

# Metaphors of Intensities and Indices: Using Digital Technologies and Non-Human Actors in Performing Art

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**ABSTRACT:** This research investigates the role of non-human actors in the context of digital performing arts. It employs an interdisciplinary approach, integrating philosophical, historical, and artistic perspectives to explore the unique potential of non-human actors. Starting with an in-depth analysis of the philosophical concepts laid out by Deleuze, Bergson, and Tyler, the study establishes a theoretical framework. It then investigates the historical and contemporary artistic movements that have begun to challenge the anthropocentric paradigm in performing arts. The practical application of these theoretical and historical perspectives is illustrated through an examination of three case studies: *Leňochod má*

*celkom vážny dôvod sa vykakať* [Sloth Has a Pretty Good Reason to Poop], *Foam*, and *Heterotopia* [Heterotopy]. These projects leverage extended reality technologies to offer spectators an immersive glimpse into the lives and experiences of non-human entities. They employ philosophical concepts such as intensity and indices to test their potential for establishing communication between human and non-human entities. The research concludes by emphasizing the transformative potential of incorporating non-human actors in digital performing arts, suggesting that such a practice can redefine traditional theatre boundaries, challenge human-centric worldviews, and foster empathetic connections across species.

**KEYWORDS:**

non-human actors, digital performing arts, extended reality (XR) technologies, intensity and indices, interdependence

## I. INTRODUCTION

### BACKGROUND AND CONTEXT OF THE STUDY

The incorporation of non-human actors into performing art represents a steadily evolving area of interest. While this trend has not become widespread or fully mainstream, it has been gradually gaining traction in various artistic communities. Mostly in Scandinavian and western theatre contexts or in the performance<sup>1</sup> and live art<sup>2</sup> more broadly. However, in certain areas, such as the local Central European theatre scene where I have been actively involved. The exploration of non-human actors has not been widely adopted yet. The limited institutional interest in non-human actors in performing art within this context is problematic, as there are persuasive arguments for engaging with non-human actors and enabling them to speak or express themselves through performance. The importance of incorporating non-human actors in performing art, live art or theatre stems from its ability to expand the range of artistic expression, intensify audience involvement, or cultivate a more profound appreciation of the interrelationships between human and non-human entities and others.

### RESEARCH QUESTIONS AND OBJECTIVES

This study aims to explore the potential for communication between human and non-human actors in performing art through the use of digital technologies. To achieve this aim, the following research questions will be addressed:

What is the relationship between the theoretical concepts of intensity, indices, and anthropomorphism and the incorporation of non-human actors in performing art?

How can the theoretical concept of intensity, non-human actors as indices, and anthropomorphism be applied to digital technologies to enable communication between human and non-human actors in performing art?

To answer these research questions, the study will examine the concepts itself,

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**1** Even though it may seem apparent, I believe it is crucial to emphasize that in this study, I adhere to the distinction between performing arts and performance art as follows: Performance art refers to interdisciplinary artwork created through actions executed by the artist or participants, generally within a fine art context. Conversely, performing arts encompass disciplines like music, dance, and drama, which are performed for an audience in a variety of venues, such as theatres and open-air stages. The category which I will speak about mostly is performing arts, but I would like to add that except for the mentioned venues, it might also be happening in virtual venues and spaces.

**2** In this context, my reference to "live art" is not connected to Adolphe Appia's concept of "living art," which focused on the integration of set design, lighting, and acting to create more lifelike theatrical experiences. Instead, it emphasizes the fluid boundaries and cross-disciplinary nature of live performances that transcend conventional theatre classifications. It's inspired by Esa Kirkkopelto's perspective. Kirkkopelto's group Toisissa Tiloissa found themselves in a unique position, where their work was neither accepted as traditional theatre nor as performance art. They chose to describe their work as "live art," acknowledging its hybrid nature that transcended these categories. Alongside this, it is valuable to consult the works of Philip Auslander, particularly his book *Liveness: Performance in a Mediatized Culture*. Auslander's exploration of the relationship between live and mediatized performance gives an understanding of the changing nature of live art in the context of contemporary media culture. It also opens the question of the liveness of the actor itself, digital or non-human.

existing research on them, as well as explore the potential application of these concepts in the context of non-human actors in performing art.

### **SCOPE AND LIMITATIONS OF THE STUDY**

The study does not aim to promote or advocate for the use of non-human actors in performing art, but rather aims to investigate the specific potential for communication between human and non-human actors through digital technologies. It is worth noting that the study is not a comprehensive exploration of the general use of non-human actors in performing art even if it makes a short description of definitive, historical and practical aspects of non-human actors in performing arts, for the help of exemplifying the topic. It is limited in scope to practices that use digital technologies, such as mixed reality, 3D animation, and computer peripherals as sensors and actuators. Additionally we will question the possibility of providing tools for communication between human and non-human actors connected with the aforementioned philosophical concepts such as intensity and indices.

Furthermore, the study is limited in its focus on the theoretical aspects of the incorporation of non-human actors in performing art, as it is centered around specific Deleuzian philosophical perspectives but also with others associated with new materialism, object-oriented ontology, and flat ontology.

### **METHODOLOGY AND RESEARCH DESIGN**

The research design for this study is qualitative and interdisciplinary. The study will use a literature review to explore the theoretical concepts of intensity, indices, and anthropomorphism in relation to the incorporation of non-human actors in performing art. The literature review will draw from relevant philosophical, critical, and artistic works, including but not limited to the writings of Gilles Deleuze, Jane Bennett, Ian Bogost, and Tom Tyler.

The study will also employ a case study approach, focusing on selected examples of non-human actors in performing art that use digital technologies for communication. The case studies will be analyzed through the theoretical lens of the study, with a particular focus on how the concepts of intensity, signs, and anthropomorphism are employed in these works.

Data collection for the case studies will be conducted through various methods, including observation, interviews with artists and performers, analysis of relevant documentation such as performance scripts and technical specifications, and reviewing literature in the form of books and articles.

## **II. THEORETICAL FRAMEWORK**

### **OVERVIEW OF DELEUZE'S CONCEPT OF INTENSITY**

One of the major philosophical influences on Deleuze's philosophy was the French philosopher Henri Bergson. Bergson's ideas on time, intuition, and others were

crucial in shaping Deleuze's own theories of difference and intensity. For Bergson, intuition was the ability to grasp the unique and ineffable qualities of an object, through a direct, immediate experience of sympathy. This approach to knowledge and perception contrasted with traditional scientific and analytical methods, which reduced objects to their measurable, quantifiable elements.

