ClF9oZUoG_K/?img_index=2, accessed September 20, 2025.

⁹⁴ More about the artist can be found at <https://grotowski.net/biogramy/magdalena-niedzielska> or also at <https://vimeo.com/magdaniedzielska>, accessed September 20, 2025.

In this piece, I oriented the timeline vertically, so that elements, instead of fading away, ascended upward.⁹⁵ This compositional choice made the relationship between poses even more visible, highlighting it as a key factor in constructing the choreography-based artwork.

The culmination of this creative process was the final version of *Coalesce*,⁹⁶ presented at the symposium's closing exhibition. Later, the work was shown—in a technically modified form—at the UKREP International Dance Festival in Ljubljana. The installation relied on contrasts between poses, mapping the traces of change: expansive movements produced broad black bands, while subtle gestures outlined specific parts of the body. Responding to the dance of Alja Lacković,⁹⁷ the projection revealed yet another dimension of visualizing movement.

The work *Coalesce* interprets the kinetic properties of movement, translating them into the language of moving image. It also draws upon the characteristics of the site, becoming embedded in the architecture and responding to the specific qualities of its surroundings.

The piece morphs in response to changing exhibition conditions, and this very mutability exemplifies the *dialogical disposition*—the idea of a contextual and environmentally sensitive mode of creation, which constitutes one of the central pillars of my doctoral research.

_Case Study: The Viewer within the Interactive Projection *Sculptures of Movement*

While performing with the installation, Magda Niedzielska remarked that she “felt as though she were dancing with a partner.” Within the projection, she sought confirmation of her movements and, responding to the emerging visuals, shaped her choreography accordingly. Wioleta Fiuk also described her collaboration with the projection in terms of partnership,

⁹⁵ The following link leads to a sketch created during the symposium—it serves as documentation of the rehearsals conducted with the dancer, during which I experimented with code while listening to her impressions and observing her movement responses:

<https://www.researchcatalogue.net/view/3140993/3140994#tool-2435777>, accessed September 20, 2025.

⁹⁶ The project can be viewed at <https://www.youtube.com/watch?v=ZHK9Gh00-Ks>, accessed September 20, 2025.

⁹⁷ The announcement of the project can be found at <https://mgml.si/en/match-gallery/events/2085/2025-06-11/21-30/dancers-alja-lackovic-movement-dialogue-with-the-interactive-projection-coalesce/>, accessed September 20, 2025.

Fragments of this project can be found on my Instagram profile:

https://www.instagram.com/p/DKjXQNYlaez/?img_index=1,

https://www.instagram.com/p/DKbipkYI92k/?img_index=1, accessed September 20, 2025.

saying she felt guided by the interactive image. In Wioleta’s performative approach, her attention was directed toward the timing of movement. The dancer shaped the visualization through slowed or held poses, reached via gestures of varying tempo. At times she would freeze in a pose, at others blur the sculptural outline of her body through rapid motion, or create cloud-like abstractions by moving rhythmically with her entire body. For both artists, collaborating with the projection offered a new perspective on proprioception, casting fresh light on their relationship with their own bodies.

A contrasting attitude toward the projection was presented by Patryk Dariusz Gacki⁹⁸—dancer, choreographer, director, and artist—who also took part in my experimental process exploring how visualization influences bodily awareness. His approach was marked by greater distance and an emotionally neutral stance toward creation. He sought out the aesthetic values inherent in the interactive image, using his movement as a testing instrument to probe and uncover the possibilities offered by the technology.

Observing these three distinct approaches to the environment, certain common, recurring aspects can be identified—all of which concern proprioception. The performers’ perception of their own bodies becomes expanded by an additional space—a virtual reflection. However, this is not a mere mirror image but rather an augmented representation of the performer’s silhouette. This extension becomes the catalyst for a shift in body awareness.

The dancers begin to use movement in relation to the generated video, seeking confirmation of their choreographic choices within the image—allowing it to guide them. The conscious, controlled body functions as a somatic interface,⁹⁹ existing between virtuality and reality, with its awareness distributed across both realms simultaneously. The performance thus becomes an environment of mixed realities.

The contrast between the responses of the female dancers and the male performer, I attribute to the sensitivity of the works to *the Viewer*. Interactivity unfolds as a dialogue—

⁹⁸ In this dissertation, I have already referred to my collaboration with this artist; his work and role are discussed in more detail in footnote 60.

⁹⁹ The “somatic interface” is a concept developed by Agnieszka Jelewska that examines the relationship between the body, emotion, and technology in contemporary performative and media art. The author points out that in contemporary media art, the viewer’s body becomes an interface through which sensory and emotional stimuli flow—often in an unconscious way. See Agnieszka Jelewska, “Somatyczny interfejs: Zwrot afektywny w sztuce” [“Somatic Interface: The Affective Turn in Art”], *Didaskalia. Gazeta Teatralna*, 2012, no. 109–110: 113–122.

one that engages both the artwork and the performer's body, where different personalities generate distinct experiential situations.

But how do people unfamiliar with dance experience such works? Preliminary neuroimaging studies suggest that viewers experience stronger sensations of movement when they have prior experience with physical practice or choreographic techniques similar to those used by the performer they are observing. This effect is linked to kinesthetic empathy—a phenomenon in which the viewer feels the dancer's movement without moving their own body.¹⁰⁰

It is worth noting that in *Coalesce*, the properties of movement are also made visible in the image itself. As a result, those who are more visually attuned can perceive the qualities of movement through a medium familiar to them. By recognizing the visual consequences of motion, they begin to grasp its interpretive and expressive dimensions, developing a deeper sensitivity to movement.

This process enriches the reception of the artwork and simultaneously cultivates the viewer's sensitivity to the medium itself. Consequently, such a complex and multi-layered form of interaction supports the development of the viewer's cognitive apparatus, expanding both perception and awareness.



Figure 11. Aleksandra Nowakowska performing *Corpus*, accompanied by my reactive visualizations responding to the dancer's movement, during *FUTUROFONIA* Baltic Opera, Gdańsk, 2025. Photo by K. Mystkowski, KFP. Source: materials of the Baltic Opera.

The Viewer, however, remains excluded from the situation—and although their engagement is high, the immersion pertains primarily to a body that is absent from the scene, activated only through mental processes. I deeply value such intellectually engaging aesthetic situations, which is why I often employ sympathetic media.¹⁰¹

Yet, the form of artistic sensitivity I pursue is grounded in the engaged body–mind. For this

¹⁰⁰ See Magdalena Zamorska, “Technoobrazy performujących ciał” [“Techno-images of Performing Bodies”], in *Więcej niż obraz* [More Than Image] (Gdańsk: Wydawnictwo Naukowe KATEDRA, 2016), 299–310.

¹⁰¹ For example, while creating the visual design for *Corpus* by Aleksandra Nowakowska, presented at the *FUTUROFONIA* festival organized by the Baltic Opera in Gdańsk. A fragment of the project can be viewed at https://www.instagram.com/p/DK1TsQml_jq/?img_index=1, accessed September 20, 2025.

reason, in seeking the practical dimension of my doctoral research, I developed a parallel path of interactive objects, whose creation process I describe in “Sprouts | *There Is No Truth / Just Sensual Objects.*”

The experience gained while researching *Sculptures of Movement* had a significant impact on the final form of my artistic project—particularly on my reflections regarding bodily awareness (so deeply dependent on the viewer’s individual characteristics) and the relationship between projection and material reality. Translation has remained my primary method of formal experimentation.

_Sprouts | Subcutaneous Audio-Reactivity¹⁰²

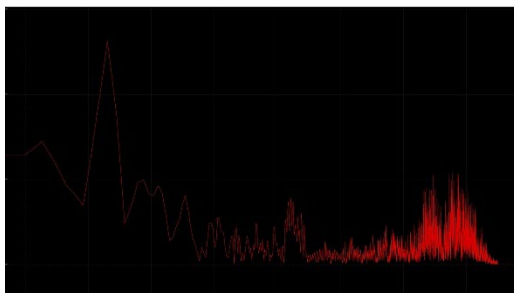
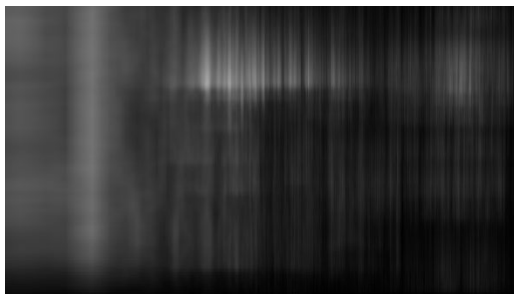


Figure 12. Above: a *sound fabric* created by transforming the spectrogram shown below — an element later subjected to further modifications. Source: author’s archive.

The concept of sympathetic media also manifests itself in the high connectivity between generative video and sound. When creating visual compositions for concerts, I work with live audio input. I analyze the sound line by dividing it into high, mid, and low frequencies, abstracting such properties as beats, rhythm, and spectral density. These parameters reveal the character of the sound according to precisely defined references.

I create my visualizations in the programming environment TouchDesigner, where a system of nodes (graphical programming commands) operates on data. These data sets are mutually compatible, which allows me to extract specific sonic qualities and assign them to visual parameters—for example, a circle that pulses in sync with the bass. Even such a literal, unsophisticated sound–image equivalence carries a certain immersive harmony.

¹⁰² While creating projects in collaboration with musicians I work with, I aimed to construct a cohesive audiovisual experience in which image and sound complement each other. I sought a form of reactivity that supports the sound without making the image subordinate to music. In this way, I developed the concept of “subcutaneous reactivity,” which I describe in detail in an article of the same title.

See Laura Adel, “Audioreaktywność podskórna” [“Subcutaneous Audioreactivity”], *Rita Baum*, no. 71–72 (2025).

Following this path of building interdependencies between sound and image, I developed the concept of subcutaneous audio-reactivity. It emerged from my research exploring how the moving image responds to sound, yet without hierarchical subordination¹⁰³—so that both components form complementary parts of a single organism. Subcutaneous audio-reactivity is not merely the image responding to sound; it is the coexistence of both media within one corporeal–perceptual rhythm—as if sound were trembling beneath the surface of the image.

The image of sound—as I prefer to call my visualizations—is constructed through networks of nodes, some of whose parameters I assign to a MIDI controller. This allows me, when performing live, to adjust the visual layer to the character of the music and to develop its narrative¹⁰⁴. The chain of nodes is internally interdependent, building upon itself from the beginning to the end of the network. I assign carefully calibrated sonic properties to the initial parts of the chain; these generate the movement of the fundamental, deepest layers of the visualization. On top of them, I layer further programming commands that continue to transform the image. As a result, beneath the strata of my programmed transformations, the video pulses in rhythm with the music¹⁰⁵—an internally entangled image with multi-layered, kinetic interrelations emerges.

When I begin working on a given musical set, I spend a long time simply listening—until the image of sound appears in my imagination. Each aural form generates within me a sensation that carries its own visual equivalent. For instance, long, droning tones sketch expansive spatial fields with a light, trembling texture that vibrates in accord with their pitch. These imagined audiovisual constellations arise from attentive observation of my surroundings, where every event possesses both its own appearance and its own sound. The creation of visualizations—or images of sound—is thus an intuitive process of concretizing the relationship between two media, image and sound, informed by prior

¹⁰³ I believe that in the concept I propose—the “image of sound”—visualization becomes an interpretation of musical impressions, a translation of sensory experience into another medium. Such visualizations therefore possess autonomy and their own meaning, correlated with the musical message. Of course, the image is a subjective reaction of the artist to the auditory layer; however, I argue that through practice and a deepening familiarity with sound, one can create complex and accurate interpretations.

¹⁰⁴ An example of a live performance created using a controller and audio signal is the recording of the *FUTUROFONIA* concert held at the Baltic Opera on April 5, 2025: <https://www.youtube.com/watch?v=0Sd0HUXiRXY&t=539s>, accessed September 20, 2025.

¹⁰⁵ An example of such projects is the video documentation of works created in collaboration with the musician Sylwester Galuschka, *LASG_04 / constancy of the change*: <https://www.youtube.com/watch?v=eoSCvHi5lWg&t=5s>, accessed September 20, 2025.

knowledge and experience. By observing and listening to natural environments, I search for audiovisual correspondences that I later interpret within the TouchDesigner environment.

The spectrogram—a graph showing changes in frequency over time—reveals sonic variations that may otherwise remain inaudible. When creating some of my first visualizations, I based them precisely on this kind of sound distribution.¹⁰⁶ I constructed looping and self-interfering commands that continuously transformed the graph. By watching the visualized sound, I was able to *hear* its subtle shifts, tensions, and densities more fully, as if the sound had finally revealed itself in its entirety. The perceptual mechanism I developed then has remained with me and continued to evolve in subsequent works with audio signals. I believe that audioreactivity makes visible the specific qualities of music that may not be accessible to all listeners. Translating certain sonic properties into visual parameters allows sound to appear as complex, diverse, and more perceptible. The image leads the viewer into the sound and merges with it—and in their mutual resonance, a multisensory aesthetic experience is born.

