Understanding More-Than-Human Relationships in Interactive VR Installations

A Case Study of Copy Paste Dance

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Abstract:

Arts and artists can decentre human agency by foregrounding the entanglement between more-than-human matter within their art works. Therefore, artists can question who we are and how we relate to the world by staging processes of *becoming-with*. I will use this philosophical concept by Donna Haraway as a perspective to move towards a better understanding of how we become-with. The inclusion of the more-than-human makes the concept of becoming-with helpful to look at more-than-human relationships that are situated in interactive art. As a departure point, I use different new materialism theories and Maurice Merleau-Ponty's bodily account on perception and experience. The goal of this thesis is to explain how more-than-human bodies interact within my case study *Copy Paste Dance*. This interactive multi-user installation by Monobanda is a performative space in which users can explore their bodies in virtual reality. In this case study research, I apply a concept-driven dispositif analysis to investigate the triangular relationship between screen, image and spectator. The three operationalisations of becoming-with (embodiment, movement and collaboration) function as three lenses that structure this analysis. The research question I aim to answer is: How can we understand becoming-with as a characteristic of spectatorship in the interactive art installation *Copy Paste Dance*? The results show three different forms of spectatorship: an embodied, performative and co-creative spectatorship. Within these three spectatorships, different processes of becoming-with between more-than-human actors are recognisable. The interactive design sets up new possibilities for embodied experiences that differ from our normative experiences and explores the boundaries of bodies in an online and open virtual environment. *Copy Paste Dance* lets users rethink bodies and the more-than-human relationships, and the understanding of our body, perception and meaning. Interactive installations such as *Copy Paste Dance* show the value of artists like Monobanda to understand the possibilities of our human body in relation with more-than-human matter and how we become-with through intra-action.

Keywords:
becoming-with, embodiment, performative art installation, virtual reality, interactive installation, intra-action, performativity, spectatorship, dispositif, more-than-human.

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Introduction

We become-with each other or not at all.

- Donna Haraway, *Staying With The Trouble*

The Anthropocene is the epoch in which the human species has an immense influence on the earth and is the primary cause of ecological changes. By exploitation of natural resources, ecosystems are disturbed, species are heading towards extinction and viruses threat humanity around the globe. The core of Anthropocentric thinking is the belief that the human species is superior above others, which is based on human exceptionalism and individualism.[1] This human-centered thinking is commonly used in various scientific fields and influences scientific discourse in a wide range of topics. Today's crisis demands us to rethink the concept of the human as well as the place humans fulfil in this world. In order to do so, we should focus on more-than-human relations. New materialism and posthumanism offer concepts that decentralise the human and reject classical dichotomies and hierarchies. The new materialist and posthumanist perspectives that trouble this Anthropocentric thinking opened my eyes to the way things are inherently connected. My interest towards these theories that were introduced to me by philosophers such as Donna Haraway and Karen Barad, converged with other personal interests in practices that actually incorporate these philosophical theories such as Yoga and Qigong. Both are ancient Asian practices that focus on the flow of Qi (氣, also sometimes translated as material energy or life force), a universal energy that flows through every entity. The intellectual capacity to understand in combination with the ability to practice these theories with my body made me realise that I am becoming through the changing relationships with more-than-human matter around me. I came to understand the importance that bodies play within meaning-making. In this thesis I use new materialism and this bodily account on experience as a departure point for further thinking and research.

In 1945, the French philosopher Maurice Merleau-Ponty explained in *Phenomenology of Perception* how perception in essence is a bodily phenomenon. Therefore, the body is essential in understanding our existence in the world. It is through our body and embodied experiences that we experience life and ourselves. In his work, Merleau-Ponty critiques the traditional sciences which tend to separate the studied subject from its context in order to create an objective point of view. This results in Cartesian dichotomies such as subject versus object, body versus brain and internal versus external. When failing to recognise the importance of subjectivity, theories of perception become passive and abstract, resulting in mental representations of the outside world. In this objectifying way of thinking the body is reduced to an object, separated from the mind. Instead, Merleau-Ponty argues, studied

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[1] Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene,* (Durham and London: Duke University Press, 2016), 30.

subjects such as body and perception always need to be studied in its lived context.[2] In this thesis, I will use Merleau-Ponty's theory about the crucial role of bodies in experience as a second framework in my research.