An absolute can only be given in an intuition, while all the rest has to do with analysis. We call intuition here the sympathy by which one is transported into the interior of an object in order to coincide with what there is unique and consequently inexpressible in it.<sup>3</sup>

Deleuze built on Bergson's philosophy of intuition by developing a theory of difference that emphasized the importance of non-identity and multiplicity in the world. As he paraphrased André Lalande that reality is difference, whereas the law of reality, or principle of thought, is identification. Reality is therefore in opposition to the law of reality...<sup>4</sup>

He argued that reality was not made up of fixed, stable identities, but was instead a dynamic process of continual differentiation and change. This process of differentiation was driven by intensity, which Deleuze defined as the force or power that underlies all things and gives them their particular qualities. God makes the world by calculating, but his calculations never work out exactly (*juste*), and this inexactitude or injustice in the result, this irreducible inequality, forms the condition of the world: The world "happens" while God calculates; if the calculation were exact, there would be no world. The world can be regarded as a "remainder", and the real world is understood in terms of fractional or even incommensurable numbers. Every phenomenon refers to an inequality by which it is conditioned. Every diversity and every change refers to a difference which is its sufficient reason. Everything which happens and everything which appears is correlated with orders of differences: differences of level, temperature, pressure, tension, potential, difference of intensity.<sup>5</sup>

Deleuze's concept of intensity is a crucial element of his philosophical work, and it is based on the idea that the condition of that which appears is not space and time, but rather the unequal in itself. According to Deleuze, intensity is always implicated in quantity, and it always affirms a difference: it includes the unequal in itself and reaches beyond extensity. Intensive quantity includes the unequal in itself. It represents difference in quantity, that which cannot be cancelled in difference in quantity or that which is un-equalisable in quantity itself: it is therefore the quality which belongs to quantity.<sup>6</sup>

In other words, intensity is not actually a measurable quantity, but rather an immeasurable quality that cannot be represented by language, only sensed. It is a base that rests upon the idea of difference, and when we sense intensity, we are sensing

3 BERGSON, H. *The Creative Mind: An Introduction to Metaphysics*. New York : Dover Publications, 2012, p. 190.

4 Ibid.

5 DELEUZE, G. *Difference and Repetition*. New York : Columbia University Press, 1994, p. 222.

6 Ibid., p. 232.

the difference. We are giving agency to the thing we sense, and in turn, what we sense is giving us a message of their existence.

Deleuze's concept of intensity is rooted in his rejection of the traditional metaphysical concepts of substance and causality: He tries to develop a metaphysics adequate to contemporary mathematics and science—a metaphysics in which the concept of multiplicity replaces that of substance, event replaces essence and virtuality replaces possibility.<sup>7</sup> He sees the world as a dynamic process of intensity-powered everchanging differentiation or becoming.

As he draws on the work of Henri Bergson, who defined intuition as a simple, indivisible experience of sympathy through which one is moved into the inner being of an object to grasp what is unique and ineffable within it.<sup>8</sup> It seems that intuition is a means of accessing intensity, and that it is through intuition that we can grasp the essence of things.

### OVERVIEW OF TOM TYLERS ANIMAL INDICES

In his work on different intellectual definitions, descriptions and parameters of anthropocentric thinking about animals and their effect on our thinking, Tom Tyler proposes a nuanced understanding of the ways in which animals can function as signifiers in human thought and culture. Drawing on a range of philosophical and literary sources, Tyler argues that animals are not simply ciphers or symbols, but are rather indices that point to complex and multifaceted relationships between humans and non-human beings. In his work he explores different philosophical perspectives on animals, and he begins with Georges Bataille, who argues that animals are lesser creatures and exist without meaning or knowledge of the world. Like water in the water.<sup>9</sup> For Bataille, the lack of transcendence between animals and their environment means that they cannot distinguish phenomena as objects.<sup>10</sup> He then discusses Martin Heidegger's perspective that living creatures are difficult to think about because of their profound alterity and separation from humans.<sup>11</sup>

Tyler goes on to describe how philosophers have used animals in their concepts and thinking, often as ciphers or symbols that represent epistemological problems or metaphysical speculations. These animals are typically not the focus of attention for philosophers, but rather are used as examples to illustrate human-centered ideas. Tyler argues that we must decipher these ciphers and stop treating animals as mere ciphers altogether.<sup>12</sup>

<sup>7</sup> SMITH, D. et al. Gilles Deleuze. In *Stanford Encyclopedia of Philosophy*. 2008. [online]. [cit. 28 April 2023]. Available at: <https://plato.stanford.edu/entries/deleuze/>.

<sup>8</sup> For more see BERGSON, H. *The Creative Mind: An Introduction to Metaphysics*.

<sup>9</sup> BATAILLE, G. *Theory of Religion*. Zone Books, 1989, p. 19.

<sup>10</sup> TYLER, T. *Ciferae: A Bestiary in Five Fingers*. University of Minnesota Press, 2012, p. 10.

<sup>11</sup> Ibid., p. 13.

<sup>12</sup> Ibid., p. 29.

At the heart of Tyler's argument is the concept of the index, which he distinguishes from ciphers. Where cipher is a sign that has no inherent meaning or significance,<sup>13</sup> an index is a sign that points directly to its referent through a causal or spatiotemporal relationship: dynamical (including spatial) connection both with the individual object, on the one hand, and with the senses or memory of the person for whom it serves as a sign, on the other.<sup>14</sup>

One key way in which animals function as indices in human thought and culture is through their use as metaphors and analogies. Another way in which animals function as indices in human thought and culture is through their use as models or examples. Like in Aesop's fable, in which according to Tyler, Aesop constructs his animal alphabet from both animal ciphers and indices.<sup>15</sup>

Tyler acknowledges the dangers of relying too heavily on animals as indices in human thought and culture. He cautions against the stereotyping of animals into fixed and static roles and instead emphasizes the importance of recognizing the individualistic behaviour of animals and assigning agency to them.<sup>16</sup> In this notion, Tyler draws on Derrida's book *The Animal, Therefore I Am*, which calls for understanding animals as irreplaceable living beings, the unsubstitutable singularity.<sup>17</sup>

### III. NON-HUMAN ACTORS IN PERFORMING ARTS

#### DEFINITION OF NON-HUMAN ACTORS

Prior to delving into the historical background and examples of non-human actors in performing arts, it is crucial to begin with a precise definition of what is meant by non-human actors. In the context of this study, non-human actors in performing art refer to any entities, objects, or creatures that are not human yet are integrated into a performance. What differentiates such an actor from a standard scenographic element is analogous to what sets a human actor apart from that same element. This distinction is challenging to articulate because the underlying premise of this research asserts that anything on the stage should be considered an actor, communicating meaning in its unique way. However, if we must define the divergence between a scenographic element and a non-human actor, we look for characteristics typically found in a human actor and seek correlations in the non-human counterpart. The non-human actor might then control the narration, steer the

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<sup>13</sup> T. Tyler describes it further that: By the sixteenth century the term cipher was being used figuratively of a person or thing "who fills a place, but is of no importance or worth" in its own right. For more see: TYLER, T. *Ciferae: A Bestiary in Five Fingers*, p. 23.