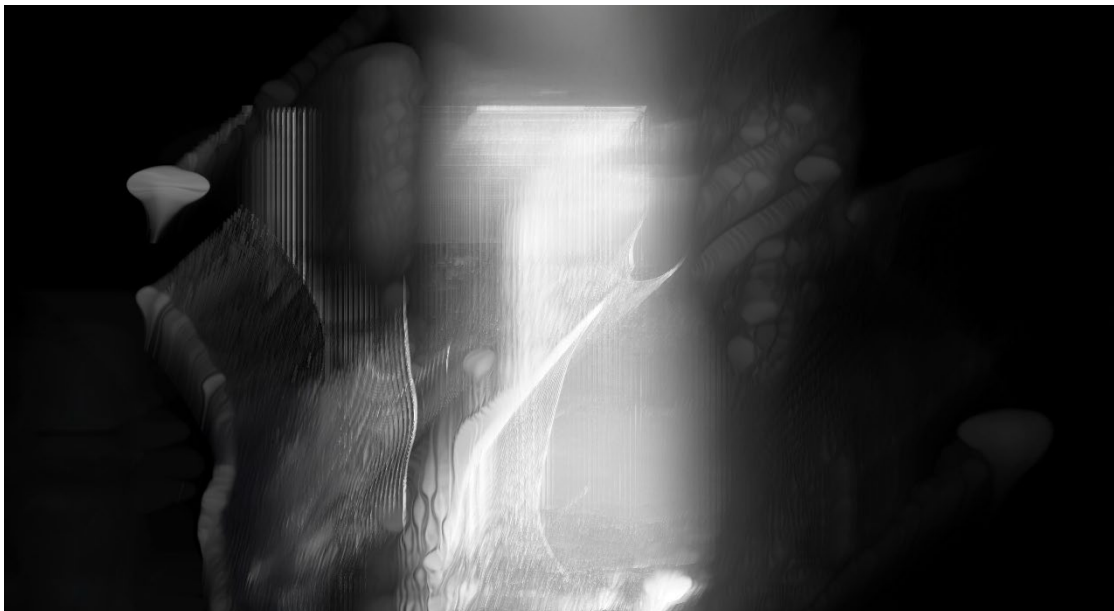


Figure 13. Still from the visualization created for the musical segment of *FUTUROFONIA*, Baltic Opera, Gdańsk, 2025.

Source: author's archive.

Sensitivity, understood as receptiveness to external stimuli, metaphorically relates to this constructed *image of sound*. The concert becomes a dual, time-based aesthetic event that reveals the interplay of its elements. The viewer, caught by the tendrils of these interdependent forms, comes to understand the looping structure of the presented situation

¹⁰⁶ The images of sound constructed on the basis of a spectrogram are presented in this fragment of the project created during the residency at Kolonia Artystów in August 2022: https://www.instagram.com/p/CkvEQ7mldtY/?img_index=1, accessed September 20, 2025.

and follows its unfolding narrative. They *hear through the image* and *perceive through the sound*—their attuned, focused perception immersing them ever more deeply in the experience.

When I work with audio signals or construct node sequences in TouchDesigner, I often pause to observe the mutual interplay of elements. I listen to the sounds—even though I already know them well from my earlier, imagined sketches of their form—and watch the visual components moving in rhythm. Their harmony surprises me, despite being a relationship I myself have designed. The system reveals qualities I could not have imagined beforehand. I had never heard the sound as precisely as it is read by the spectrum analysis; nor had I imagined motion so delicately distributed in time and nuanced by the melody's dynamics.

The *dialogical disposition* within the creative process exposes what escapes my perception. Later, I return to build additional layers upon the pulsating musical base. When I finish and connect the controller, I feel as though I am exploring unfamiliar landscapes of new aesthetics. Although I initiated the relationships that unfold there, I cannot predict all the possible combinations—which is why, when creating a visualization, I say that I play. I grant the patch a certain autonomy, and the generative quality embedded in its structure renders it mutable and not entirely predictable. The *dialogical disposition* within the creative process exposes what escapes my perception. Later, I return to build additional layers upon the pulsating musical base. When I finish and connect the controller, I feel as though I am exploring unfamiliar landscapes of new aesthetics. Although I initiated the relationships that unfold there, I cannot predict all the possible combinations—which is why, when creating a visualization, I say that I *play*.¹⁰⁷ I grant the patch a certain autonomy, and the generative quality embedded in its structure renders it mutable and not entirely predictable. Often, referring to such creations, I say that the patch produced this aesthetic. In this sense, technology—in the spirit of a *dialogical disposition*—becomes my partner in creation. Audioreactivity thus reveals a path toward a sensitive attunement to sound.

_Części Wierzchnie | delicacy in the raw realm of pixels

„I seek delicacy in the raw realm of pixels,” I write when asked about the nature of my artistic practice. From the very beginning of my creative path, I have been fascinated by the abstraction. I understood it as an essence of experiences framed within artistic creation. For me, these events served as carriers of sensations and experiences more

¹⁰⁷ The image of sound, together with the controller and the audio signal, constitutes my instrument—although I know their structure and principles of operation, the number of possible combinations remains unimaginable.

universal than narratives. They allowed me to evoke emotions and construct states shared between myself as the artist and the audience. They became the seed of understanding.

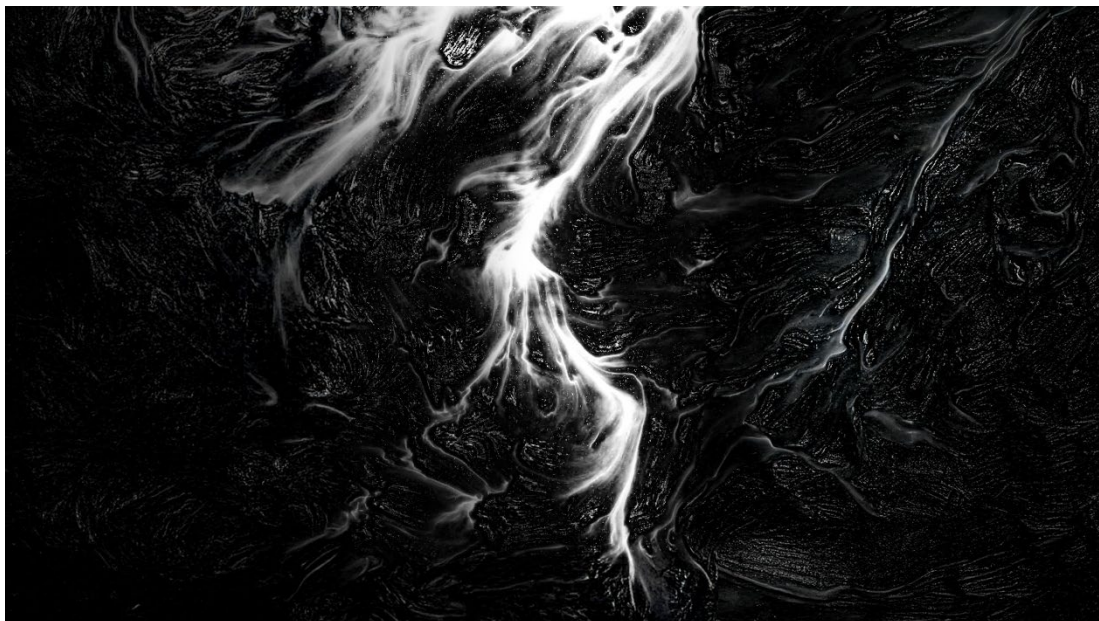


Figure 14. Still from the visualization presented during the festival *Wizjonerki – kobiety w polskiej muzyce improwizowanej i eksperymentalnej* [Visioneries – Women in Polish Improvised and Experimental Music], Warsaw, 2025.

Source: author's archive.

I created scenographies, studied materials, and experimented with liquids in search of diverse aesthetics. The discovery of the TouchDesigner programming environment enabled me to generate visualities similar to those I once produced through analog means—but now with full control over every element: movement, time, the character of individual components, and the overall composition. I could also choreograph camera movement, defining the mode of observing the event—oscillating between the sensations of being inside and outside the depicted situation.

By collecting mental images of places that held me for longer and photographing spaces with a strongly immersive presence, I created a catalogue of visual inspirations. When I look at these places now, with the distance of time, I see immersion in them—a distinct, engaging quality of meditative contemplation, a quiet stillness, a sense of nostalgia. I believe that the atmosphere of these places is subjective—rooted in the relationship between the environment and myself. Many of the qualities I describe come from the perceptual filter I place upon these spaces. Yet I believe that translating these impressions into abstract graphics and video allows them to become accessible to viewers.

I spend long periods observing events in natural environments, trying to break down their rhythm into parts and immerse myself within them. I abstract their grain, fluidity, and transience, seeking to evoke these qualities in the visualities I create within

TouchDesigner. I have developed a collection of custom components that generate various aesthetics inspired by natural phenomena. I create appearances and extend them through movement that pulses and throbs in rhythm with what I know and remember from places shaped by their own nature.



Figure 15. One of the generated interpretations of nature, 2022. Source: author's archive.

Digital and generative art often carries a sense of otherness and coldness. I believe that showing nature through a technological lens reveals the familiar in a new way—one that intrigues and sparks curiosity. It makes *the Viewer* pause, forming mental connections to places and phenomena they already know. In doing so, a bond emerges between *the Viewer* and the perceived image. What is seen, however, is not a representation of nature but its interpretation. These transformed qualities evoke a sense of strangeness—though not so distant as to provoke rejection. Instead, they intrigue, draw in, and engage, allowing one's gaze upon the world to acquire a new filter—one of attentiveness and sensitivity.

_Virtuality

Among its many innovations, technology has brought one particularly significant expansion—the introduction of virtuality. Though rooted in reality, virtuality has evolved into a distinct entity, carrying its own aesthetics, communities, and modes of existence.

The etymology of the word virtuality points to inner energy, hidden potential, or essence. The adjective virtual derives from Middle English virtual,¹⁰⁸ from Old French vertüal (modern virtuel), and from the Latin virtuālis, meaning “relating to potential or power,” “having the capacity to produce an effect,” or “potent.” This constellation of meanings underlying

¹⁰⁸ “Virtual – being something in essence or effect, not in fact; existing virtually though not actually (mid-15c),” *Online Etymology Dictionary*, accessed September 30, 2025, <https://www.etymonline.com/word/virtual>.

virtuality suggests the generative potential of new media creations, referring to the inner, essential sphere and to abstract, immaterial properties.

The Internet has become a Place—not merely a collection of data, images, sounds, information, and recordings. Through its expanding web of connections (hyperlinks), systems of cataloguing, and the constant exchange of ideas, it has evolved into a self-sustaining organism that generates its own creations. When analyzing purely Internet-based aesthetics, one finds that they often refer to fleeting, intangible, and affective qualities.¹⁰⁹ Like visual potentials, they trigger psychological responses that act as immersion catalysts, allowing users to emotionally co-participate and identify with the worlds being presented. It is not the subject matter, depiction, or figures that form the central aspect of such works—though they remain important reference points for categorization. Greater emphasis is placed on the feeling they evoke¹¹⁰—the so-called *vibe*, meaning atmosphere or mood. These aesthetics construct a new iconography: on one hand, broad enough to accommodate universal user experiences regardless of origin or culture, and on the other, precise enough to provoke highly specific emotional reactions. Within these practices lie the beginnings of movements shaping new forms of community—groups built upon nostalgia, self-irony, and shared disorientation.¹¹¹ Created collectively and organically by millions of users, they mirror the emotional and social states of contemporary life. I see here an intriguing turn toward shared affect—a mode of communal feeling that replaces collective interpretation of meanings, symbols, or metaphors. It is an ephemeral and elusive shift. I believe that the Internet, as both a parallel reality and an avenue of escape from the real, has become a space where the emotional effects of escapism have taken on both visual and communal form.

The themes of Internet-based aesthetics—the visible tendency toward a sense of separation from the external world, the inability to assimilate within one’s environment, and the experience of dissociation—reveal clear points of contact with the notion of the sublime. The coherence of this aesthetic quality with cybercultural creations also manifests in their ambivalence—the simultaneous desire to engage with virtual worlds and the melancholy or helplessness such experiences often evoke. The sublime presupposes the existence of a higher force, one that exceeds human capacity, agency, and intellectual

¹⁰⁹ See *Aesthetics Wiki* [*Aesthetics Wiki*], accessed September 30, 2025, https://aesthetics.fandom.com/wiki/Aesthetics_Wiki.

¹¹⁰ Valentina Tanni, *Exit Reality: Vaporwave, Backrooms, Weirdcore, and Other Landscapes Beyond the Threshold*, trans. Aileen Carruthers (Ljubljana: Aksioma – Institute for Contemporary Art, 2024), 74.

¹¹¹ *Ibid.*, 48.

grasp; within cyberculture, this force may be found in the presumed simulation—in the suspension of certainty about what is real.

In seeking the tenderness of art, I turn toward creations that mirror the inner landscape of contemporary society. Within virtuality—so deeply saturated with the ineffable and the inexpressible—I perceive a valuable carrier of interior sensations. Particularly in the aesthetics of *Liminal Places*,¹¹² I discern the sublime: a tender gaze into spaces that appear alien and uncanny, yet simultaneously alluring and familiar, offering a paradoxical sense of comfort.

Among the themes explored by Internet-based creations, V. Tanni identifies alienation—a particular form of detachment from events unfolding in the external world and the inability to grasp reality itself. The division of reality into real and virtual dimensions multiplies the number of sites of occurrence and, consequently, the number of reference planes. This branching destabilizes the monolithic façade of reality and increases the potential points of isorientation. It evokes a longing for safety, certainty, and stability—states that can collectively be described as nostalgia.