In her work *When Species Meet* (2008), biologist, philosopher and feminist Donna Haraway introduces the concept *becoming-with*. This concept accentuates how we are becoming from within our interaction with matter around us. We are inherently intertwined with matter around us and it is through these relationships that we exist. In its essence, becoming-with rejects Anthropocentric thinking by highlighting the togetherness in processes of becoming: "if we appreciate the foolishness of human exceptionalism then we know that becoming is always becoming with, in a contact zone where the outcome, where who is in the world, is at stake".[3] In other words, if we do not change our perspectives of existence towards a perspective of how we become together, we damage these processes and ourselves. Becoming-with could function as a way to frame a society in which we can construct life together based on this inherent relationality, including both human and other than human matter.

In this thesis, I will use the perspective of becoming-with to move towards a better understanding of how we become-with and how our bodies operate within this world. This perspective offers a new view on more-than-human relationships. The goal of this thesis is not necessarily to move beyond the Cartasian dichotomies, but to explain how more-than-human bodies interact within this interactive installation. In doing so, I will illustrate how becoming-with can become a form of spectatorship in interactive installations. Spectatorship can be understood as the state of being a spectator that is staged within the specific context of this work. My research question is how we can understand becoming-with as a characteristic of spectatorship in the interactive installation *Copy Paste Dance*. In my case study research, I will use a concept-driven dispositif analysis that enables me to look at the relationships between spectators, the used technology, and the speculative images that are created. To operationalise the philosophical concept of becoming-with, I propose to operationalise becoming-with by the concepts *embodiment*, *movement* and *collaboration* as they form three major components of this perspective. I will use these concepts as focus points in my analysis.

The concept of becoming-with can be considered as an abstract and utopian philosophy, and therefore hard to grasp, to imagine or to practice. According to philosopher Brian Massumi, art can show "the techniques of existence".[4] In his philosophy, Massumi illustrates how art and art processes can help to understand phenomena. Together with Erin Manning, he argues that "every practice is a mode of thought, already in the act. To dance: a thinking in movement. To paint: a thinking through

[2] Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (London and New York: Routledge & Kegan Paul, 1962), 111. https://voidnetwork.gr/wp-content/uploads/2016/09/Phenomenology-of-Perception-by-Maurice-Merleau-Ponty.pdf.
[3] Donna Haraway, *When Species Meet* (Minneapolis, MN: University of Minnesota Press, 2008), 77.
[4] Brian Massumi, *Semblance and Event: Activist Philosophy and the Occurrent Arts* (Cambridge: MIT Press, 2011), 140.

color".[5] In this way, Massumi points out that artistic processes are crucial in understanding abstract phenomena such as becoming-with. By creation, artists become practitioners of philosophy. In *Art Beyond Itself: Anthropology for A Society Without A Storyline* (2014), Néstor García Canclini argues how the open character of art can suggest a possibility, suggesting something in becoming:

> Art is the place of imminence—the place where we catch sight of things that are just at the point of occurring. Art gains its attraction in part from the fact that it proclaims something that could happen, promising meaning or modifying meaning through insinuations. It makes no unbreakable commitment to hard facts. It leaves what it says hanging.[6]

Because of this openness, art can be seen as living labs or open playgrounds that can situate or stage relationships between human and/or more-than-human matter in experimental ways. The philosophers Gillez Deleuze and Félix Guattari pointed out in their famous book *A Thousand Plateaus: Capitalism and Schizophrenia* (1987) that artworks and art processes can open up to *the virtual* instead of affirming and accepting existing ways of thinking: "potential and virtual are not at all in opposition to real; on the contrary, the reality of the creative, or the placing-in-continuous variation of variables, is in opposition only to the actual determination of their constant relations".[7] By experimenting with potentialities and possibilities, and facilitating or staging processes of becoming-with, arts and artists can decentre human agency, thereby foregrounding the entanglement between more-than-human actors, questioning who we are and how we relate to the world.