<sup>14</sup> For more see PEIRCE, Ch. *Collected Papers of Charles Sanders Peirce*. Cambridge: Belknap Press of Harvard University Press, Cambridge, 1931–1935.

<sup>15</sup> *Ibid.*, p. 50.

<sup>16</sup> *Ibid.*, p. 68.

<sup>17</sup> DERRIDA, J. *The Animal That Therefore I Am (Perspectives in Continental Philosophy)*. Fordham University Press, 2008, p. 9.

story in a particular direction, take center stage in the theatrical event, and embody a living connection between the author's text, the director's intentions, and the audience's perception.<sup>18</sup> By doing so, it transcends mere decoration or background, becoming an active participant in the theatrical experience. Such entities can range from animals, plants, machines, to natural phenomena, such as wind or water.<sup>19</sup> In such a context, non-human actors are endowed with agency or considered to possess performative capacity. Though the medium, channel, or language of communication utilized by the non-human is not explicitly stated, a discernible transfer of information or transformation is evident. However, it should be noted that the non-human actor's presence in the performance may be an example of anthropomorphism, which should be critiqued but not wholly banned, as it might be impossible to avoid it.<sup>20</sup> By examining the use of non-human actors in performing art, we can explore innovative ways of thinking about performance and agency, while also challenging conventional notions of what constitutes an actor on stage.

### **HISTORICAL BACKGROUND AND DEVELOPMENT OF NON-HUMAN ACTORS IN PERFORMING ART**

The incorporation of non-human actors into performing art might have a very long and diverse history. Dating back to ancient cultures where animals, plants, and other non-living entities might have played prominent roles in various rituals.<sup>21</sup> We can surely mention the instances of non-human actors in Eastern theatrical traditions, such as Noh theatre, at a later stage. However, it is important to note that the Western theatrical medium, which has its roots in ancient Greek theatre, has struggled to break free from the superiority of the human figure.<sup>22</sup> In contrast, the visual arts have been more successful in integrating non-human actors into their practices. In recent times, there has been a growing awareness of the need to delve deeper into the use of non-human actors in visual and performing arts. This comes

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18 PAVIS, P. *Divadelný slovník* [Dictionnaire du Théâtre]. Bratislava : Divadelný ústav, 2004, p. 179.

19 It is important to differentiate between a non-human actor, such as an animal, that actively participates in the theatrical narrative, and an animal representing merely its own animality or serving as a static scenic object. The former entails an active engagement in the performance, contributing to the progression of the story or thematic exploration, while the latter might simply serve a symbolic or aesthetic purpose without influencing the narrative or dynamics of the performance. But as I was proposing in the previous part, I believe that animals should not be seen solely as ciphers or symbols, but rather as indices pointing to complex relationships between humans and nonhuman beings.

20 In the previous section, we briefly discussed Tyler's work on the anthropocentric perspective and anthropomorphism in relation to non-human beings. A more in-depth analysis of these topics, including Tyler's ideas on animal indices, and their connection to Bogost and Bennett's theories, will be provided in the following sections. Further exploration of anthropomorphism, specifically in the context of non-human performing art, can be found in Part III's section titled *Anthropomorphism in Non-Human Performing Art*.

21 The exact nature of non-human performances in ancient cultures is unknown. However, cave paintings suggest that they might have been depicted in such a way that the light from fire would create the illusion of movement. Herzog, in his movie *Cave of Forgotten Dreams*, provocatively posits that this phenomenon could be considered a form of proto-cinema. Building upon Herzog's idea, it can be suggested that this might also be seen as a proto virtual reality.

22 KIRKKOPELTO, E. A manifesto for generalized anthropomorphism. In *Eurozine*, 2004. [online]. [cit. 15 April 2023]. Available at: <https://www.eurozine.com/a-manifesto-for-generalized-anthropomorphism/>.



at a time when ecological concerns are becoming more prominent, but it is also a reflection of a broader shift in the philosophical discourse that has been termed the “nonhuman turn” by Richard Grusin.<sup>23</sup> In the modern era, the use of non-human actors in performance art gained popularity in the 20<sup>th</sup> century, particularly in avant-garde and experimental performance movements. This trend continues to the present day, as artists push the boundaries of what constitutes an actor on stage, and explore new ways of understanding and interacting with non-human entities in the performance context.

There is no exhaustive chronological list of examples of non-human actors used in performing arts, but there are some examples that from our perspective might be considered as such use cases, even if the authors of these creations would probably not categorize it as non-human actors.

One of the earliest examples of systematic use of non-human actors in performance art are the works of Futurist artists. Their work reflected the fast transformation of society, usually concerning utilisation of new machinery like engines, airplanes and others. It was a part of a far-reaching, systematic strategy of socio-political involvement and cultural transformation.<sup>24</sup> One of the Italian Futurist artists Luigi Russolo advocated for the use of non-musical sounds in musical compositions and performances, including the sounds of machines, animals, and natural phenomena. Another artist, Giannina Censi, depicted the airplane in her dance performance in the following way: I made myself a satin costume with a helmet; everything that the plane did had to be expressed by my body. It flew and, moreover, it gave the impression of these wings that trembled, of the apparatus that trembled, ... And the face had to express what the pilot felt.<sup>25</sup>

Allan Kaprow is also an important figure in the history of non-human actors in performance art, as he developed the concept of happenings in the 1950s. These were performance events that incorporated not only human, but also everyday objects and environments, blurring the lines between art and life. This approach influenced artists in the 1960s and 1970s, when performance art became a prominent form of artistic expression. Artists such as Joseph Beuys, Yoko Ono, and Marina Abramović also incorporated non-human actors into their performances, although not necessarily with the aim of giving them agency. Rather, their use of non-human actors emerged as a natural aspect of human-nonhuman cooperation during the creative process.

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**23** Richard Grusin's book, *The Nonhuman Turn* (2015), is a collection of essays exploring the growing interest in non-human agency and its implications for various fields, including philosophy, ecology, and the arts. The book brings together prominent scholars, amongst others Bennet and Bogost to discuss the ways in which non-human entities and forces are increasingly being recognized as having significant impacts on human culture, society, and the environment.

**24** BELOW, J. *Futurism an Dance*. [online]. [cit. 16 April 2023]. Available at: <https://www.rem.routledge.com/articles/overview/futurism>.

**25** KLÖCK, A. Of Cyborg Technologies and Fascitized Mermaids: Giannina Censi's Aerodanze in in 1930s Italy. In *Theatre Journal*, 1999, Vol. 51, Issue 4, p. 400. DOI 10.2307/25068708.