Internet aesthetics often awaken such feelings; however, they are not centered around a specific moment in time. Rather, they express a longing for the feeling of being—for presence and engagement in a moment that exists only as an imagined past, “a memory of a memory,”¹¹³ to quote Tanni. Thus, the Internet becomes a space for the experience of longing—one rooted in material reality yet seeking release and understanding within virtuality.

Within longing lies a mechanism that counteracts loneliness.¹¹⁴ Nostalgia reveals lost places—those that once provided a sense of fulfillment and wholeness. In doing so, it helps to uncover a constellation of needs that illuminate individual traits of identity and belonging, grounding the self within its surroundings. The nostalgia embedded in representations such

¹¹² The phenomenon of *Liminal Places* (transitional or threshold spaces) refers to environments that exist on the border between reality and unreality—spaces devoid of clear function, evoking a sense of suspension. In internet aesthetics, these are most often empty corridors, nighttime parking lots, or deserted shopping malls—places that evoke both unease and nostalgia. See https://aesthetics.fandom.com/wiki/Liminal_Space, accessed September 20, 2025.

¹¹³ Valentina Tanni, *Exit Reality: Vaporwave, Backrooms, Weirdcore, and Other Landscapes Beyond the Threshold*, trans. Aileen Carruthers (Ljubljana: Aksioma – Institute for Contemporary Art, 2024), 49.

¹¹⁴ See <https://journals.sagepub.com/doi/abs/10.1037/gpr0000109>, accessed September 30, 2025.

as *Liminal Places* or *Lore*¹¹⁵ speaks to a sense of suspension between worlds. It thus refers to a plane of feeling awakened by technological development. When analyzing *Immersive Environments* rooted in technology, I find it essential to turn toward the artistic properties revealed within these creations. Virtuality—so deeply inscribed in the perceptual system of contemporary society—becomes a crucial plane for the possible expansion of *Immersive Environments*.

_New Materialism

New Materialism proposes an alternative way of perceiving meaning-constructs as embedded within things themselves. Materiality and discourse—or meaning—are understood as entangled: in Barad, through *entanglement*;¹¹⁶ in DeLanda, through *emergence within networks*;¹¹⁷ and in Braidotti,¹¹⁸ through *processual becoming*.

In the framework I propose—the artwork understood as an *Environment* into which *the Viewer* enters—there emerge meaning-bearing elements belonging to *the Image of the Environment*, though they arise from the artistic means used to bring *the Environment* into being. The perspective of New Materialism allows us to look closely at the points where the roots of cultural interpretation cut into matter—nourishing and strengthening it, or alternatively, parasitizing it and leading to its erosion.

The *entanglements* identified by New Materialist thinkers touch upon the ephemeral boundary between *the Environment* and *the Image of the Environment*¹¹⁹ that it itself constructs. Scholars working within New Materialism focus on events co-created by humans

¹¹⁵ *Lore* refers to the body of knowledge, history, myths, and terminology generated within a specific online subculture, often formed around a game, narrative, or video format. See Valentina Tanni, *Exit Reality: Vaporwave, Backrooms, Weirdcore, and Other Landscapes Beyond the Threshold*, trans. Aileen Carruthers (Ljubljana: Aksioma – Institute for Contemporary Art, 2024), 93.

¹¹⁶ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham and London: Duke University Press, 2007), 3.

¹¹⁷ Manuel DeLanda, *A New Philosophy of Society: Assemblage Theory and Social Complexity* (London: Continuum, 2006), 6, https://www.researchgate.net/publication/334714933_A_New_Philosophy_of_Society_Assemblage_Theory_and_Social_Complexity, accessed September 30, 2025.

¹¹⁸ See Rosi Braidotti, *The Posthuman* (Cambridge: Polity Press, 2013).

¹¹⁹ The concept of distinguishing between *the Image of the Environment* and *the Environment* itself is my own original development within the framework of this dissertation.

and nonhumans—and when related to my proposed definition of art reception, these can be read as events of encounter between *the Viewer* and *the Environment*, moments in which *the Image of the Environment* is being negotiated.

Affordances, symbols, and references—the cultural meanings rooted in *the Environment*—do not emerge through *the Viewer's* interpretation or introspective engagement. They manifest the moment *the Viewer* appears, which is why I position them on the side of *the Image of the Environment* constructed by *the Environment* itself.¹²⁰

Many paths of thought and action have already been walked; numerous conceptual structures and modes of practice have been built—so what, then, could still be new? But what if, instead of searching for novelty, we were to look with sensitivity and tenderness at *what already is*? Just as a shift in camera movement transforms the geometry of the image,¹²¹ a new gaze can reshape a thought that has long served as one of the pillars of how reality operates.

In accordance with New Materialism, I turn toward the transformation of *the Image of the Environment*, decentralizing the point of perspective and unsettling the fixed, monolithic planes of reference. I rewrite the appearance of things through digital translation, liquefying what is solid and (seemingly) given directly.

I refer here to the stable, unchanging, monolithic, and independent entity—the *Environment*—following the thought of Quentin Meillassoux,¹²² one of the key figures of speculative realism. He points to the existence of a reality beyond human thought and rejects the correlationist paradigm of philosophy, which assumes that reality exists only in relation to human cognition. Instead, he introduces the possibility of elements entering into relations and thereby generating events.

¹²⁰ I am aware that scholars of new materialism might disagree with the distinction I propose between *the Image of the Environment* and *the Environment* itself. Nevertheless, I advocate for this approach, as it allows for the grasp of the dynamic and transformative nature of culture in contrast to the relative stability of material things. For example, a clothes hanger remains a bent piece of wire, while its symbolic meaning—as an emblem of the struggle for women's reproductive freedom—accretes upon it as a cultural layer rather than as an integral part of the object itself.

¹²¹ See the description of the video *INSIDES* on page 17 of this dissertation.

¹²² Rick Dolphijn and Iris van der Tuin, *Nowy materializm. Wywiady i kartografie* [*New Materialism: Interviews and Cartographies*], trans. Joanna Czajka et al. (Gdańsk–Poznań–Warszawa: Fundacja Machina Myśli, 2018).

Applied to the field of art, this liberation and autonomy of elements allows *the Environment* to be defined in an open, flexible way—one that leaves room for experiment, self-expression, ambiguity, inconsistency, and even incomprehension. I believe that such unbinding enables feeling and experience to unfold without the necessity of intellectual grasp or definition. In this light, form and content—the traditional categories of defining an artwork—become suspended.

The tension between these opposing poles arises from a binary mode of analysing the artwork. New materialism, standing in opposition to dualistic frameworks, focuses instead on the *process of materialisation*—locating within it the very moment of the emergence of extremes and tensions. Donna Haraway (to whose thought I have already referred in this dissertation)¹²³ dissolves the opposition between nature and culture through her concept of *natureculture*, while Bruno Latour introduces the notion of the *collective*.¹²⁴

According to these thinkers, opposing phenomena relate to the same matrix of understanding and differ only in sign—positive or negative.¹²⁵ Moreover, oppositional qualities are defined within the same frame of reference and are thus interlinked.¹²⁶ Negation presupposes relation.¹²⁷ This unifying approach, where one plane hooks onto another, reveals an inherently dialogical structure. Within this internal entanglement and network of references, I also recognise the *hypertextuality* of links and connections characteristic of new media reality.

Such a connective rather than oppositional mode of understanding underpins the consistency I propose between nature and art. It also forms the foundation for my conception of technology as a means of expanding human cognition and transcending

¹²³ I referred to this researcher in Part I of this dissertation, in the chapter *Environment*, subsection “_Nature”, on page 15.

¹²⁴ Rick Dolphijn and Iris van der Tuin, *Nowy materializm. Wywiady i kartografie [New Materialism: Interviews and Cartographies]*, trans. Joanna Czajka et al. (Gdańsk–Poznań–Warszawa: Fundacja Machina Myśli, 2018), 77.

¹²⁵ *Ibid.*, 80.

¹²⁶ “X” is present in “Y,” whereas in “Z” there is no “X” — “X” thus becomes a point of reference through which the relationship between “Y” and “Z” can be analyzed.

¹²⁷ Rick Dolphijn and Iris van der Tuin, *Nowy materializm. Wywiady i kartografie [New Materialism: Interviews and Cartographies]*, trans. Joanna Czajka et al. (Gdańsk–Poznań–Warszawa: Fundacja Machina Myśli, 2018), 80.

anthropocentric limitations. As Rosi Braidotti notes, “New Materialism manifests itself most fully in action,”¹²⁸—hence I relate it to the *dialogical disposition* towards new media creation—a collaboration with digital tools.

The concept of *intra-action* was introduced by Karen Barad as a counterpoint to *interaction*, in which the entities entering a relation are already individuated. Barad proposes that “the distinction between entities is secondary to phenomena.”¹²⁹ Only from a temporal distance can one discern the factors that have constituted a situation.¹³⁰ Moreover, the elements engage in relations so widely distributed that they form *material arrangements (or materialising practices)* in which the very division between “subject” and “object” is produced. These arrangements are not permanent—they exist only as temporary fields of co-agency, whose potential constantly fluctuates, while the relations binding their elements transform, redefine, and sometimes even bring them into being. The configuration shifts, and reality itself becomes processual and continuously constructed.

Viewed through this lens, the act of creating an artwork with new media means co-existing with morphing potentials, among which the artist themselves is one. Attentiveness and openness enable the creator to perceive, with sensitivity and precision, the medium’s response. Yet, unlike a brush or a canvas, the new media tool is not monolithic. It follows its own algorithmic logic—one that is not fully aligned with the human mode of thinking. It can, of course, be predictable and controllable (programmable), but it also contains the potential for surprise—and thus, for the creator, the potential to step beyond oneself.

Moreover, this process requires the artist to follow the internal logic of the medium, aligning their actions with its intrinsic structure.¹³¹ When such alignment becomes a space of negotiation and collaboration rather than imposition, the situation becomes dialogical. It is precisely this kind of creation that I propose—a *dialogical disposition towards used*

¹²⁸ Ibid., 14.

¹²⁹ Mateusz Chaberski, „Asamblaż” [„Assemblage”] (Kraków: Uniwersytet Jagielloński, 2016), <https://ruj.uj.edu.pl/server/api/core/bitstreams/73d2faff-5663-4fd3-aeeb-5f56943f9eb2/content>, accessed September 30, 2025.

¹³⁰ I would like to note that this temporally deferred analysis—the postponed possibility of understanding the event—corresponds to the relationship I propose between *the Viewer* and *the Image of the Environment*, which likewise reveals itself only over time, gradually exposing to the viewer the interrelations of its components and their inner structure.

¹³¹ See the concept of the computer as a metamedium in: Ryszard W. Kluszczyński, *Estetyka nowych mediów [The Aesthetics of New Media]* (Warszawa: Międzyuczelniana Specjalność Multimedialna, Uniwersytet Muzyczny Fryderyka Chopina, 2009).

elements, grounded in attentiveness and reciprocity between the artist and the medium. Below, I will examine two examples in which such attentiveness manifests within artistic practice.

_Case Study—The Dialogical Disposition in Creation

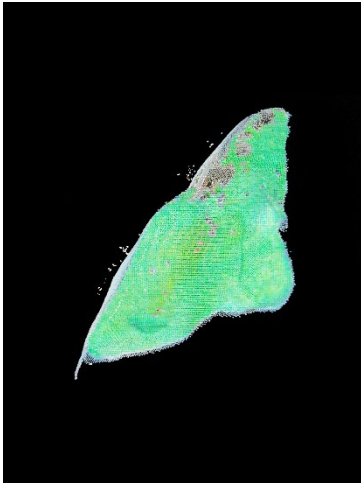


Figure 16. Screenshot taken during scanning, showing a point cloud from which the 3D object is generated.
Source: author's archive.

A 3D scanner consists of a head that reads the form of an object and (optionally) a rotating table that ensures the proper positioning of the item. During the process of creating the model, a cloud of points appears within the navigable digital space. Their concentrations materialise in places where the shape of the object begins to emerge, while points inconsistent with the form are discarded as errors. The process requires only an attentive eye to oversee the accuracy of the scan.

I spent many hours bringing digital counterparts of my objects into being—following the thickening cloud of points and ensuring that they clustered in the right places.

I checked whether the scanner distorted the geometry or missed significant surfaces of the object.¹³² I scanned in the evenings, in darkness, accompanied by the droning sound of the device's motors. Although I cannot pinpoint

the precise reason, there was something deeply fascinating in this mechanical movement of point-generation, in the navigable space through which I wandered with my mouse, observing the virtual object as it slowly came into being.

Guided by my fascination with exploring the point-mapped landscapes of scanned objects, I created the installation *Between a Rock and a Hard Place*. It allows the viewer to explore both the exterior and interior of a 3D stone scan using their hand: the farther the hand moves from the screen, the more the digital stone recedes into distance; when the hand is brought closer, it enables an exploration of the interior. The model is composed entirely of points—the same ones I observed during the scanning process.

In the making of a 3D model, these points are typically connected to form polygons, which build up the object's solid structure. Depending on the chosen method of rendering, the scan can be translated into different forms of three-dimensional representation.

¹³² Despite being aware that it is a device, I impose a human mode of perception and concretization of forms onto its functioning. I will return to this automatic anthropomorphization later in the dissertation.



Figure 17. Viewer interacting with the installation; *Between Rock and a Hard Plate*, documentation of the installation process.

Source: author's archive.

The version I used for this installation is made solely of points. Just as I once navigated the space with my cursor, so the viewers now wander through the models during their interaction.