The importance of arts for practicing philosophies make art projects useful case studies or study objects. Especially when studying the relation between more-than-human actors, interactive art becomes very interesting as it centralises relationality. In his book *Interactive Art and Embodiment: The Implicit Body as Performance* (2013) the interdisciplinary artist Nathaniel Stern argues how an interactive installation can function as a "situational framework for the experience and practice of being and becoming".[8] He argues how "interactive art intervenes into entwined relationships that are always already emerging, which are necessary—and in fact the very precondition—for being(-with)".[9] He points out that interactive installations can stage the body as performance and can frame how bodies relate to each other.[10] In this thesis I will use an interactive installation as my case study to

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[5] Erin Manning and Brian Massumi, *Thought in the Act: Passages in the Ecology of Experience* (Minneapolis: University of Minnesota Press, 2014), vii, https://www.jstor.org/stable/10.5749/j.ctt6wr79f.

[6] Néstor García Canclini, *Art Beyond Itself: Anthropology for a Society Without a Storyline,* trans. David Frye (Durham and London: Duke University Press, 2014), xii.

[7] Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis and London: University of Minnesota Press, 1987)*,* 99.

[8] Nathaniel Stern, *Interactive Art and Embodiment: The Implicit Body as Performance* (UK: Gylphi Limited, 2013), 7.

[9] Nathaniel Stern, *"*The Implicit Body as Performance: Analyzing Interactive Art" In *Leonardo* 44, no. 3 (2011): 236. https://muse.jhu.edu/article/431865.

[10] Stern, *Interactive Art,* 13-14.

analyse processes of becoming-with. I will look at what this interactive installation allows spectators to *do* in this context, or in other words what it *affords*. In this understanding, I follow Stern's definition of interactive installations as digital art featuring sensory information in a responsive environment that demands embodied participation of users. In this definition he highlights the importance of the physical activity of the user.[11]

Especially playful and open designs function as playgrounds in which users can experiment without a predestined end result, exploring multiple possibilities and positioning the human in relation to the more-than-human. Interactive installations are able to stage moving bodies as a performance to uncover processes of becoming-with. Therefore, I will study the interactive installation *Copy Paste Dance* of Monobanda. Monobanda is an artistic duo from Utrecht, the Netherlands. They use the concept of play and interaction to expand our understanding of the human body. Their art projects and collaborations connect science, art and education. *Copy Paste Dance* is a cooperative interactive installation in which one or two users experiment with the boundaries of their body in virtual reality. Within speculative realities, collaborative game settings can contribute to a living laboratory in which users explore the possibilities of the virtual world and their bodies by interaction and performance. At the same time, the multi-sensory technologies have the potential to estrange human experiences by creating immersive, interactive and embodied experiences. Especially when users use their mobility to move freely without boundaries, even the impossible becomes possible.

Chapter 1 will function as a theoretical framework focused on becoming-with and its operationalisation. In chapter 2 I will explain how a concept-driven dispositif analysis is a suitable method to investigate more-than-human relationships that are set up within the case study. In chapter 3 I highlight my most important results in looking at how embodiment, mobility and collaboration as characteristics of becoming-with are staged within *Copy Paste Dance.* In chapter 4 I present my conclusion and I will underscore the importance of this type of art for our understanding of more-than-human relationships.

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[11] Stern, *Interactive Art,* 5-6.

Chapter 1   Operationalizing Becoming-With

I am not in front of my body, I am in it, or rather I am it.

- Maurice Merleau-Ponty, Phenomenology of Perception

When a body is in motion, it does not coincide with itself.

It coincides with its own transition: its own variation.

- Brian Massumi, Parables for the Virtual

In this first chapter I explain what I understand as becoming-with. In paragraph 1.1 I discuss theories of Donna Haraway, Karen Barad, Gilles Deleuze and Félix Guattari to carefully unpack this abstract and philosophical concept. In the following paragraphs I present three concepts that function as qualities of becoming-with. By the use of these concepts, I operationalise processes of becoming-with in an interactive design that makes use of multisensory and immersive techniques. Because the philosophy of becoming-with includes more-than-human actors and relationships, such as the relationship between human and technology or speculative images, the concept of becoming-with becomes very helpful to look at the relationships that are staged within interactive installations. Therefore, I discuss the operationalisation of becoming-with within a framework of interactive art.

1.1   Becoming-With

The concept of becoming-with finds its origin in metaphysics, a philosophical branch that deals with abstract theories of the existence of things, not looking at the tangible reality but asking questions that go beyond our perception. As explained before, becoming-with provides a useful framework in which we can understand how all matter relates to each other. It treats dichotomies as problematic and rejects any illusion of separation as all matter is fundamentally entangled. Because of these essential connections, matter comes into being. To apply this perspective on the existence of matter in a more concrete way, I will unpack this concept into two different parts: 'becoming' and 'with'.