## EXAMPLES OF NON-HUMAN ACTORS IN CONTEMPORARY LIVE ART AND PERFORMING ART

In contemporary times, the use of non-human actors in performing art has become increasingly prevalent, as it serves as a means of exploring ecological themes, disrupting anthropocentric perspectives, and challenging the traditional boundaries between human and non-human entities. In fact, there is a growing tendency to let non-human actors take the center stage and give them agency in the performance, which results in novel forms of artistic expression, creation, and audience experience.

In this section, I aim to give some examples of the works of Finnish performing artists, Esa Kirkkopelto, Annette Arlander, and Tuija Kokkonen, who have focused their creative endeavors on incorporating non-human actors into their performances. Additionally, I will introduce two Slovak authors, András Cséfalvay, and Peter Bartoš who also practice non-human acting in their works.

The selection of these two countries is personal: Slovakia is the country where I am actively involved in performing arts, and Finland is where I completed an internship and learned about wide support for non-human acting. Finland serves as an excellent example of this practice, while in Slovakia, it is not as standardized, and non-human productions are still not widely accepted. However, there are a few artists who are exceptions to this rule.

Kirkkopelto, a successful Finnish theatre director, established the artistic collective Toisissa tiloissa, whose main activity is collective corporeal exercises that allow visiting non-human forms of experience and being.<sup>26</sup> Kirkkopelto explores the untapped potential of performative art in exploring bodily encounters and interactions between human and non-human beings. The performance *Tick Variations* is based on Jakob von Uexküll's ecological studies of animal environments, focusing on the environment of the tick. Kirkkopelto aims to prove that the tick's world is much richer than what Uexküll claims. Participants became ticks through exercises that explored the tick's approach to prey, reaction to butyric acid, and kinesthetic and tactile senses when hunting. A workshop organized by Toisissa tiloissa allowed attendees to become various non-human entities through similar exercises.<sup>27</sup>

Tuija Kokkonen initiated the Chronopolitics – III Memo of Time project in 2010 with the aim of creating a performance that exceeds human lifespan and exploring the boundaries of performance. Her work focuses on non-human actors, as evidenced by her dissertation titled *The Potential Nature of Performance. The Relationship to the Non-Human in the Performance Event from the Perspective of Duration and Potentiality*. One of her most well-known works, *Chronopolitics – III Memo of Time*, partially takes place at an ancient elevated beach in Jakomäki (Helsinki) and is

<sup>26</sup> Some information about Kirkkopelto and the artistic collective Toisissa tiloissa was gathered from their official website: <https://toisissatiloissa.net/en/>.

<sup>27</sup> KIRKKOPELTO, E. *TICK VARIATIONS*. In *Research Catalogue*. [online]. [cit. 18 April 2023]. Available at: <https://www.researchcatalogue.net/view/622394/707552>.

a nomadic live performance.<sup>28</sup> Kokkonen concentrates on the temporality and time perception of non-human actors in her performances, and her works such as *Kemi – II Memo of Trees*, *Chronopolitics with Dogs and Plants*, and *A Performance with an Ocean View* demonstrate a focus on non-human actors. Through her art, Kokkonen examines the relationship between performance, nature, non-human actors, time, and the role of art in the age of ecological crises, relying heavily on the agency of non-human actors.<sup>29</sup>

Annette Arlander's artistic practice is centered round the theme of performing landscape. Lately, she has been focusing on vegetation, especially trees, and often incorporates site-specific work, camera performances, sound recordings, video installations, and various experiments related to the environment that take place on the border between performance, media art, and environmental art.<sup>30</sup> Her Instagram account, @annettearlander, provides an interesting insight into her relationship with non-human entities, where she has been sharing experiences with objects like a red arrow-marked stone, a small pomegranate, a cone, or an acorn for over eight years now. Her recent works mainly involve communication with trees and plants, which she archives meticulously and creates a methodology with rules on how to approach plants if one wants to perform with them. The resulting works are characterized by a sense of respect, sensitivity, and care towards non-human entities, resulting in dialogues, physical exercises, or series of observations that encourage the participant to learn to listen to the language of non-human entities.

András Cséfalvay is an artist who works with digital tools, such as 3D modelling, animation, motion capture, cameras, and 3D printing, to simulate and create worlds, creatures, and objects. His work often involves non-human actors, and he explores the problem of communicating with them. Cséfalvay's work often involves anthropomorphization, and he aims to show how humans are connected to nature without portraying them as the ultimate goal of evolution. He also questions the limitations of science and technology in understanding the world, arguing that non-human actors might possess tools to hide information from scientific instruments. To play non-human characters and express their views, Cséfalvay often must, in a way, become them.

Peter Bartoš was an artist who frequently used the concept of becoming<sup>31</sup> in his

**28** One definition of nomadic performance, or theatre that we consider to be precise is the one mentioned in the book *Nomadic Theatre* by Liesbeth Groot Nibbelink: the theatre that manifests itself as movement and thinks performance through mobility.

**29** KOKKONEN, T. Tuija Kokkonen [Portfolio]. [online]. [cit. 16 May 2022]. Available at: <https://tuijakokkonen.fi/>.

**30** Information about Annette Arlander's recent focus and artistic practices was gathered from her personal website: <https://annettearlander.com/>.

**31** The concept of "becoming," as it appears throughout this study, is rooted in Deleuzian philosophy. Contrary to notions of imitation or analogy, Deleuze defines "becoming" as a generative process that births a new mode of being, driven by influences rather than resemblances. It involves the decontextualization of an element from its original functions and the emergence of new ones. Instances such as immersion in a VR art piece can exemplify this Deleuzian "becoming," as they often exhibit a transformative experience that generates new modes of perception and existence. While "becoming" isn't the central focus of this study, it remains an essential concept in understanding the



András Cséfalvay: *Purgatorius*. New Synagogue in Žilina, 2018. Directed by András Cséfalvay. Photo by András Cséfalvay.

works. In his long-term project of breeding pigeons, Bartoš had to become not only a breeder but also a pigeon, as these things are always in a conditional relationship (that is, someone who wants to become a breeder should ideally try to become the animal they are breeding). One of Bartoš's biggest projects, called *Elaborát I* [Elaboration I], was a design for a zoological garden in Bratislava. Bartoš worked with experts to create different parts of the garden that would meet the needs of the animals that would live there. Bartoš considered the specific type of vegetation, airflow, water sources, and other environmental factors that would be present in the enclosed areas. Bartoš also made art projects with Hucul, a type of mountain horse, in order to plan the Zooskanzen project featuring Hucul horses that were once naturally found in the White Carpathians. Bartoš's strong connection to nature is evident in his works. For example, he performed a poetic and ritualistic piece called *Pieta stromom* [Piety to Trees], where he used healing mud to treat both himself and a cut-down tree nearby, emphasizing the organic unity of man and plant.<sup>32</sup> Bartoš's works raise questions about the permanent creation of nature as a natural model. He also considered nature as a co-creator of his work, as seen in his work *Činnosť snehu vo vzduchu a na zemi* [Activity of Snow in the Air and on the Ground], which presented a printed text referring to a specific natural event of snowing.

phenomena discussed, particularly within the non-human performing arts. For a more comprehensive exploration of this concept, see Deleuze and Guattari's "A Thousand Plateaus," particularly the chapter "Becoming-Intense, Becoming-Animal, Becoming-Imperceptible."