I presented this work at my solo exhibition *Sensitive Bodies*.¹³³ Some visitors pointed to the intimacy and tenderness of hand-based navigation as the defining quality of the installation—yet more often, I heard the comment: “There is something fascinating about it.”¹³⁴

I recall this anecdote of the work's origin because it was precisely through a *dialogical disposition*—through a sensitive and attentive engagement with the process—that I was able to notice the beauty hidden within a purely technological procedure. I believe that a purely instrumental approach to the medium would not have allowed me to perceive the aesthetic dimension of the scanner's operation. It was the *dialogical disposition* that revealed the qualities which became the foundation of *Between Rock and a Hard Place*.

In Ljubljana, Slovenia, while installing my own work at the Svetlobna Gverilla International Light Festival,¹³⁵ I encountered Nika Erjavec's installation *Elusion*. Inside rectangular glass cases, white, dried plants illuminated by cold bulb light trembled gently. Their motion, combined with the illumination, produced colourful afterimages that split the scene into static, monochromatic fragments. By merging kinetic presentation with the mechanisms of perception, the work revealed both the imperfections of human vision and the illusory nature of phenomena.

¹³³ The project *Sensitive Bodies* and the concluding exhibition at IP Studio were carried out as part of an artistic scholarship granted by the Mayor of Wrocław.

¹³⁴ One of the people who commented on this work was Paweł Janicki, an artist working with new media and interactive art, and a member of the WRO Center team.

¹³⁵ See Nika Erjavec, *Elusion*, accessed September 30, 2025, <https://www.svetlobnagverila.net/en/lighting-guerrilla-2025-disturbances/>.

In conversation, Nika Erjavec emphasized the experimental nature of her artistic practice.¹³⁶ Focusing on a selected property—currently vibration—the artist conducts an in-depth analysis that spans both theoretical and practical dimensions, crossing disciplines such as physics, cognitive science, and philosophy. She then turns to technology to visualize the phenomenon under study, transforming it into a form of representation or digital interpretation. Treating these phenomena as *data*—modifiable, transformable, and highly connectable¹³⁷—she proceeds to the next stage of her process.

Within the set of tools already established in her artistic practice, she searches for correlates of the examined property. For example, she may combine a vibrating object with a surface, a substance, or light, observing their mutual interactions. Through these relations, the elements reveal properties that might previously have remained invisible.

The attentive, distanced gaze appears here twice. First, it emerges at the conclusion of the process of creating the *actants* (to use Latour’s terminology from Actor–Network Theory). Their formation is closely tied to the artist and carries a task-oriented character—it unfolds through proximity, even a merging with the creative process itself. The second instance of this analytical, deeply engaged gaze arises after the moment of connection—that is, once the construct has been brought into being (continuing along the philosophical line of ANT).¹³⁸

However, the process of assembling these elements occurs intuitively,¹³⁹ keeping the artist immersed in the intricacies of creation. Relating this to my own practice, I notice that the act of making is instinctive, experimental, and charged with high energy. It is grounded in accumulated knowledge and propelled by strong emotional investment—yet remains susceptible to fatigue under critical scrutiny. The *cold gaze* thus arrives only after the act

¹³⁶ Guided by the sense of dialogicality I perceived in her statements, I conducted an interview with her. The following paragraph is an authorized translation of that interview.

¹³⁷ In the subsection “_Sympathetic Media” of this dissertation, on page 49, I discuss the high connectivity of digital properties.

¹³⁸ Actor–network theory; see page 9 of this dissertation.

¹³⁹ Intuition is not a superficial following of emotions but an unconscious process grounded in knowledge and experience—a phenomenon widely studied, for instance, by Daniel Kahneman. See Daniel Kahneman, *Pułapki myślenia. O myśleniu szybkim i wolnym* [*Thinking, Fast and Slow*], trans. Piotr Szymczak (Poznań: Media Rodzina, 2019).

of construction has ended.¹⁴⁰ It marks the moment of re-encounter with the created work—of seeing it anew, in its entirety, with an emotional distance that temporarily suspends the intimate bond between author and artwork.

Although Nika Erjavec’s creative practice is an individual case, it vividly illustrates the broader tendency I aim to outline in this dissertation. In her work—similarly to my own, and to the practices of artists within my immediate creative circle¹⁴¹—I observe complex, multifaceted research processes that explore contemporary modes of creation. These often focus not on narrative structures, but on *properties, qualities, and events*.

Within this broad, multidirectional field of inquiry, I recognize an affinity with the concept of *transversality* as developed within New Materialism. Moreover, the method of constructing works from elements previously created or repurposed (which can also be read as an ecological practice of *upcycling*) exemplifies the application of *modularity* in art. What also becomes distinctly apparent here is the tendency toward *relationality*—as opposed to individualistic conceptions of existence—an orientation I have sought to emphasize throughout this dissertation in defining the structure of *Environments*.

Collaboration and attentiveness—the broad influence of relations and the morphic nature of elements—form the foundation of the shift proposed by New Materialism and Timothy Morton’s dark ecology. These principles closely align with the characteristics of the *dialogical disposition* I propose. Recognizing the emergence of various manifestations of such an attitude, I link them to the previously discussed *relationality* of the elements constituting *the Environment* and consider them as signposts of an ontological turn in the contemporary paradigm.

¹⁴⁰ Naturally, in the process of creating a complex conglomerate, there are moments of withdrawal from the engaged, emotional, and intuitive flow. I would compare these moments to those when a painter steps back from the easel to verify the work. This alternating immersion in and distancing from creation enables artistic decision-making and constitutes an essential part of the “heated” process of bringing the construct into being—much like the saccadic movement of the eyes when gazing at an image.

¹⁴¹ Many of the conversations to which I refer here accompanied artistic events and were not recorded. However, an exemplification of the broader context of my hypothesis can be found in my article *In the Light of Contemporaneity*, which includes nine interviews with contemporary artists and was published in *LAACT, Volume 2 [Light as a Creative Tool]*, edited by Robert Sochacki and issued by the Academy of Fine Arts in Wrocław.

The act of including other—even non-human—agents in the process of creation may appear to be a subtle transformation of artistic or perceptual practice, yet it is crucial in overcoming the anthropocentric model of understanding the world.

Technology enables the filtering of reality through a defined, narrow mode of analysis—offering a synthetic and selective perspective focused on a chosen aspect. Through the possibility of modifying the *Image of Things*,¹⁴² various properties of the involved elements become revealed—they shift, intensify, or fade depending on perspective and their relations with other components.

New Materialism emphasizes *transversality*—the capacity to connect what is inconsistent, to build bridges between distant fields or seemingly unrelated threads. By introducing a transformation in the logic of events, it expands established conceptions of reality, opening them to new perspectives. I perceive a strong coherence between this philosophical shift and the linguistic transformations that emerged from the early seeds of *new media* and have since extended into the plane of real-world understanding. *Navigability, modularity, and hypertextuality*—once digital properties—have now permeated and interwoven themselves into material reality.

_Sprouts | *There is No Truth / Just Sensual Objects*

The starting point for the series *There Is No Truth / Just Sensual Objects* was a comparison between the real form of a stone and its model printed in 3D technology.¹⁴³ Placing both objects side by side, I examined them closely, searching for similarities and differences. The cognitive tension that arose from this juxtaposition became the impulse for further artistic exploration.

In creating the 3D print, I do not perceive it as a copy of the scanned object. I claim instead that it is a different, artificially generated form—one that focuses on a specific property of the recorded or processed object. The resulting artifact reveals the characteristics of the tools used to bring it into being. Much like a sensory object, whose form is likewise

¹⁴² I understand “the Image of the Thing” as a construct formed analogously to *the Image of the Environment*, yet extending beyond the field of art.

¹⁴³ Part of my doctoral research devoted to 3D scans and prints was made possible through my collaboration with Daniel Stimmeder, whom I met in Linz (Austria). What began as a conversation about work developed into a friendship filled with shared discussions and explorations. Daniel also provided me with the equipment that enabled my first experiments in 3D scanning and printing. His kindness, support, and friendship accompanied me during my first steps into the technological realm and continue to inspire me in my creative processes. Thank you, Daniel!

correlated with the properties and capacities of the human senses—the apparatus that renders it perceptible.

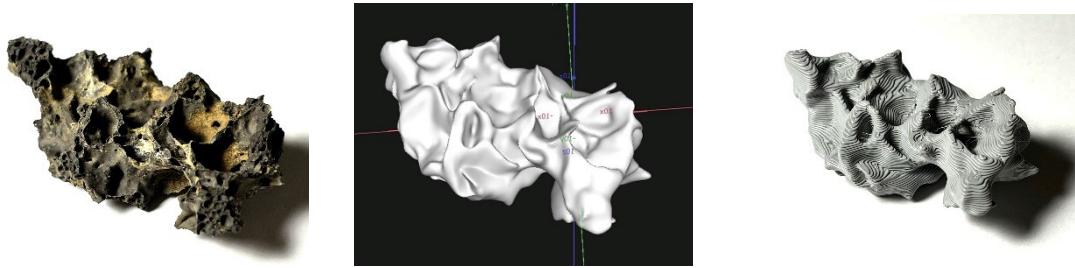


Figure 18. Stone, 3D model of the stone, and 3D print of the stone, 2022.
Source: author's archive.

The juxtaposition of these two objects evokes the need for a deeper phenomenological analysis—one that naturally centers on touch. The hand explores what the eye cannot grasp.¹⁴⁴ I observed this same impulse among the viewers of the prototype installation “*There Is No Truth / Just Sensual Objects*.” The possibility of tactile engagement offered them a new layer of experience. Through heightened focus and bodily involvement, it enclosed them within the act of reception, isolating the experience from its external context. This intimate gesture—enclosing the object within one’s palm—intensified immersion, addressing the sensual dimension of aesthetic experience.

The aspect of expanded activity and experience through touch revealed to me the importance of bodily engagement and the titular tactile sensitivity of contact. These reflections became the impulse to create enlarged scan forms, which I realized as interactive objects within *INTERWORLD*—the artistic component of my doctoral project.

Working with a 3D scanner has profoundly influenced not only the way I perceive form but also how I analyze spatial relationships and the process of recording shape. I used two types of devices: a handheld scanner, operated manually, and a stationary one that worked in tandem with a rotating platform.

In the first case, the user’s body—the movement of the hand and the changing angle of inclination—determined the perspective of the scan. In the second, the machine dictated the rhythm of observation: the object rotated around its own axis while the software, in real time, generated a cloud of points whose density gradually formed a three-dimensional shape. During such scanning, one part of the object—the section resting on the platform—remains invisible. The process therefore requires a pause, a repositioning of the object,

¹⁴⁴ Juhani Pallasmaa, *Myśląca dłoń. Egzystencjalna i ucieleśniona mądrość w architekturze* [*The Thinking Hand: Existential and Embodied Wisdom in Architecture*], trans. Michał Choptiany (Kraków: Instytut Architektury, 2005).

and the continuation of recording. The software, recognizing distinctive points, automatically interpolates the missing fragments. Through this sequence of perspectives and captures, a coherent virtual whole emerges.

Initially, I assumed that the most effective way to scan would be to use two ideal perspectives: one fully revealing one side of the object, and the other complementing it from an opposite point of view. However, this anthropocentric logic proved incompatible with the operating principles of the scanner. The device became disoriented by dark, unscanned fragments of the object—it failed to connect the forms or distorted their proportions. From the perspective of the scanner’s logic, the optimal approach was not a frontal or aesthetically composed view, but one that revealed as many surfaces as possible. In this way, as the viewing angle shifted, the software retained reference points, and the variations in depth and shape facilitated the construction of a coherent three-dimensional representation. At times, the most effective method was to keep the objects tilted and stabilized with rubber supports.

Over time, by observing how the device constructed the model and gathered spatial data, I began to understand the scanner’s internal logic. I learned to recognize the distinctive reference points that allowed me to rotate the object without losing the continuity of the recording. The errors in my early scans made me realize that I had imposed an anthropocentric way of constructing shapes and gathering information onto the tool.

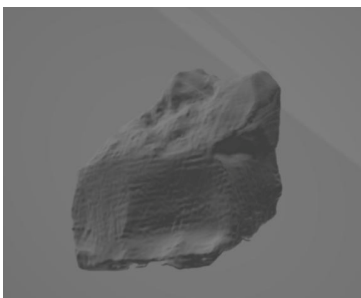


Figure 19. Comparison of a rock crystal with its 3D scan — the juxtaposition illustrates the influence of texture on the perception of form, 2024. Source: author’s archive.

This realization opened a space for dialogue between myself and the technological medium. Only by internalizing the logic of the scanner does true collaboration become possible.

As I looked at the emerging models on the computer screen, I held the real stone

in my hands to verify the accuracy of its form. I ran my fingertips across its surface, examining the precision of the reproduction. Some features of the form disappeared in the scan, while others became strikingly pronounced. Strong color contrasts seemed to exaggerate the depth of the structure’s recesses, and the texture of the surface affected the sharpness of its edges. For instance, oily stones appeared sharper and more varied than their scans, whereas the opposite was true for fragments with a grainy texture.

Color acted as a carrier of the illusion of shape, and the surface became more legible to the hand than to the eye. The scanner, too, was sensitive to the surface properties of the object—some forms had to be coated

with a temporary white spray paint that evaporated over time, ensuring greater scanning accuracy. This also made it easier to compare the scans with scanned objects.