1.1.1   *Becoming*-With

First of all, the word *becoming* is a verb and therefore implies an action; it does or performs something. In *Posthumanist Performativity: Towards an Understanding of How Matter Comes to Matter* (2003), posthuman and feminist theorist Karen Barad shows how becoming is *performative*. To understand the origin of this way of thinking, she first refers to language philosopher John L. Austin. He explained that language is not only reflective but also does something, instead of simply transferring information.[12] He argued that linguistic utterances have the ability to act and therefore

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[12] Karen Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter." *Signs Journal of Women in Culture and Society* 28, no. 3 (Spring 2003): 808.

put something in change. Although Austin did not use the word performativity in his speech act theory, he influenced many scholars in different domains, such as the philosopher and feminist Judith Butler who argues that gender is an act of doing. Butler quoted in Barad: "gender is itself a kind of becoming or activity (...) gender ought not to be conceived as a noun or a substantial thing or a static cultural marker, but rather as an incessant and repeated action of some sort".[13] In this way, performativity can be applied to becoming, as becoming is about matter being active in the way it becomes. Later in this chapter, I will discuss in more detail how performativity is fundamental in explaining processes of becoming.

Another point that relates to this active connotation of becoming is that becoming implies a change; a process. Following the Western history of philosophy, the ontological concept of becoming finds its origin in the work of Greek philosophers such as Heraclitus, who argued that nothing is certain, only change. Since then, other Western philosophers became fascinated by the concept of becoming. In *A Thousand Plateaus: Capitalism and Schizophrenia* (1987), Gilles Deleuze and Félix Guattari describe becoming as follows:

> a line of becoming has neither beginning nor end, departure nor arrival, origin nor destination (…) A line of becoming has only a middle. (…) A becoming is always in the middle. (…) A becoming is neither one nor two, nor the relation of the who; it is the in-between.[14]

Therefore, becoming can be understood as an open and non-linear process that is not so much about transformation from A to B, but a continuous development or movement without a beginning or ending. The concept of a *rhizome*, as defined by Deleuze and Guattari, is a useful metaphor to imagine this open structure. A rhizome is an underground-rooted structure that connects multiple organisms together in an unstructured way. This structure can be disrupted or entered at every point. The theory of a rhizome is helpful to question any hierarchical structure, such as a tree-structure which is often applied in Western philosophy or organisational structures within societies. It depicts how matter can be interrelated and in relation with multiple. The process-based characteristic of becoming-with is this non-hierarchical structure without any centre or end point as Deleuze and Quattari describe. Therefore becoming is never finished, but an ongoing process.

Both this performative and process-based character of becoming implies a form of change; something in the making. It foregrounds a potentiality. Hence, the process of becoming is not stable, given or predictable but continuously formed and shaped in unexpected directions. Becoming is therefore never finished.

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[13] Barad, "Posthumanist Performativity," 808.

[14] Deleuze and Guattari, *A Thousand Plateaus*, 293.

1.1.2   Becoming-*With*

The second part of becoming-with suggests that matter is inherently intertwined: *with* refers to the fact that matter always becomes together. In this way matter cannot become without any relation with other matter. Therefore, becoming-with cannot be understood as something that happens autonomously. Instead, the inherent relationship between matter implies that all matter in essence is interdependent. To understand this relational aspect of the concept, I refer to the concept of *entanglement* that is used by both Karen Barad and Donna Haraway.

In *Meeting The Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (2007), Barad uses the example of a *superposition*, a fundamental principle in quantum physics that helps us to understand what entanglement is. A superposition is a combination of two or more waves that cross each other. The moment that the waves overlap can be seen as a disturbance of their amplitudes in the creation of a new wave.[15] In *Thought to Act: Passages in the Ecology of Experience* (2014) Erin Manning and Brian Massumi described this phenomenon beautifully:

> Two stones dropped into the same pond produce two ripple patterns. Where the ripples intersect, a new and complex pattern emerges, reducible to neither one nor the other.[16]

When two or more different ripple patterns in the water cross each other, this superposition is shaped and can only exist because of the two former waves. In other words: matter is shaped by its entanglement with other matter. In this way "to be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent, self-contained existence".[17] Thus, matter comes into being because of the inherent entangled relationships with other matter.