<sup>32</sup> KERATOVÁ, M. *Performatívne umenie 60. a 70. rokov 20. storočia a jeho dokumentácia*. Bratislava : Vysoká škola výtvarných umení, 2015.

## ANTHROPOMORPHISM IN NON-HUMAN PERFORMING ART

In examining non-human entities throughout this study, it is crucial to confront the matter of anthropomorphism. This notion has faced criticism due to its promotion of a worldview in which humans are perceived as the standard for all things, resulting in the projection of human experiences and viewpoints onto non-human entities. Nevertheless, the chosen authors for this analysis, Tyler, Bogost, and Bennett, put forth persuasive counterpoints that imply the possibility of utilizing anthropomorphism while still transcending anthropocentrism.

The act of anthropomorphism, or ascribing human qualities or features to non-human entities, is often criticized for being rooted in anthropocentrism, which views humans as inherently unique and the only beings capable of asking questions such as “What is it like to be something else?” Challenging this assumption, as Tom Tyler demonstrated through Heidegger’s philosophical inquiry, is the notion that we cannot definitively attribute any specific quality as uniquely human, especially when our understanding of human existence remains incomplete.

Tyler cites Heidegger’s argument that we have not yet sufficiently explored the question, “Who is man?”<sup>33</sup> Our comprehension of human beings is still relatively incomplete, which surely raises doubts about the legitimacy of assigning human characteristics to non-human entities. But also challenges our confidence in empathizing with other humans. In the context of performing arts then, it is not possible to dismiss the idea of representing non-human objects on stage, saying that they are too distant from us, when we are similarly removed from understanding any other human being.

In the same pace, we cannot clearly state that we are assigning human features to non-human actors, when we cannot really prove if humans are only and prominent owners and users of that feature or quality. Moreover, Tyler questions the term itself which implies that any kind of morphing happens in the direction from human outside to the other.

There is an asymmetry in place here that renders the expression prejudicial. What of those occasions when behaviour characteristic of bears is erroneously attributed to humans? Or to wolves? Or fish? How often does one encounter accusations of ark-tomorphism?<sup>34</sup>

In fact, anthropomorphism works rather both ways. While we try to assign human-like qualities to the other we might anthropomorphize them but it’s us who is also other-morphing. We are both in the process of becoming.

All of the previously mentioned authors have approached this topic from a similar angle. We could say that the characteristics of this approach is that they are describing anthropomorphization as a risk that is worth running. They argue that anthropomorphism does not need to be tied to anthropocentrism. Assigning human traits

<sup>33</sup> TYLER, T. *Ciferae: A Bestiary in Five Fingers*, p. 58.

<sup>34</sup> *Ibid.*, p. 59.

to non-human objects does not automatically result in an anthropocentric stance.

In the study of non-human performing art, it is difficult to completely avoid anthropomorphism. Our limited perspective as human beings inevitably influences the way we perceive and interpret the world around us, including non-human entities. When we try to show, demonstrate, present, act or perform something we are usually working with the human body. This sole thing makes anthropomorphism almost unavoidable. But some argue that anthropomorphism is an inherent part of our cognitive processes also and is for example useful for generating testable hypotheses and gaining insights into non-human beings.<sup>35</sup> Stephen Budiansky even argues that: "Natural selection may have favoured our tendency to anthropomorphize: ... Being good at thinking what would I do in his position can help us calculate what our rivals may be up to and outsmart them. .... Our tendency to anthropomorphize the animals we hunt may have given us a huge advantage in anticipating their habits and their evasions."<sup>36</sup>

So if we would, together with the triad of authors, run the risk of anthropomorphizing, what would be the things that we should be aware of? And how should we understand it without falling in the human-centric trap? To better understand the role of anthropomorphism in non-human performing art, we must acknowledge that attributing human characteristics to non-human entities does not necessarily imply a belief in human superiority or uniqueness. Instead, it can be seen as an attempt to recognize shared qualities and experiences among different beings. It's not what the result of it is, or how precise the result of this attempt is. The importance lies in the fact of trying, in a result of an attempt to do what Bergson would maybe call intuition.<sup>37</sup> Or speculative realism thinkers the speculation.

Bennett argues that a touch of anthropomorphism can counteract the narcissism inherent in human-centric worldviews. By acknowledging the echoes of human agency in non-human nature, we can develop a more profound appreciation for the interconnectedness of all beings, both human and non-human.<sup>38</sup>

She further states that: one way to develop this inclusive perspective is to revisit and engage with discredited philosophies of nature, such as superstition, animism, vitalism, and anthropomorphism. By temporarily suspending our disbelief and embracing these premodern attitudes, we can cultivate a new sensitivity to the vibrant materiality of the world around us.<sup>39</sup>

Bennett contends that anthropomorphism can help us to identify resonances and isomorphisms between seemingly distinct entities. By emphasizing similarities and structural parallels between human and non-human forms, anthropomorphism can reveal a more intricate and interconnected world.

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<sup>35</sup> Ibid., p. 57.

<sup>36</sup> BUDIANSKY, S. *If a Lion Could Talk: Animal Intelligence and the Evolution of Consciousness*. New York : Free Press, 1998, p. xvii.

<sup>37</sup> For more see BERGSON, H. *The Creative Mind: An Introduction to Metaphysics*.

<sup>38</sup> BENNETT, J. *Vibrant Matter: A Political Ecology of Things*. Durham : Duke University Press, 2010, p. xvi.

<sup>39</sup> Ibid., p. xviii.