The process of creating a digital model became a process of questioning my own anthropocentric, sensory-based judgments. I was creating a new artefact—one that undermined the certainty of the senses and revealed the technological purity of measurement. The scan functioned as a translation that sharpened perception. A three-dimensional object represented on the two-dimensional surface of a screen inevitably eludes precise observation. Printing restores the possibility of a tactile, sensitive encounter with the form—yet it, too, is a translation, carrying its own layer of transformations and generating a new artefact.

One of the first printed models was characterized by low resolution, which meant a greater height of the lines forming the printing layers. This stratification, revealing differences in the height of each fragment of the object, made it resemble an isometric map. I observed the spatial dimension of the object through the lens of these relational levels—simplified and made visible in the scan. In later attempts, I produced higher-resolution prints that concealed the linear division of layers. At that point, using touch, I compared the dimensions of the print and the scan, reflecting on the differences emerging from the various methods of artefact creation. Certain properties of the filament—such as its matte finish, gloss, or multicolored surface—distorted the perceived form of the print. During one of these moments, I asked a sculptor working in the same laboratory¹⁴⁵ for assistance. As she compared the shapes, she did so with her eyes closed. The need to mute one sense in order to intensify another—or to draw on sensory data to verify mental judgments—reveals the deep interdependence of embodied information in forming our impression of an object.

The virtual scan and the 3D print both referred to the real form of the stone—they pointed to it and interpreted it. Yet, they became autonomous objects in their own right—artefacts. Engaging with them led me to delve deeper into the structure of the object, to rediscover it, and to question my earlier perceptual judgments. Working with technology made me aware of how strongly I impose onto my surroundings an order and logic aligned with an anthropocentric view of the world. A dialogical gaze directed toward the tool revealed to me the complexity of the relationships among the properties that constitute an object, as well as the multiplicity of ways of perceiving it.

¹⁴⁵ Most of my research on 3D scanning and printing was conducted at the Tangible Music Lab, a department of the University of Art and Design Linz (Austria), where I stayed as an artist-in-residence. <https://tamlab.kunstuni-linz.at/>, accessed September 30, 2025.

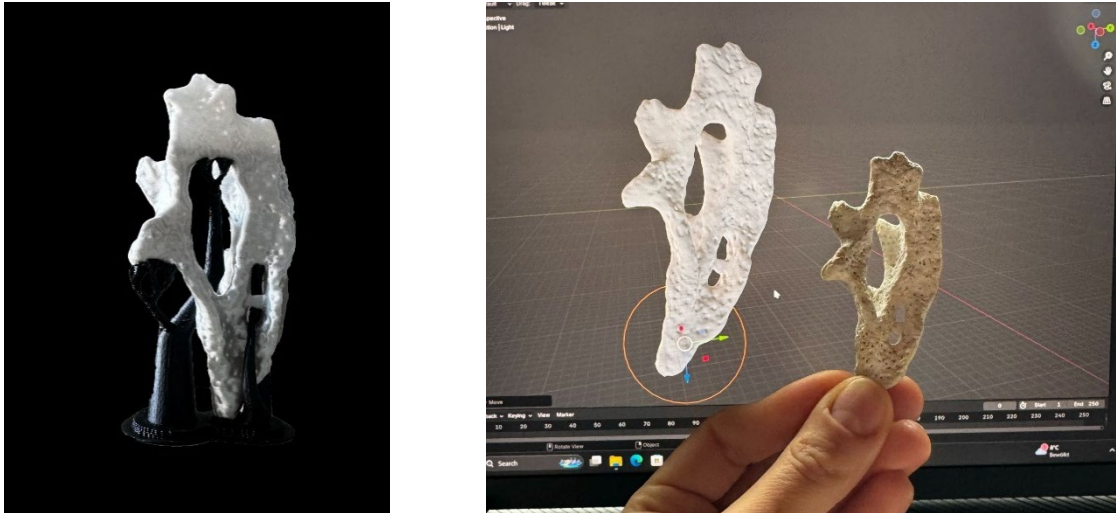


Figure 21. On the left: 3D print, on the right: coral with color scan.
Source: author's archive.



Figure 20. 3D print and the stone—a clearly visible change in form resulting from the use of a different material.
Source: author's archive.

7. Dialogical Disposition toward Technology

As Walter Jackson Ong¹⁴⁶ observes, contact with technology transforms not only the ways phenomena are recorded, but also the forms of reasoning and communication.¹⁴⁷

This transformation extends to analysis and interpretation, as technical media reveal aspects of reality previously inaccessible to the senses—such as extrasensory spectral ranges, temporal scales, or micro- and macro-dimensions—thereby expanding the *Image of the External* to include “nonhuman” properties. At the same time, technology exposes the limitations of bodily cognition: through apparatuses, humans extend their capabilities and gain technologically mediated modes of experience. In this sense—as an “extension of the body”—technology not only completes our vision of reality but also co-shapes perception itself, configuring what can be perceived and conceived.

An examination of the internal structure of cybernetic creations reveals two parallel paths of simplification: on the one hand, the egocentrism of human cognition; on the other, the naïveté of the senses, susceptible to the illusory nature of digital representations of the world. I recognize a certain egoism in the assumption that technology operates entirely according to human expectations.

On a micro scale, yet with striking clarity, this became evident during my work with the 3D scanner. The process exposed a wishful mode of thinking—a projection of simplified cognitive schemes onto a medium that follows its own internal logic. Becoming aware of this projection reveals the instrumental approach that reduces the richness of the human–technology relationship. Therefore, I propose a *dialogical disposition*: an attitude that not only facilitates collaboration with innovative media but, more importantly, expands the cognitive apparatus to include perspectives inaccessible through purely human experience.

A dialogue with technology—grounded in attentiveness and sensitivity toward data and the processes through which they are gathered—enables the perception of new dimensions of events. In this way, the logic embedded in technological processes becomes assimilated by users and integrates into their technologically expanded perception. Awareness of the transformation that technology introduces into the human cognitive

¹⁴⁶ Walter J. Ong, “Zmienne sensorium” [“The Shifting Sensorium”], trans. Michał Topolski, *Konteksty. Polska Sztuka Ludowa*, no. 4 (2021).

¹⁴⁷ What is particularly interesting—and worth emphasizing in the context of this dissertation, which addresses the body–mind as both a receptor of stimuli and a constructor of meaning—is that Ong points to the multisensory nature of communication. He advocates for a holistic, embodied mode of exchange that involves, for example, touch, kinesthetics, taste, and smell.

apparatus allows for the construction of increasingly complex and multifaceted images of the world, surpassing anthropocentric limitations.

This non-instrumental approach to collaboration with technology aligns with the principles of object-oriented ontology, which advocates an egalitarian view of nonhuman entities and restores their agency. In this sense, I regard technology as a *partner in cognition*, rather than merely a tool.

_Ritual and Magic in Cyberculture—Robert Pfaller

I touch upon various fields that resonate with my proposed concept of *Environments*—some of which I explore in depth, while others I merely mark as peripheral references. My aim, however, is to lift the weight of interpretation from *the Viewer* and redirect it toward *situational relationality*—to turn toward the agency of matter and the vision of a world independent of human thought or of the sociological layer that envelops what is socially engaged.

Here, I trace another line of reasoning—one that could easily escape notice, yet deserves attention. A number of the scholars I reference originate from theological or spiritual contexts. Why does this religious undertone emerge among reflections on nature, technology, and humanity? Spirituality, metaphysics, and rituality are deeply entangled with art, and their new-media articulations must necessarily carve new pathways for these currents of thought.¹⁴⁸ By bringing together the philosophy of dialogue and Ong's ideas,¹⁴⁹ I turn toward *interpassivity* and the contemporary rituals discussed by Robert Pfaller, in order to paint a more precise picture of participation within technologically embedded *Environments*.

According to Robert Pfaller, *interactivity* points to the incompleteness of an artwork—one that must be completed through the engagement of the viewer.¹⁵⁰ I recognize here an instrumental approach to the audience and a task-oriented disposition (suggestive

¹⁴⁸ Ryszard W. Kluszczyński, *Estetyka nowych mediów [The Aesthetics of New Media]* (Warszawa: Międzyuczelniana Specjalność Multimedialna, Uniwersytet Muzyczny Fryderyka Chopina, 2008).

¹⁴⁹ Walter Jackson Ong was an American Jesuit, professor of English literature, historian of religion, and philosopher.

¹⁵⁰ Robert Pfaller, *Interpassivity: The Aesthetics of Delegated Enjoyment* (Edinburgh: Edinburgh University Press, 2017), 54.

of *gamification*), which further opens the possibility of hierarchical implication—the artwork becomes subordinate to and dependent on the actions of the interactor.

Instead, I propose the idea of a sensitive artwork. In the case of *Immersive Interactive Environments*, I reformulate interactivity, drawing inspiration from natural environments. When I submerge myself in the ocean, the water embraces me; the inner rhythm of the shore continues, slightly stirred by my presence. Around me, ripples unfold across the trembling surface of the water. I see and feel my influence—my presence brings about change—yet the ocean is neither fuller nor diminished because of it.

Within this kind of distributed interactivity, I discern immersion: dialoguing elements remain autonomous, yet there emerges a space *sensitive* to their actions. I reject the dualistic prism of finite/infinite, open/closed, in favor of processuality and co-existence.

Interpassivity—positioned as the opposite pole to interactivity—presupposes an artwork that is *more than complete*, one that requires neither the engagement nor the passivity of the viewer. It proposes a work that observes itself, responds to itself. The viewer is suspended; no action is demanded of them. Instead, activity is transferred into the field of the artwork's own unfolding. This phenomenon is widely present in culture.¹⁵¹ It leads to the delegation of one's own pleasure, to the displacement of activity beyond the sphere of one's direct actions. Pfaller suggests that this occurs through ritual—a figurative representation of an actual act of doing. For instance, copying *a book* may give the impression of having read its contents.

The interpassive subject and their medium are not connected by physical conduits, as an external organ would be, but rather by representation. The interpassive person delegates their enjoyment to the medium, which performs the act of consumption in their stead. It is the medium that *reads, watches, laughs, eats*—ritually, on behalf of the receiver. Thus, the spectator becomes suspended, excluded from the situation of action. What is particularly intriguing, Pfaller adds, is that this delegated act must remain an illusion—one in which the viewer believes—in order to preserve its affective power.¹⁵²

¹⁵¹ Referring to an example cited by Slavoj Žižek, Pfaller points to the mechanism of laughter and applause heard in the background of comedy scenes. Thanks to these cues, the viewer does not have to engage emotionally or react intensely, yet still leaves the screening with a sense of having had an enjoyable experience.

¹⁵² Robert Pfaller, *Interpassivity: The Aesthetics of Delegated Enjoyment* (Edinburgh: Edinburgh University Press, 2017), 53–57.

I seek immersion rooted in deepened sensibility and heightened attention. In Pfaller's notion of delegated enjoyment, I recognize the trap of digital worlds—a condition into which the fatigued and inattentive mind easily falls. The remedy I propose lies in grounding the artwork in material reality while extending it through digitality and interactivity. In such a framework, the absence of interactive engagement does not signify disengagement; rather, it becomes a form of passive reception that nonetheless continues to absorb the aesthetic stimuli of the work.

Pfaller calls interpassivity the *magic of the civilized*, seeing in technology a plane that intensifies this dependence. The magical and mythological connotations of technology are also noted by Latour, who argues that magic and myth were displaced by technology only on the surface.¹⁵³ In reality, technology is used magically—with faith in positive outcomes, yet without understanding the principles behind its operation.

While researching interactivity and observing audience reactions, I indeed noticed a certain fascination with how artworks function—recurring questions of “how?”, attempts to understand the programming commands or systems employed. There is a kind of mystery embedded in interactivity, reinforced by the artwork's responsiveness, which makes it resemble an independent, living entity.

Another parallel lies in communal experience, present both in religious rituals and in technological practices. Crowds follow shared patterns of reaction, engaging in rituals rooted in tradition and repeating actions that have become woven into the cybernetic fabric of reality. I also believe that interactivity informed by ritual distances the artwork from gamification.

_Sprouts | The Ritual of Interactivity

Regardless of one's attitude toward religion, spaces dedicated to the sacred are pervaded by an atmosphere of deep focus and stillness. In her essay on the total artwork, E. Gieysztor-Miłobędzka outlined an interpretive framework in which the Baroque cathedral becomes an example of such an all-encompassing artistic form.¹⁵⁴ Furthermore, spirituality relates to the inner realm—to the dimension of feeling that I seek to engage, move, and touch

¹⁵³ Bruno Latour, *Nigdy nie byliśmy nowocześni: studium z antropologii symetrycznej* [*We Have Never Been Modern: An Essay in Symmetrical Anthropology*], trans. Michał Gdula (Warszawa: Wydawnictwo Krytyki Politycznej, 2011).

¹⁵⁴ Elżbieta Gieysztor-Miłobędzka, „W obronie ‘całościowości’. Pojęcie Gesamtkunstwerk” [“In Defense of ‘Wholeness’: The Concept of the Gesamtkunstwerk”], *Kultura Współczesna. Teoria, Interpretacje, Praktyka*, no. 3–4 (1995): 102.

through artistic creation. I maintain that immersion naturally emerges in an atmosphere of concentration and attentiveness.