To understand this relationality in more depth, I apply Barad's concept *intra-action*. This concept contrasts with the concept of interaction. Interaction between two entities suggests that both entities already existed before they encountered each other. In this way both entities maintain a degree of independence. However, intra-action suggests that entities are becoming from within the relationship with each other and their situatedness.[18] As I mentioned before, matter is interdependent instead of independent. Building upon Austin's speech act theory, Barad proposes that every matter has the ability to act. The notion of agency is key in understanding intra-action and is understood as a performative act. Agency is not something that is owned by something or someone. Instead, agency circulates through the entangled network of matter. Barad speaks of agential cuts within intra-actions

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[15] Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham, N.C.: Duke University Press, 2007), 255.
[16] Manning and Massumi, *Thought in the Act,* ii.
[17] Barad, *Meeting the Universe*, IV.
[18] Karen Barad, "Posthumanist Performativity," 815.

that result in differences between matter. Those cuts can be seen as "performances through which specific exclusionary boundaries are enacted".[19] These differences are continuously shaped and reshaped, and therefore never fixed. Or as Rick Dolphijn and Iris Van der Tuin formulate in *New Materialism: Interviews & Cartographies* (2012): "All bodies, including but not limited to human bodies, come to matter through the world's iterative intra-activity, its performativity".[20] In this way, agency does not belong to matter as a property, but appears from within the relationships between matter and is distributed along a fluctuating network. All designated entities within this network have a shared responsibility as all actions affect other entities. Thus, agency can be understood as a "dynamism of forces" that evolves from all present actors that are constantly acting, moving, exchanging and disrupting.[21] They are permanently under (re)construction. Therefore, Barad speaks of a continuous process of *mattering*:

> Meeting each moment, being alive to the possibilities of becoming, is an ethical call,
> an invitation that is written into the very matter of all being and becoming. We need
> to meet the universe halfway, to take responsibility for the role that we play in the
> world's differential becoming.[22]

In *Staying with the Trouble: Making Kin in the Chthulucene* (2016), Haraway builds upon Barad's agential theory and introduces the concept of *tentacular thinking*, a metaphor to imagine the entanglement in more-than-human relationships.[23] The word tentacle comes from the latin verb tentare which means 'to feel' or 'to try'. The tentacle itself is a moving, flexible and sensitive organ that carries two thirds of the octopus brain capacity. In this way, an octopus senses, moves and thinks by the use of its multiple tentacles. Tentacular thinking is thus a form of embodied cognition. When we apply this tentacular thinking to an entangled multi-species network, all species would feel, think and collaborate together through their entangled strings, like tentacles sense their surroundings. The concept of tentacular thinking is useful as it imagines how all matter contributes to an entangled network that shares knowledge and nutrition, but also feelings, memory and emotions. This reciprocity can be seen as a form of experiencing the other or caring for each other, a form of responsibility. Haraway illustrates this reciprocity by using the metaphor of a string figure. String figures are what she called thinking and making practices. It is about "passing on and receiving, making and unmaking, picking up threads and dropping them".[24] Alike Barad, Haraway speaks about agency within this process of becoming: "Shaping response-abilities, things and living beings can be

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[19] Karen Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter". *Signs Journal of Women in Culture and Society* 28, no. 3 (Spring 2003): 816.
[20] Rick Dolphijn and Iris Van der Tuin, *New Materialism: Interviews & Cartographies*. (Ann Arbor: Open humanities press, 2012), 69. http://openhumanitiespress.org/books/download/Dolphijn-van-der-Tuin_2013_New-Materialism.pdf.
[21] Barad, *Meeting the Universe*, 141.
[22] Idem, 396.
[23] Donna Haraway, *Staying with the Trouble*, 32.
[24] Haraway, *Staying with the Trouble*, 3.

inside and outside the human and nonhuman bodies, at different scales of time and space. All together the players evoke, trigger, and call forth what—and who—exists".[25]

In conclusion, *with* suggests that matter is inherently entangled with other matter. Instead of considering two entities as separate, they do not only relate to each other but can only exist because of this interdependency. Together, entities form an entangled network that constantly changes by disruption and reconstruction by agency that flows through it. All have a shared responsibility as every action affects other entities. Together entities think, perceive, share and perform in a reciprocal way.