A chord is struck between person and thing, and I am no longer above or outside a non-human environment.<sup>40</sup>

In a short chapter called *A Note on Anthropomorphism*, Bennett writes about the old Chinese musician handbook from the 14<sup>th</sup> century. She says it is an example of similarities between nature and culture which reveal isomorphisms.<sup>41</sup> In it the musicians have learning materials on how to play various tones, but not according to notations, but more according to something more like metaphor from nature that musicians can intuitively reproduce. Unlike the European system of assigning to each sound a note or symbol on a written score, “Chinese musical notation does not indicate the sounds themselves... but simply the precise gesture required to produce them.”<sup>42</sup>

The text can be accessed on a website, where, in addition to scanned pages, we find passages described using vivid metaphors, explaining the right way to play the tone: In the style of a crab walking, In the style of a praying mantis grabbing a cicada. In the manner of a lone duck turning his head towards the flock.<sup>43</sup>

It is only natural that when discussing intuition, we encounter the ultimate practitioners of it, namely artists. And we're fortunate to come across the metaphor in this case also, serving as a helpful resource. The reason is that it is a metaphor we can try to use as a tool to incorporate anthropomorphism as a communication tool between human and non-human.

The previously mentioned term speculation is also helpful for us. In the book *Alien phenomenology, or What It's Like to Be a Thing*, Ian Bogost speaks about the ancient version of the modern mirror. The name of the object was the speculum. An imprecise device, usually a convex disc of polished metal that reflected enough light to give a viewer a rough sense of the figure placed in front of it. Only a rough sense: a representation, an imitation, a caricature.<sup>44</sup> Bogost borrows Harman's words for further description of the term caricature: A caricature is a rendering that captures some aspects of something else at the cost of other aspects.<sup>45</sup> He argues that it is the caricatures, analogies, similarities, metaphors that objects use to try to understand each other. Through using the logic and qualities they possess, they try to grasp the other with what is available to them. Enough for the one to make some sense of the other given its own internal properties.<sup>46</sup>

The use of metaphor, as demonstrated through the example of the ancient Chinese musician handbook, offers a powerful tool for artists to engage with anthropomorphism, providing an intuitive means to communicate and connect with non-human

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<sup>40</sup> Ibid., p. 210.

<sup>41</sup> Ibid., p. 99.

<sup>42</sup> JULLIEN, F. *The Propensity of Things: Toward a History of Efficacy in China*. Zone Books, 1995, p. 113.

<sup>43</sup> Taiyin Daquanji. [online]. [cit. 20 April 2023]. Available at: <http://www.silkqin.com>.

<sup>44</sup> BOGOST, I. *Alien Phenomenology, or What It's Like to be a Thing*. Minneapolis : University of Minnesota Press, 2012, p. 31.

<sup>45</sup> Ibid., p. 66.

<sup>46</sup> Ibid.





Taiyin Daquanji: In the manner of a lone duck turning his head towards the flock. Accessible at: <http://www.silkqin.com>.

entities. This kind of artistic metaphorical depiction might be then used with its informative or transformative power.

We have recognized the potential of anthropomorphism and metaphor as powerful tools for cultivating a more inclusive and interconnected perspective. By embracing these approaches, the subsequent part of this study will explore the integration of non-human actors with concepts of intensity and indices. This synthesis will be employed to test these vibrant metaphors within the realm of digital performing arts experiments.

#### IV. DIGITAL NON-HUMAN PERFORMANCE

It's in this section where this study of non-human actors in performing arts progresses into the realm of digital technology. It becomes apparent that the integration of extended reality (XR) technologies could play a vital role in overcoming the challenges and limitations previously described, in traditional theatre settings. Not only that but it could also bring other possibilities, not available in previous settings



of the medium. The potential of XR technologies to employ concepts of intensity and becoming, as delineated by Deleuze, is particularly significant for us in this context. These technologies may effectively facilitate immersive experiences, enabling spectators to engage with these transformative processes more readily. It might then create a unique empathic experience and develop a more thorough understanding of non-human actors. By using the ideas from previous sections regarding intensity, indices, and metaphor, this section will explore the potential of XR technologies in the way we approach performing art and potentially redefine its borders that were partially given by the human figure.

### **INTENSITY, INDICES AND METAPHORS IN XR-BASED NON-HUMAN PERFORMING ART**

In order to capitalize on the potential of XR technologies and Deleuze's concept of intensity, we must consider the various ways in which these technologies can be employed to express the meaning of other beings. One approach is to leverage the differences and changes in intensity within virtual reality (VR) to work with elements such as colour, animation, sound, potentially haptic devices in the near future and others.<sup>47</sup> By incorporating these creative applications, we can generate a multi-sensory experience that allows the spectator to not only observe but also literally feel the intensity or differences in intensity in non-human experiences. By reflecting the Bergson ideas on intuition, its relevant to speak about the immersiveness also, since as he claims, the only way how to get the idea about the absolute, is by intuition, and VR experience coupled with the focus on becoming might be a good way how to transport oneself into the interior of an object in order to coincide with what there is unique and consequently inexpressible in it.<sup>48</sup>

Expanding on Tyler's theory about indices, XR technologies hold significant potential for decoding and interpreting the meanings conveyed by non-human actors. In such applications, animals need not be limited to their stereotypical roles or the cultural constructs ascribed to them. We could instead present animals with their unique behaviours, individual traits, and agency, showcasing their unsubstitutable singularity and rendering them as indices bearing significant meaning. This approach could be extended to a broader range of beings, including not just mammals but also more elusive organisms such as unicellular life forms. Although the meanings we derive might be shrouded in metaphor, as some authors have suggested, it

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<sup>47</sup> The potential array of haptic and sensory devices in the future of XR technologies could extend beyond our current understanding. As the field develops, we might see the introduction of various movement rigs that could further enhance our sense of immersion by simulating physical actions in the virtual world. Additionally, we could expect to see the development of devices that generate heat or even replicate specific smells, broadening the range of sensory experiences accessible within VR. I have personally been involved in a project where a heat-producing device was combined with the VR experience, synchronizing physical heat sensations with the virtual content. The correlation between the two added a new layer of immersion and intensity to the VR experience, underscoring the potential of these technologies in expressing the meaning of other beings. As such, the possibilities for leveraging Deleuze's concept of intensity in XR are vast and continue to evolve.

<sup>48</sup> BERGSON, H. *The Creative Mind: An Introduction to Metaphysics*, p. 190.

may be inherently challenging, if not impossible, to comprehend other beings without resorting to metaphorical interpretation.

Virtual reality is a particularly powerful tool for creating and conveying metaphors with potent and adaptable meanings. Jaron Lanier, the renowned computer scientist, visual artist, and computer philosophy writer, may be loosely associated with the idea that VR technology has the potential to show all the red things in the world – although this serves only as an illustrative example<sup>49</sup> emphasizing its potential for conveying powerful metaphors. Lanier initially regarded VR as something akin to an empathy machine. However, he has since expressed scepticism about VR's capacity for fostering empathy, particularly when considering its implementation by large corporations primarily focused on profit. Lanier's critique of Mark Zuckerberg's promotion of VR as an empathy machine,<sup>50</sup> exemplified by presenting disastrous events recorded in VR as magical experiences, is indeed valid.