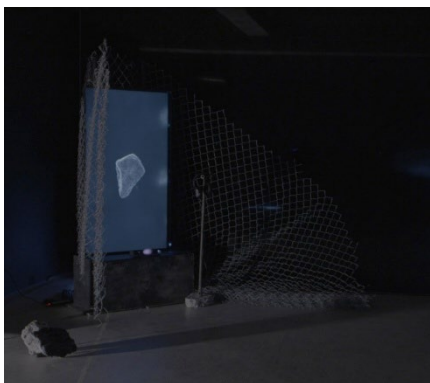


Figure 22. View of the installation *Between Rock and a Hard Place*, IP Studio, Wrocław, 2025.

Source: author's archive.

I turn to architectural and spatial arrangements of religious environments, seeking to evoke the atmosphere they carry. In the aforementioned work *Between a Rock and a Hard Place*, I referenced the form of an altar, constructing a space that enclosed the viewer within an immersive aesthetic situation. The central element was a vertical screen, surrounded by a metal mesh that formed a tripartite symmetry. The element positioned at the center—responsive to the viewer's hand movements—focused attention even more strongly on the core of the arrangement, while the metal "arms" acted like embraces, amplifying the sense of an intimate yet sacred experience.

Although the methods I employ to evoke the spiritual dimension of space may appear subtle, they are so deeply encoded within cultural iconography that they are naturally recognized and absorbed into the experience of the artwork. They become part of *the Image of the Environment* that arises from *the Environment* itself.

My attention to the spatial distribution of light also stems from my interest in sacrality. Darkness and half-light do not serve merely formal purposes; rather, they construct an atmosphere of focus and quietude. They create a frame for experience, one in which *the Viewer* is separated from the external world and guided toward a more intensified perception of the moment. By illuminating selected elements of the arrangement, light grants them the status of almost ritualistic signs, directing attention in a manner akin to sacred encounters with the sublime.

8. Tangles: Fields of Coexistence

_The Viewer in Dialogue with the Artwork

The transformation of the internal structure of new media artworks has made them less accessible, raising the threshold of entry into the experience. They have become unfamiliar spaces governed by opaque, often intuitive rules. Outside the field of art, *the Viewer* operates within the cybernetic reality under specific parameters—they decide which layer of reality to enter. Artworks, however, lack this functionality. Their only certainty remains—though not without its own complications—the aesthetic plane, which arises from their very nature.

The tendrils of the cybernetic properties of *the Environment* invite *the Viewer* to engage and cooperate. Yet the intention to participate in an interactive artwork must be strong enough to overcome the initial distance of the relationship. It is up to *the Viewer* to discover the logic of reactivity—through trial, error, and experimentation. Among the qualities that support acclimatization within the *Environment*, I add responsiveness: the immediate, sensitive reaction of the work to the viewer's action. It serves as a response to their initiation—the first touch, movement, or entry into the space.

The reaction does not need to be spectacular. In the *Cyberscapes* series, the viewer's entry into the field of interactivity triggered the emergence of a new layer of sound—subtle yet immersive. I returned to this type of relationship in the work *Sensitive Bodies*, presented at the Biennale in Jelsa, Croatia.

Another way to anchor *the Viewer* within the artwork is through intuitive behaviour—automatic reactions triggered by spatial arrangement or the form of an object. Following internal impulses, *the Viewer* enters into contact with the surrounding environment. The object invites touch; the space beckons one to step deeper; the light breathes, drawing attention and encouraging interaction. These elements become additional tendrils that gently wrap around the viewer, pulling them into the experience.

When the artwork responds to the viewer's first gestures, a plane of understanding begins to form—a sense of certainty that the reaction is legible and comprehensible. The dialogue thus established facilitates further exploration, develops the narrative, and allows the relationship with the work to deepen.

_The Immersion of Environments Growing from the Ground of Technology

The sphere of perception has expanded to include qualities emerging from cyberreality, and *the Viewer* has adapted to functioning within a mixed reality. On the surface, it might seem that *Immersive Interactive Environments* are a natural response to the transformation of the surroundings and the parallel evolution of the viewer's cognitive apparatus.

Yet, as reality has expanded, so too have social disorientation and cognitive dispersion. Situations that evoke a sense of dissociation have become more frequent—experiences that estrange the individual and, under the guise of quick entertainment, deepen the feeling of cognitive exhaustion.

The ongoing technologization enables the digitization of media. Digital objects are characterized by a high degree of connectivity, which ensures their mutual compatibility. This allows one property to influence another. As a result, the network of interrelations within an intermedial artwork becomes increasingly dense—and, consequently, more engaging. The coherence of the representation also increases, allowing *the Viewer* to navigate such a designed space with greater ease.

Collaboration with technology, approached in the spirit of a *dialogical disposition*, expands human potential and enables a deeper understanding of the surrounding world. Attuning oneself to the logic of machines and algorithms reveals new planes of comprehension and enhances the viewer's cognitive capacities.

Nature brings peace and solace. The sense of contemplation and tranquility it evokes is the atmosphere I strive to infuse into my artistic creations. I believe that presenting natural phenomena through the lens of generativity and digitality creates an immersive impression of affective recognition—an echo of bodily memory that recalls moments of relief and safety. Within this mechanism, I see the potential for fostering a sense of communal belonging, rooted in the intuitive, corporeal unity between human and nature.

I seek the tenderness of art—spaces that receive *the Viewer* with care and sensitivity. In response to the multifaceted nature of reality, I propose *Immersive Interactive Environments* that nurture the act of reception, ensuring continuity of experience. Their tendrill extensions, growing from virtuality, reach toward reality, grounding the encounter. The spatial structure of such environments guides the viewer, indicating points of focus and possible actions, thereby facilitating acclimatization.

Turning toward environments with a deeply calming effect, I draw upon rituals and ceremonial practices. In designing the way an artwork is experienced, I emphasize the need to establish a ritual of passage—a moment of entry and exit that anchors the experience in time, allowing for both acclimatization and return from the aesthetic event. I believe that many of the formal strategies present in the design of religious rituals ensure their immersive quality. Therefore, I draw compositional and narrative inspiration from these realms.

The bodily engagement of *the Viewer* within the aesthetic situation leads to both somatic and intellectual immersion. This form of reception—through the body–mind—submerges *the Viewer* within *the Interactive Environment*. It counteracts the instrumental treatment

of the body by restoring the value of sensory experience. Here, I draw a line between loss (dissolution) and immersion (attentive presence)—an experience that resists the gamification of art. Being within the installation becomes a tender dialogue between *the Viewer* and *the Environment*, where understanding deepens through duration.

Analyzing the structure of artistic cognition that I have proposed, I emphasize the importance of sensory experience. It is through the senses that awareness is awakened—the force that constructs meaning and shapes *the Image of the Environment*. In touch, registration, and translation, I find methods that lead toward deeper understanding. Within the material and the tools that bring the artwork into being, I perceive agency—made visible through the dialogical attitude. The artist becomes a catalyst for relations between the interwoven systems that constitute the work. The viewer, immersed in this network of entangled elements, gradually comes to understand the structure of the environment, delving ever deeper into its fabric.

Such reception becomes a space of interpretation—a moment of negotiating meanings with the *Environment*. The concept of sympathetic media expands the idea of the medium as an active participant in the process of cognition. *Immersive Interactive Environments* constructed in this way, through their connotations with poetic corporeality and a sense of unity with nature, envelop *the Viewer* in a tender field of influence.

_Sprouts of the Tangle

The tenderness of art lies in its ability to respond to the presence of the viewer—to co-create an experience that transcends the artist's initial framework.

At the beginning of my research on interactivity, I was intrigued by the relationship between analytical and contemplative modes of thinking. I wondered whether these two forms could coexist or whether they mutually excluded one another. As a result of my artistic research and experimentation, I propose a temporal unfolding of the experience—a process of the viewer's gradual immersion in the environment. I believe that, at first, *the Viewer* encounters and familiarizes themselves with the Unknown. Then, after a period of acclimatization, they enter an analytical phase. By understanding the mechanisms that govern the environment and exploring the planes of interaction, they begin to coexist with it. In this reciprocal attunement, I recognize the essence of immersive engagement within interactive environments. The viewer's level of activity depends on their aesthetic and empirical needs and aligns with their individual capacity for engaging with the artwork.

In my earlier reflections on the various stages of prototyping *Immersive Interactive Installations*, I tended to dismiss collective reception. I analyzed the behavior of participants who experienced the artwork alone and those who came with friends. The former approached the installation with greater attentiveness, calmness, and focus,

while the latter often exhibited a playful attitude—treating the experience as a game or joint exploration. At that time, I interpreted this as a sign of distraction, something that hindered contemplation and deep immersion in the aesthetic experience.

Now, I view that hypothesis more critically—as if I had once implied that people walking through a forest in a group experience nature less fully than those who wander alone. Personally, I still feel closer to solitary experience—perhaps that explains my earlier preference. Yet, the experience of an *Interactive Immersive Environment* should align with the needs of the individual and unfold according to their natural modes of engagement—this, to me, is the tenderness of art.

The Environment itself is not indifferent. It responds to the viewer’s actions and affective disposition—and each person carries their own atmosphere and vision of coexistence, subtly shaping the world around them.

As I write these rather personal words, I recall the evening of the opening of exhibition where I presented my first installation based on the idea of interactive objects—an approach I later continued to explore in my work *INTERWORLD*. *Your touch brings me to a whole new dimension* was an installation in which the movement of a stone also triggered the movement of its digital representation. After the official opening, I stayed in the gallery with a few close friends. At one point, a good friend of mine grabbed my arm and pulled me toward my (still active) installation. She began to rotate the stone intensely. The digital representation employed feedback—previous positions faded into nothingness, and with such rapid motion, the representation began to disappear entirely. Then she turned to me and exclaimed, “*Did you see that? It vanished!*” Seeing her excitement and unrestrained joy, I felt torn—I had designed this work as a meditative exploration of the appearances of things, and such a playful reaction didn’t align with that intention. Yet how could I dismiss such a vivid aesthetic experience? I wondered if it wasn’t the same sense of wonder I myself had felt while finalizing the first sketches of the piece. I no longer wish to dismiss specific, individual modes of perception as incompatible with immersion—for immersion arises in the relational space between *the Viewer* and the artwork. Each person carries their own mode of experiencing, their own emotional landscape. A work of tender art allows these differences to resonate and unfold through dialogue—within the shared act of discovery.

I did not know that the virtual stone would vanish. I did not know that *Coalesce*¹⁵⁵ would draw such beautiful forms until Magda Niewińska danced with it. I did not know that the interactive projection of the smoky silhouette would create pulsing embers

¹⁵⁵ The installation is available at https://www.youtube.com/watch?v=Wn8_-7RiY3E, accessed September 30, 2025.

until Wioleta Fiuk set it in motion. Nor did I know the delicate contours shaped by *Coalesce*¹⁵⁶ until Alja Lacković performed with it. Although I am the author of each of these works and designed the interactive mechanisms behind them, I could not foresee all the directions they might take. They evolve through collaboration with the audience. I do not see this as a lack of control or competence—on the contrary, this is where the tenderness of art reveals itself: in its capacity to carry the vision of the one who enters into dialogue with it. This shared coexistence allows the artwork to slip beyond my own imagination. The *Interactive Immersive Environment*, in its mutual presence with the viewer, continually unveils new forms.

¹⁵⁶ The version presented in Ljubljana was based on a different interactive mechanism than the installation *Coalesce*, with which Magda Niedzielska performed during the symposium *There Was, There Is and There Will Be*.

III. *INTERWORLD*

The Artistic Project—A Field of Embodied Research

The reality has branched into multiple directions, and art—as its reflection—has also undergone a process of divergence and problematization. In creating my own artistic works, I strive to transform the experiences that fascinate me into forms that are both accessible and shareable with others. My focus lies in contemplation, inner stillness, and the sense of connection with the surrounding environment. I have developed my own visual language, inspired by natural phenomena and sites of degradation, in an effort to construct an authentic image of contemporary nature. At the same time, I study social relations, seeking to translate the essence of human bonds into the form of aesthetic experience. I employ *translation* as a tool for interpretation—a way of transferring what is known into new, immersive sensations.

The stone became a symbol around which I built the narrative of my doctoral project. “You’re cold as stone”—it is said of those who seem unfeeling, focused on their own paths, making decisions guided solely by themselves. The phrase also describes those who remain unmoved by external circumstances. I once heard such words directed at me. Yet I believe that what is visible on the surface does not always reveal the complexity of one’s inner and emotional processes. When I hold a stone in my hand, I feel beneath my fingers its hard surface—a record of the formative processes that shaped it. In the same way, everyday behaviors and more stable personality traits are the outcome of each person’s life experiences. Over time, its cold form warms in the heat of the hand—just as time softens and familiarizes every closeness.

For me, form serves as a vessel for the essence of things; therefore, within abstraction, I seek a universal language that can foster understanding and a sense of shared experience. When I look at the shape of a stone, I can almost *feel beneath the surface* the events that shaped it. The soft curves of river pebbles speak of the gentle motion of water currents smoothing their surface. The cementation of sand, born from the weathering of rocks, gives rise to sandstone. Sharp, angular edges emerge from the dynamic transformations of lava, whose rapid cooling produces porous, lightweight fragments—*scoria*.¹⁵⁷ Geological transformations bring forth new stone forms—conglomerates or metamorphic rocks. Others arise from

¹⁵⁷ Waław Ryka and Anna Maliszewska, *Słownik petrograficzny [Petrographic Dictionary]* (Warszawa: Wydawnictwo Geologiczne, 1982), 301.

organic matter, at times bearing traces of ancient flora¹⁵⁸ or shapes that recall past life forms.¹⁵⁹

In attempting to classify the stones in my collection, I learned to read their structure—to recognize their grain, texture, and surface type. Working with the 3D scanner also revealed to me a new dimension of the stone’s form: the discrepancies between color and shape, and the illusion of volume created by surface characteristics. After some time, I could sense which shapes were translatable—and which fascinated me precisely because of their qualities that resisted translation into virtuality. I also discovered the vast scope of petrology—the branch of science concerned with the origin, small-scale structure, and composition of rocks—and how difficult it often is to unambiguously determine the actual type of a stones. Still, I allow them to keep their mystery.

The traces and hypotheses I form as I try to uncover their histories are enough for me. The real dimension of the stone—that which, in the sense of object-oriented ontology, always remains withdrawn—will forever remain beyond my reach.

The stone was humanity’s first tool. Its history carries something deeply primal and ancient. I believe that these qualities—which point to the stone’s sense of timelessness—imbue it with a kind of monumental temporality. It fits naturally into the hand, recalling ancient gestures. Many people collect stones, fascinated by their properties and forms. Among my own friends and visitors, I often notice the same impulse—they instinctively reach for the stones in my collection, holding them, weighing them in their palms. Although there are many examples of collective fascination with other elements of nature, I see in this a confirmation of an intuitive bond we all share. The act of translating stone into new media, therefore, creates an intriguing contrast—a meeting of enduring, primordial matter with digital reality.

In the juxtaposition of the real stone, its scan, and the printed model, a certain tension emerges. The objects appear coherent and symmetrical, yet each distinctly reveals its individuality. This configuration invites *the Viewer* to examine the three representations closely, searching for differences and correspondences among them. While creating works based on this relationship, I felt the need to extend perception through touch. It was only in the viewer’s hands that the true tension between these representations materialized. Allowing for tactile engagement transformed the act of viewing into an intimate Encounter. While creating works based on this relationship, I felt the need to extend perception through

¹⁵⁸ The work is available at https://www.instagram.com/p/DJwHTYqLuZl/?img_index=1, accessed September 30, 2025.

¹⁵⁹ The work is available at https://www.instagram.com/p/DPIGpU0DTQ3/?img_index=1, accessed September 30, 2025.

touch. It was only in the viewer’s hands that the true tension between these representations materialized. Allowing for tactile engagement transformed the act of viewing into an intimate Encounter. Touch is also a form of tenderness—a tenderness that leaves a trace. The initial impulse for my interactive sketches came from interpersonal relations, where touch became a metaphor for influence and closeness. I translated the sensations associated with deeper human connection into the language of interactivity—and the stone became my symbol of the person.

“Do not touch the inner structure”—this was the first phrase I assigned to my early sketches for interactive works. It referred to the stones that, when touched gently, would draw beautiful and complex landscapes, yet too much pressure or an abrupt movement would disrupt their contemplative narrative.

As I moved toward realizing these ideas, I began to pay closer attention to the relationships among the media I used and to the complexity of each component—the 3D scan, the print, the properties of the sensors, the programming, the data transmission systems, the visualizations, and the spatial arrangement. Initially, I perceived these elements as mere tools for the realization of my concept. However, the development of a *dialogical disposition* revealed their own logic—a spectrum of possibilities and limitations to which I had to respond, adapt, and redefine the individual parts of the work.

Having completed the interactive environment *INTERWORLD*, I now wish to focus on narrower fields of aesthetic experience and to examine more closely the possibilities that the process of creating this work has revealed to me. I have encountered many materials and solutions that I wish to explore further, within more focused experiential situations. The ideas that I once recorded in my early sketchbooks, at the beginning of my work on immersive interactivity, will now be expanded to include the sociological dimensions and forms of artistic creations I have since discovered.

The *INTERWORLD* environment consists of six objects augmented with an interactive system that responds to rotation. Opposite them, visualizations of their virtual models are projected onto the surrounding surfaces. Three projection-covered walls—like an embrace—envelop the viewer, enclosing them within the experience. Each stone rests on a custom-shaped base¹⁶⁰ that pulses with a steady, breathing light. The virtual images, too, are imbued

¹⁶⁰ The foundations on which the objects I refer to are based stem from a *dialogical disposition* to the process of 3D printing. When preparing a model for printing, some elements require reinforcement in the form of supports that ensure the stability of the process. These supports can take on an organic (*tree*) or automatic structure, resembling—at least in my perception—scaffolding that supports architectural constructions. Each of the parameters of these supports can be modified and adjusted by the designer. Fascinated by the entwining structure of the supports, I decided to make

with a gentle, cyclical motion, evoking the presence of a living organism. The viewer enters a space stretched between virtuality and reality—a space in which elements unfold simultaneously within both dimensions. Gradually, *the Viewer* synchronizes with its rhythm; their gaze drifts across the moving forms, slowly absorbed by their pulsating, meditative temporality.

Each object contains an internal power system and an interactive apparatus based on the ESP-32 module. The main board is powered by a power bank and connected to a gyroscope—the MPU-6050 sensor—which collects data on the object’s rotation along the X, Y, and Z axes. When designing the 3D print model, I determined the center of the object and established its axes of rotation so that they corresponded to an intuitive, visually coherent movement. The sensor was placed precisely at this point, ensuring that its axes aligned with those of the virtual object’s rotation. I then transferred the model into the TouchDesigner programming environment, where I was able to create an interactive projection that linked the sensor data with the rotation of the virtual model.

The highly detailed 3D model required for precise printing placed too much strain on the system, making it necessary to simplify the form into a geometrized version. From the detailed mesh, I created a texture that was then applied to the simplified model. It was this texture—with its varied shades, folds, and elevations—that faithfully reproduced the original shape of the object. After importing both the model and the texture into TouchDesigner, I positioned the virtual camera according to my point of view. The simplification of the model ensured that the real-time changes in rotation occurred smoothly and without delay.

A receiver connected to the computer collected data from the ESP boards placed inside the stones. These boards transmitted compressed packets of information containing the stone’s identification number and its rotation values. The receiver unpacked the data and forwarded it to the USB port as a continuous stream of values. In TouchDesigner, the incoming data were sorted into tables and assigned to the corresponding visualizations.

The ESP boards use their own data transmission protocol, making them independent of Wi-Fi or Bluetooth—forms of communication that are prone to interference. The sampling rate, that is, the frequency at which each of the six boards transmitted information, had to be adjusted to match the receiver’s bandwidth and the computer’s performance. Interestingly,

them a part of the artwork itself. The piece *Osnowy [Enclosure]*, presented as part of my solo exhibition *Sensitive Bodies*, is based on this method, marking the beginning of a new direction in my visual language.

An example of such an arrangement (in this case from the exhibition at Sirup Gallery in Linz, Austria) is available at https://www.instagram.com/p/DId_5M6IvZB/?img_index=4, accessed September 30, 2025.

it was the boards that required a reduction in transmission frequency—the computer, despite processing the motion of six virtual 3D objects, operated smoothly. Due to the need for less frequent position updates, I introduced a smoothing filter, which helped maintain a natural rhythm of movement.



Figure 23. Interior of the interactive object, 2025.
Source: author's archive.

Cables, batteries, sensors, and microprocessors were placed inside the stone sculptures, forming their “organs”—elements that allowed the environment to pulse with its own rhythm. Although in the future I would like to create a work that reveals its technological “viscera,” in the case of my doctoral project *INTERWORLD*, the decision to conceal the apparatus deepens immersion. The sense of strangeness and otherness arises from the act of translation rather than from an aesthetic rooted in cybernetic form. Technology here opens new spaces for perception and contemplation instead of creating distance through mechatronic, inaccessible, and hermetic structures. *INTERWORLD* is based on the idea of entering what appears new yet feels familiar—evoking nostalgia and a sense

of connection with the surrounding environment. It touches upon the magic of technological processes, in which the viewer’s influence becomes both perceptible and tangible, even as it travels invisibly as data.

The *INTERWORLD* environment is immersed in monochromatic red. This color is the strongest chromatic stimulant—it raises adrenaline levels, sharpens attention and enhances focus, all of which positively influence immersion. It also carries an impression of sensuality—assertive, absorbing, and stimulating to action. What interests me most, however, is its empirical experience. To me, red unifies the entire space of the installation, creating a distinct atmosphere. It evokes a sense of interiority—reminiscent of viscera—and this impression of inwardness, of suspension between different modes of material manifestation, forms the core of my concept. Furthermore, the red of the interactive objects brings them closer to living forms—evoking muscles, tissues, and visceral organs. This gesture connects the artificially created, plastic artifacts with organic matter, profoundly affecting *the Viewer* and thereby deepening immersion.

While sketching the concepts for the *INTERWORLD* installation, I produced numerous 3D prints in different colors. Inspired by the strange and unsettling aesthetics of creatures with translucent skin, beneath which pulsating interiors become visible, I explored

the potential of transparent and semi-transparent filaments.¹⁶¹ These materials, however, introduced an element of alienness and technicality that—though intriguing—increased the distance between the artwork and the viewer. I also experimented with pastel hues of subtle yet unnatural qualities, giving the forms a distinct, enigmatic character.¹⁶² These were the materials I used to create the interactive objects in the installation *Sensitive Bodies*, presented at the Art Biennale in Jelsa, Croatia. The work represented a key study summarizing my doctoral research. The exhibition space itself played a crucial role—it carried immersive properties that stimulated the viewer’s senses and intensified the feeling of being present within the environment of the artwork.

The installation was based on three rock fragments found on a nearby beach. It was therefore deeply connected to the gallery’s surroundings—like a tendril reaching outward, it extended toward the viewers’ shared sense of locality. The work was situated in a basement that had once served as a winery. The space carried a distinct atmosphere—darkness, coolness, and the heavy scent of dampness. These tangible yet underlying qualities acted as elements of a ritual of passage, ensuring a transition from the sunlit, bustling streets of the Croatian island above. Such conditions had an immersive effect, shaping the sensory layer of the viewer’s experience. In contrast to this cave-like environment, I introduced bright, glossy objects whose luminous presence resonated more strongly against the grey, humid backdrop. I believe this formal contrast intensified the situation, amplifying the perceptual tension. The installation also incorporated a sound layer, composed by Enrique Mendoza Mejía¹⁶³ and programmed by me. “*Sensitive Bodies*” was immersed in a deep, bass-driven, droning audiosphere. Interaction with the object expanded the sound form with an additional layer, and its immediate response functioned as a vivid initiation of dialogue—an affirmation of responsiveness and an invitation to further exploration.

I value this experience of concretizing the ideas behind the practical part of my doctoral work for its stimulation of the sense of smell and the profound integration of the site’s character

¹⁶¹ Using these materials, explored in the spirit of a dialogical approach, I created the work *Przeźrocza—Przezroczyte ciała pulsują bezwstydną wrażliwością* [*Diaphanous—Transparent Bodies Pulsate with Risqué Vulnerability*]. The work is available at https://www.instagram.com/p/DlQe2QZuB_A/?img_index=1, accessed September 30, 2025.

¹⁶² Using these shimmering, pearlescent filaments, I created an installation, available at the following links, accessed September 30, 2025:

CroatiaStone_01 / Limestone - https://www.instagram.com/p/DNNLwEroXK6/?img_index=1

CroatiaStone_02 / Limestone - https://www.instagram.com/p/DNPwjqWul9y/?img_index=1

CroatiaStone_03 / Limestone - https://www.instagram.com/p/DNSV6fFucPH/?img_index=1.

¹⁶³ Enrique Mendoza Mejía is a Mexican electroacoustic music artist, composer, and lecturer at the Anton Bruckner Privatuniversität in Linz, Austria. More information about the artist can be found at www.enriquemendoza.net, accessed September 29, 2025.

with the proposed action. However, it is important to note that the environment I create requires advanced technology and access to specialized technical solutions. When realizing the installation at Bruckner Privatuniversität during Sonic Saturday at the Ars Electronica Festival, I had significantly greater control over the formal aspects of visualization and spatial arrangement, which allowed me to construct a more refined and formally coherent situation.

The *INTERWORLD* installation was located in the depths of the room, accessible through a section veiled with black curtains that muffled the surrounding space. In this transitional area, there was also an element of the ritual of passage—a luminous object¹⁶⁴ on which real stones, previously subjected to the process of translation, were placed. I carefully selected these stones, wishing to present the broadest possible spectrum of the complex and diverse world of rocks, which had become the starting point for my exploration of the relationship between matter and its virtual counterpart.



Figure 24. Interactive Environment *INTERWORLD*, Sonic Saturday, Bruckner Privatuniversität, Ars Electronica Festival 2025, Linz, Austria, 2025.

Source: author's archive.

I chose a desert rose¹⁶⁵—a stone formed in arid regions through the evaporation of water near the Earth's surface. The gypsum (calcium sulfate) contained in the evaporating water crystallizes between grains of sand, creating intricate crystalline forms. For the print, I used a semi-transparent material that accentuated the complexity of the shape and its light,

¹⁶⁴ The object is available at https://www.instagram.com/p/D0p30K0DYIC/?img_index=1, accessed September 29, 2025.