Nevertheless, the potential of VR and other XR technologies remains undeniable. In the context of non-human performing art, XR technologies can be harnessed to create immersive metaphors that challenge spectators' perceptions of reality, fostering a deeper understanding of non-human actors. This application of XR technology could transform it into a genuine empathy machine, one that does not merely serve commercial interests through advertising and consumer exploitation but is instead employed for one of its intended purposes: facilitating meaningful connections between human and non-human beings.

### EXPERIMENTS WITH NON-HUMAN ACTORS IN DIGITAL PERFORMING ART

In my research into non-human actors' practices, I've carried out many experiments to test my hypotheses. I've used various types of applications in this work. For example, in one of my recent projects, *Leňochod má celkom vážny dôvod sa vykakáť* [Sloth Has a Pretty Good Reason to Poop], I aimed to capture the mix of intense experiences sloths have when they defecate.

The sloth spends a significant portion of its life in the treetops, hanging from branches and moving at an incredibly slow pace. This passive lifestyle inadvertently leads humans to associate sloths with laziness, incompetence, and clumsiness. However, its slow movements are actually a significant evolutionary advantage. Just as some animals have adapted by increasing their speed to escape predators, the

<sup>49</sup> It should be noted that the source of Lanier's idea mentioned here, has not been directly identified. The concept may be a paraphrase of his original thoughts, and as such, the precise context and intention behind his statement remain unclear. It is important to approach this concept with a degree of caution, given the potential for misinterpretation or misrepresentation.

<sup>50</sup> It is important to acknowledge the potential pitfalls of utilizing XR technologies to foster empathy, as illustrated by a controversial example from 2017. Facebook CEO Mark Zuckerberg conducted a virtual reality tour of hurricane-ravaged Puerto Rico in order to demonstrate the capabilities of Facebook's Spaces platform. The event faced significant criticism for its tone-deaf presentation, with many arguing that it trivialized the struggles faced by those affected by the disaster. This instance highlights not only the ethical considerations that must be taken into account when employing XR technologies in immersive experiences, but also the limitations of these technologies in accurately conveying the intensity of non-human experiences and fostering genuine empathy.



Samuel Chovanec: *Sloth Has a Pretty Good Reason to Poop*. Jozef Kollár Gallery in Banská Štiavnica, August 2022. Directed by Samuel Chovanec. Photo by Samuel Chovanec.

sloth's life has progressively slowed down, allowing it to simply vanish from predators' sight.

Due to its lifestyle, various species of moss, fungi, insects, and moulds can grow or survive on the sloth, further enhancing its chances of successful camouflage. In a sense, the sloth goes against the grain. Instead of constantly accelerating, the sloth slows down, sleeps more, consumes less food, and excretes less. The act of excretion is one of the most mysterious activities observed in the life of a sloth. It can perform most of its activities in the treetops, but once every seven days, the sloth descends to defecate. It takes a long time to descend, and it is a serious waste of the precious calories gained from a poor diet consisting of leaves only. These are the most vulnerable moments of its life, and there is nothing to protect it from becoming easy prey. Most sloths killed by predators die during the act of defecation.

As far as my understanding of available scientific sources goes, there is no apparent evolutionary rationale for this behaviour. However, if it were not vital for sloths, this behaviour would have vanished along with the individuals practicing it. Sloths exclusively defecate at the base of trees.<sup>51</sup> One intriguing explanation is that many insect species living in its fur require the sloth's excrement for reproduction. Some can lay eggs only when in close proximity to the excrement, which can only occur when the sloth descends from the branches. A contributing factor to this peculiar situation is that to date, we have found four insect species that live nowhere else but in sloth fur.

<sup>51</sup> This behaviour of sloths defecating exclusively at the base of trees, rather than from a tree branch, might seem peculiar given the apparent lack of an evolutionary advantage. Yet, its persistence in the species suggests it holds some crucial importance. The exact reasons behind this behaviour remain uncertain, adding to the intriguing aspects of these creatures' lives.

This strange relationship shows an animal seen as so incapable and slow in the eyes of humans, is suddenly directly responsible for the survival of at least four animal species.

The opportunity to witness this defecating activity in real-time was incredibly important to me. Not only did I want to capture the intensity of the sloth's seven-day defecation cycle, but also the intensity of its descent from the tree and the growth of the moth larvae. To convey the repetition of this process, spectators were advised to visit the exhibit once every seven days. On the remaining days, the forest remained calm, with the sloth moving minimally. My aim was to facilitate an intuition into the sloth's behaviour and time scale, as well as to explore the inexplicable bond between the sloth and the moth—an almost unconditional love.

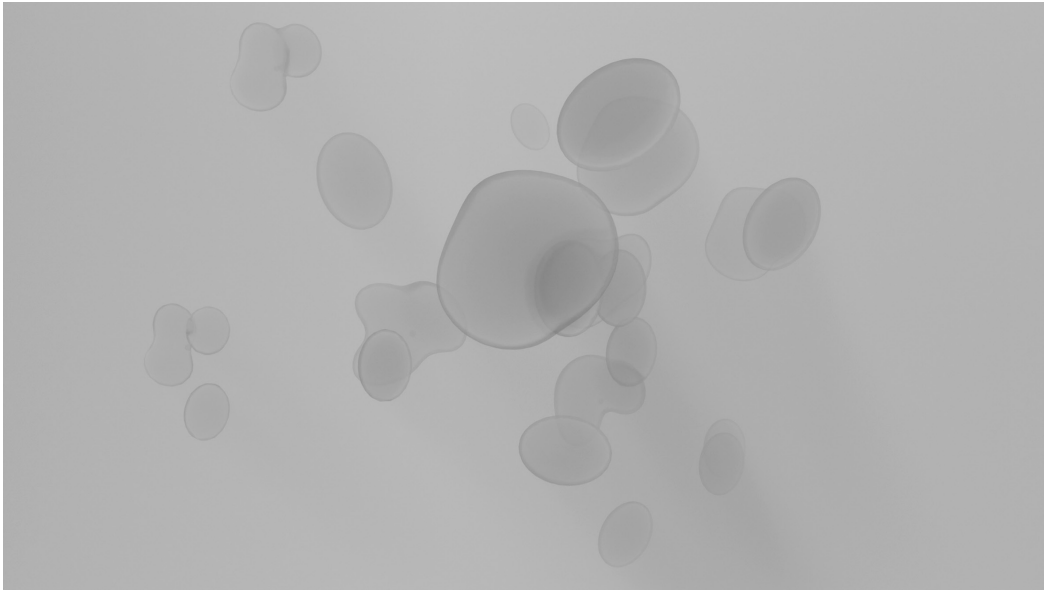
In the current discourse, the sloth manifests as a multifaceted index, each aspect offering unique insights into non-human experiences, ecological interdependence, and sensory perception. Firstly, the sloth becomes an index of behavioral deviation, its peculiar seven-day defecation cycle embodying a distinct sense of time and pace. This behavioral aspect illuminates the unique temporalities inherent in non-human beings, thereby challenging our anthropocentric understanding of time. Secondly, from an ecological perspective, the sloth operates as an index of a specialized ecological niche. Its body hosts a diverse array of moss, fungi, and insects, creating a vibrant microcosm that underscores the intricacy of interspecies relationships. The survival and reproductive cycles of these species are interwoven with the sloth's behaviours and movements, reinforcing the notion of the sloth as a crucial node in a complex web of life. Lastly, the sloth emerges as an experiential index for spectators of the exhibit. Its languid pace and distinctive lifestyle invite observers to recalibrate their perceptual and cognitive frameworks. The intention is to foster a deeper connection with the non-human world, encouraging spectators to align themselves with the rhythms and patterns of a life form that starkly contrasts their own. Thus, the sloth's role as an index presents a multi-layered examination of non-human experiences, ecological intricacies, and perceptual shifts, enabling a richer understanding of our shared world.