¹⁶⁵ Wacław Ryka and Anna Maliszewska, *Słownik petrograficzny [Petrographic Dictionary]* (Warszawa: Wydawnictwo Geologiczne, 1982), 296.

irregular, and delicate structure. In contrast to this form, I chose *Veined Stone*¹⁶⁶—a dense basalt rock with a veined structure, formed from rapidly cooled lava. For its print, I used a filament called *Stairlight*, a highly specific material that shimmers in different shades of red depending on the angle of light—ranging from warm orange tones to cool purples. This material accentuated the stone’s veined, detail-rich structure. I also selected an object that reveals the porous nature of rock formations—a piece of pumice found in Greece. Its irregular surface is marked by visible cavities, formed by air bubbles trapped during the rapid cooling of lava immediately after being ejected into the air by a volcano.¹⁶⁷ I printed this stone using dual color filament that emphasized its distinctive, irregular structure. Seeking the opposite pole to the porous texture of the pumice, I chose a small pebble from Albania—most likely a gray chalcedony¹⁶⁸—with a delicate, waxy sheen and a smooth surface. I interpreted its character using a matte burgundy filament that reflects the extraordinary smoothness of this fragment. This stone is also the smallest form I have scanned—it fits easily on the tip of a finger. To complete the collection that tells a broad story of the origins of rocks, I turned to forms of organic origin: a fragment of lignite¹⁶⁹ and a fossilized coral reef—the so-called finger coral—originating from Mauritius, an island nation in East Africa. The fragment of lignite bears the imprint of a fern from the Carboniferous period. To highlight this distinctive feature, I used a dual color (gray and pink) silky filament. Its lustrous surface accentuates every fold and irregularity, while the subtle shift in hue reveals the delicate pattern of the fern. The second stone—the finger coral—takes the form of a branched white skeleton, which I printed using a thermoactive filament. Under the influence of heat, it changes color from red to light beige, just like corals that die when exposed to rising ocean temperatures caused by climate change and human interference with nature. The coral’s branching structure contrasts with the compact fragment of lignite, yet both clearly point to their organic origins.

The projection setup positions *the Viewer* at the center of the space, facing the longest wall. At this point, opposite the physical objects, are their virtual counterparts—forms constructed from the same stones. The viewer intuitively connects the displayed images with the tangible objects. By grasping and rotating a stone, they alter the position of its virtual projection. The

¹⁶⁶ *Veined Stone* is the name I gave to this fragment due to its distinctive features, namely its veins and cracks; however, it is not the name of a type of stone, but rather my own method of cataloging.

¹⁶⁷ Waclaw Ryka and Anna Maliszewska, *Słownik petrograficzny [Petrographic Dictionary]* (Warszawa: Wydawnictwo Geologiczne, 1982), 287.

¹⁶⁸ Chalcedony is characterized by a light color, a silky or waxy luster, a smooth surface, and translucency (ranging to opacity); it can also be found in Albania. Chalcedony commonly occurs in regions with a volcanic and hydrothermal past, and Albania has a highly complex geological structure—with numerous igneous, sedimentary, and metamorphic rocks. See *ibid.*, 56.

¹⁶⁹ *Ibid.*, 377.

moment *the Viewer* moves the object, the virtual representation shifts into a monochromatic tone. This gesture serves as the *Environment's* immediate response—a spark of dialogue. For me, it also functions as a metaphorical illustration of the real object's withdrawal in perception, an idea described by Graham Harman. The object changes color because, through the act of contact, *the Viewer* overlays it with an interpretative layer, shaping their own version of the sensual object—what I refer to in this work as *the Image of the Thing*.

The viewer can move the large, monumental projections of virtual objects using the handheld interface. As their movement unfolds, an audio object correlated with the sensor data also travels through space, creating the impression of spherical sound.¹⁷⁰ The enlarged projection reveals properties distinct from those of the printed object, and their juxtaposition introduces a cognitive tension that *the Viewer* can explore and interpret. In this way, the relationships between the objects become a mode of the *Environment's* existence—an open-ended narrative that *the Viewer* may unfold, deepen, and co-create through their own actions and presence.



Figure 26. Object *INTERWORLD_stone03 – Coral*, part of the interactive environment *INTERWORLD*. Source: author's archive.



Figure 25. Object *INTERWORLD_stone02 – Coal*, part of the interactive environment *INTERWORLD*. Source: author's archive.

¹⁷⁰ During the *INTERWORLD* exhibition, Enrique Mendoza Mejía constructed a spherical dome of speakers around a table with objects. Using the OSC protocol, I transmitted data about the position of each object to him, and he translated this information into a virtual arrangement of sound objects within the dome. The spatialization of sound, correlated with the viewer's actions, enhanced the sense of immersion.



Figure 28. Object *INTERWORLD_stone06 – Veined Stone*, part of the interactive environment *INTERWORLD*.
Source: author's archive.



Figure 27. Object *INTERWORLD_stone01 – Chalcedony*, part of the interactive environment *INTERWORLD*.
Source: author's archive.



Figure 29. Object *INTERWORLD_stone05 – Desert Stone*, part of the interactive environment *INTERWORLD*.
Source: author's archive.



Figure 30. Object *INTERWORLD_stone04 – Pumice*, part of the interactive environment *INTERWORLD*.
Source: author's archive.



Figure 31. Object *INTERWORLD_stone04 – Pumice*, view of the object next to its base.
Source: author's archive.

Conclusion

In this dissertation, I explore the tenderness of art in relation to the Interactive Environments based on Immersion. This specific form of installation creates a coherent structure—an intermedial network of relations between elements—and expands into the space it occupies. Immersion functions as a receptive quality, constructed in the very moment the Viewer delves into the work. As an affective feature, it pertains both to the experiencing body and to the aspects of the Environment itself.

I have introduced a methodology that allows me to organize construction of such aesthetic situation. This structuring is essential, as in the immersive experience the boundaries between the artwork and the Viewer become blurred. The proposed division into Viewer, Environment, and Image of the Environment restores orientation within this complex network of relationships and enables the distinction between conditions and effects. The analysis of the viewer's figure, the processes of meaning-making, and the mechanisms of action within the surrounding space reveals the layers on which the artwork may resonate. The Viewer and the Environment co-create the experience. Through this relational approach, I demonstrate the foundations upon which immersion emerges. By expanding the Environments to include cybernetic qualities, I reveal how the proliferation of digitality and the hybrid virtual-real nature of reality affect the viewer's perceptual potential.

The introduction of the Environment structure makes it possible to outline the foundations upon which situations with coherent internal narratives are formed. These serve as exemplifications of the total artwork—micro-worlds with their own temporality and logic. As the Viewer explores the presentation, they construct the Image of the Environment—a vision of their surroundings shaped by individual sensitivity and creative potential. In this way, I understand the act of reception as subjective, yet grounded in the real properties of both the Environment and the Viewer.

In the creation of the Image of the Environment, I merge aesthetics with cognition, defining it as a processual, relational negotiation of meanings, senses, and impressions with the surrounding world. This concept allows for an analysis of relationships—of the aspects of the artwork that influence perception, of the perceptual needs arising from the cognitive apparatus, and of the aesthetic situation constructed upon these two pillars. The Environment as configuration, the Viewer as co-agent, and the Image of the Environment as emergent outcome form a clear analytical framework for my research, which takes the form of artistic practice.

Relationality does not occur in a vacuum—it is always embodied, sensory, and affective. The qualities of the Environment that most strongly shape the formation of its Image include the spatial arrangement, which, together with the invoked aesthetics, creates the atmosphere. The configuration of elements within the space determines the Viewer's

CONCLUSION

physical engagement—it enables exploration and can influence their sense of bodily presence. Touch, in particular, deepens the experience, linking the Viewer with their surroundings. The temporality generated by the elements of the Environment resonates with the Viewer, synchronizing them with the surrounding world. These properties co-create the experience.

In my artistic practice, I turn toward nature. What is familiar often hides beneath the surface of everydayness until it fades from awareness. I believe that a tender gaze upon the surroundings, a continuously awakened cognitive apparatus attuned to curiosity and openness toward an ever-changing reality, awakens the desire for an active and responsible way of being-in-the-world. Through my creative work, I seek to reveal a symbiotic reality, where coexisting beings grow, transform, and evolve through shared existence—and where technology opens new planes of integration and inclusivity.

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List of Figures

Figure 1. View of the exhibition <i>Uncensored Lilac</i> by Bassam Issa Al-Sabah and Jennifer Mehigan, Transmediale 2024, Berlin, Germany. Photo by Luca Girardini. Source: https://transmediale.de/de/2024/uncensored-lilac (accessed September 20, 2025).	13
Figure 2. Still from the video <i>INSIDES</i> , macro photograph of the stone <i>Desert Stone</i> , 2024. Source: author's archive.	18
Figure 3. Sketch for the works <i>Enclosure</i> , 2024. Source: author's archive.	27
Figure 4. Objects arranged on illuminated bases, spatial installation, Sirup Gallery, Linz, Austria, 2025. Opposite the video <i>INSIDES</i> , the stones featured in the film were displayed. Source: author's archive.	28
Figure 5. Documentation of the <i>Concert for Nobody</i> with sound artist Katarzyna Podpora, opening the exhibition <i>Sensitive Bodies</i> , IP Studio, Wrocław, 2025. Source: author's archive.	28
Figure 6. <i>Diaphanous—Transparent Bodies Pulsate with Risqué Vulnerability</i> solo exhibition <i>Sensitive Bodies</i> , IP Studio, Wrocław, 2025. Source: author's archive.	28
Figure 7. <i>Nothingland</i> , MiserArt Gallery, Wrocław, 2023. Source: author's archive.	37
Figure 8. <i>Coalesce</i> with performing dancer Magda Niedzielska, symposium <i>It Was, It Is and It Will Be</i> , Goszcz, Poland, 2023. Source: author's archive.	38
Figure 9. Documentation of an interactive installation from the series <i>Cyberscapes</i> , in which the viewer's movement altered the abstract landscape, symposium <i>It Was, It Is and It Will Be</i> , Goszcz, Poland, 2023. Source: author's archive.	39
Figure 10. Work from the series <i>Cyberscapes</i> — <i>LASG_05 / come alone</i> , with music by Sylwester Galuschka; exhibition <i>Palimpsesty Przestrzeni [Palimpsests of Space]</i> , Geppart Gallery, Wrocław, 2024. Source: author's archive.	41

Figure 11. Aleksandra Nowakowska performing <i>Corpus</i> , accompanied by my reactive visualizations responding to the dancer’s movement, <i>FUTUROFONIA</i> Baltic Opera, Gdańsk, 2025. Photo by K. Mystkowski, KFP. Source: materials of the Baltic Opera.....	62
Figure 12. Above: a <i>sound fabric</i> created by transforming the spectrogram shown below — an element later subjected to further modifications. Source: author’s archive.	63
Figure 13. Still from the visualization created for the musical segment of <i>FUTUROFONIA</i> Baltic Opera, Gdańsk, 2025. Source: author’s archive.	65
Figure 14. Still from the visualization presented during the festival <i>Wizjonerki – kobiety w polskiej muzyce improwizowanej i eksperymentalnej</i> [<i>Visioneries – Women in Polish Improvised and Experimental Music</i>], Warsaw, 2025. Source: author’s archive.	67
Figure 15. One of the generated interpretations of nature, 2022. Source: author’s archive.	68
Figure 16. Screenshot taken during scanning, showing a point cloud from which the 3D object is generated. Source: author’s archive.	75
Figure 17. Viewer interacting with the installation; <i>Between Rock and a Hard Plate</i> , documentation of the installation process. Source: author’s archive.	76
Figure 18. Stone, 3D model of the stone, and 3D print of the stone, 2022. Source: author’s archive.....	80
Figure 19. Comparison of a rock crystal with its 3D scan — the juxtaposition illustrates the influence of texture on the perception of form, 2024. Source: author’s archive.	81
Figure 20. 3D print and the stone, a clearly visible change in form resulting from the use of a different material. Source: author’s archive.	83
Figure 21. On the left: 3D print, on the right: coral with color scan. Source: author’s archive.	83
Figure 22. View of the installation <i>Between Rock and a Hard Plate</i> , IP Studio, Wrocław, 2025. Source: author’s archive.	88

Figure 23. Interior of the interactive object, 2025.
 Source: author’s archive. 98

Figure 24. Interactive Environment *INTERWORLD*,
 Sonic Saturday, Bruckner Privatuniversität, Ars Electronica Festival 2025, Linz, Austria, 2025.
 Source: author’s archive. 100

Figure 25. Object *INTERWORLD_stone02 – Coal*,
 part of the interactive environment *INTERWORLD*.
 Source: author’s archive. 102

Figure 26. Object *INTERWORLD_stone03 – Coral*,
 part of the interactive environment *INTERWORLD*.
 Source: author’s archive. 102

Figure 27. Object *INTERWORLD_stone01 – Chalcedony*,
 part of the interactive environment *INTERWORLD*.
 Source: author’s archive. 103

Figure 28. Object *INTERWORLD_stone06 – Veined Stone*,
 part of the interactive environment *INTERWORLD*.
 Source: author’s archive. 103

Figure 29. Object *INTERWORLD_stone05 – Desert Stone*,
 part of the interactive environment *INTERWORLD*.
 Source: author’s archive. 103

Figure 30. Object *INTERWORLD_stone04 – Pumice*,
 part of the interactive environment *INTERWORLD*.
 Source: author’s archive. 103

Figure 31. Object *INTERWORLD_stone04 – Pumice*,
 view of the object next to its base.
 Source: author’s archive. 104