In the performance *Foam*, I was using the VR technologies to show the difference of intensity of the growing yeast. They are present all around us and play significant roles in various ecosystems. Yeasts have intricate symbiotic relationships with countless organisms, from bees to plants to ants. The fermentation process, which has played a vital cultural, religious, and social role throughout history, was studied, emphasizing the emergence of bubbles and foam as a symbol of the birth of a new yeast culture.<sup>52</sup>

The project was presented as VR video to immerse the viewer in the yeast's perspective, allowing them to observe the transformation of sugars into alcohol in a nutrient-rich environment. I sought to utilize this technology as a way to communicate

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<sup>52</sup> For a more comprehensive exploration of yeast's role in various ecosystems, and their complex symbiotic relationships with diverse organisms, refer to Stephen H. Buhner's *Sacred and Herbal Healing Beers: The Secrets of Ancient Fermentation* (1998). This work provides detailed insights into the fermentation process, which holds significant cultural, religious, and social importance, and studies the emergence of bubbles and foam as symbols of the birth of a new yeast culture.



Samuel Chovanec: *Foam*. Kiosk Festival, July 2022. Directed by Viktória Revická. Photo by Samuel Chovanec.

a perspective that is very distant to that of a human. The immersive nature of the project enabled encounters with otherness, it made it possible to intuit into a yeast culture, and allow humans to try to become yeast.

The last experiment that I would like to mention as a potential case study for non-human actors in digital performing arts, is an installation called *Heterotopia* [Heterotopy].

Walls are often anthropomorphized, suggesting that they possess human qualities like the ability to hear and speak. However, walls themselves hold intrinsic value, as factors like location, age, and history shape the listener behind them, and the other way around. The Slovak National Gallery building, with its many transformations, has witnessed a rich past of diverse events and sounds.

The digital installation, *Heterotopia* [Heterotopy], aimed to let the bridging structure of the gallery express its perspective to show how it has been shaped by the architect's vision, history, and location. It embodied the concept of heterotopy and heterochrony, as described by Michel Foucault and Jarmila Bencová.<sup>53</sup> *Heterotopia* represents spaces with multiple layers of meaning and relationships, enabling individuals to experience several incompatible places simultaneously within the same physical space. The gallery's bridging structure acts as a mirrored sphere, allowing visitors to view both the real space and its surroundings while experiencing a virtual image of the world and time around it.

The primary objective of this project was to enable spectators to immerse

<sup>53</sup> MITÁŠOVÁ, M. Vladimír Dedeček: *Interpretations of His Architecture*. Bratislava : Slovenská národná galéria, 2018, p. 102.



Samuel Chovanec: *Heterotopy*. Slovak National Gallery, August 2022. Directed by Samuel Chovanec. Photo by Samuel Chovanec.

themselves in the rich history and atmosphere of the Slovak National Gallery's long bridging structure through the use of large-scale projections. Drawing inspiration from various aspects of the history of the building and also to get other possibilities to test my hypothesis, the aim was to create a multi-sensory experience that transported visitors, allowing them to feel the intensity and nuances of the space's past.

In each walkthrough, elements of the historical context were seamlessly integrated with metaphors, lighting settings in 3D modelling software, music, and non-human actors. These elements subtly guided visitors towards the atmosphere and spirit of the gallery's previous eras. By weaving together architectural, historical, and artistic elements, the project aimed to foster a deeper understanding of not only what the space was before but also how it evolved into its current state. This exploration of the space's transformation was made possible through a careful consideration of the surrounding environment and the various nonhuman actors that have shaped and influenced the Slovak National Gallery's bridging structure over time.

Through various experiments and case studies, it has become evident for us that incorporating non-human actors into digital performing arts can challenge spectators' perceptions of reality, allowing them to engage with the transformative processes and empathize with the unique experiences of other beings. The immersive nature of XR technologies served as a powerful tool for bridging the gap between human and non-human actors, fostering a sense of interconnectedness and facilitating meaningful connections.

The projects discussed in this section, *Leňochod má celkom vážny dôvod sa vykakať* [Sloth Has a Pretty Good Reason to Poop], *Foam*, and *Heterotopia* [Heterotopy], made it possible for me to show the potential of XR technologies to distort the borders of traditional theatre medium based on human figure and allowed me to experiment with employing non-human beings into the roles of actors, offering spectators a glimpse into the lives of other beings and their unique experiences.



## V. CONCLUSION

This study examines the potential for non-human actors in the performing arts through an interdisciplinary lens, integrating philosophical, historical, artistic, and scientific perspectives. By analyzing the works of Deleuze, Bergson, and Tyler, as well as various artistic movements and technological advancements, we have been able to establish a more profound understanding of the intricate relationships between human and non-human beings in the context of performing arts.

Our investigation into the concept of intensity, indices, and metaphor, along with the application of XR technologies, has demonstrated the capacity of non-human actors to challenge our preconceptions and foster empathy towards other beings. Through a series of experimental case studies, we have showcased the transformative potential of digital performing arts in redefining traditional theatre boundaries and providing spectators with insights into the lives and experiences of non-human beings.

The utilization of XR technologies in the field of non-human performing art has a potential to be a powerful tool for creating immersive experiences and facilitating meaningful connections between human and non-human actors. These technologies have the potential to serve as catalysts for further exploration into the interconnectedness of all living beings and the development of a more inclusive and empathetic understanding of our shared existence.

This research contributes to the growing body of artistic and academic discourse surrounding non-human actors in the performing arts. As our knowledge and technologies continue to evolve, it is our hope that this study will inspire further investigations into the complex relationships between human and non-human beings in the performing arts.

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