1.1.3   Becoming-With: a More-Than-Human Perspective

Combining the two parts together, becoming-with is a continuous and performative shaping process of matter, or bodies, that becomes into being together through its inherent entanglement and interdependency. It entails a reciprocal and embodied way of thinking, perceiving and performing together. The process of becoming-with is always situated and in flux, moving in unexpected ways by reconfiguration and new possibilities for intra-action. Becoming-with can never be fully achieved and is thus always continuing.

Both Barad and Haraway foreground a more-than-human view onto processes of becoming-with: "Feeling, desiring and experiencing are not singular characteristics or capacities of human consciousness. Matter feels, converses, suffers, desires, yearns and remembers".[26] In her utopian world the Chthulucene, Haraway sees becoming-with as a new way of thinking about more-than-human relationships.[27] Hence, becoming-with rejects Anthropocentric thinking, decentralises the position of the human and tries to move beyond dichotomies and hierarchies. It is a new way of thinking about bodies, identities and relations. The inclusion of the more-than-human makes the concept of becoming-with helpful to look at relationships between more-than-human matter, such as the relationships that are situated in interactive art.

I will use the concept of becoming-with as a perspective to investigate how human and bodies other than human become together. To apply this perspective, I will operationalise becoming-with by three important characteristics of becoming-with, namely *embodiment*, *movement* and *collaboration*. This operationalisation is based on the theories of Maurice Merleau-Ponty, Maaike Bleeker et al. and Donna Haraway, which I discussed in the previous section(s). In the following sections, I will explain each phenomenon and the way it is an operationalisation of becoming-with.

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[25] Idem, 1.
[26] Dolphijn and Van der Tuin, *New Materialism,* 59.
[27] Donna Haraway, *Staying with the Trouble*, 19.

1.2   Embodiment

In this paragraph, I take an embodied account on how more-than-human bodies become-with. I propose that embodiment is a characteristic of becoming-with in the sense that becoming requires a human or more-than-human body. First, I will elaborate on Maurice Merleau-Ponty and his theory of perception in which he explains the fundamental role of bodies in the way we perceive the world. It is through our body that we experience the world. Moreover, as our body is anchored in the world, the body shapes our perception of the world itself. The body can be understood as an active agent that is always situated, relational and in movement. Therefore, phenomena such as perception and experience can be understood because of bodily intra-action with an environment. Second, I argue that interactive installations in combination with VR technology intervene with our embodied selves, affording the body to explore new possibilities in new environments that estrange us from our normative experiences.

1.2.1   Embodiment as Situated And Relational

In his book *Phenomenology of Perception* was first published in 1945, Maurice Merleau-Ponty argues how perception is "anchored within the structures and capacities of the body".[28] His work is considered to be a fundamental contribution to science and philosophy by centring the body as a fundamental phenomenon in understanding perception. When we perceive the world with our senses our body is always there, somewhere on the edge. This direct link between body and experience is fundamental in how we experience the world and illustrates how perception is a bodily and living phenomenon. However, our body is formed by experience as well. The way we use our body to engage is fundamental to what the world is for us. We can only know the body, and therefore our world, through using it. It has an effect on how we move, think, feel and understand a world we are immersed in. The body is always situated and embedded within a specific situation or environment: "To be a body, is to be tied to a certain world, (...) our body is not primarily in space: it is of it".[29] Inspired by Merleau-Ponty, Maaike Bleeker, Jon Foley Sherman, and Eirini Nedelkopoulous speak about this relationality of embodiment and address how bodies become matter in performances in *Performance and Phenomenology: Traditions and Transformation* (2015). Experience is in its essence relational as "we exist among others who also experience the world".[30] Therefore, embodiment can be understood as something inherently relational, shaped through intra-action with other bodies and its environment. Based on these theories I will understand embodiment as a situated, engaged and active process of becoming-with.

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[28] Taylor Carman, *Merleau-Ponty* (London: Routledge Philosophers, 2019), 1-2. https://doi-org.proxy.library.uu.nl/10.4324/9781315537542.
[29] Merleau-Ponty, *Phenomenology of Perception*, 171.
[30] Maaike Bleeker, Jon Foley Sherman, and Eirini Nedelkopoulou, *Performance and Phenomenology: Traditions and Transformation* (New York and London: Routledge Taylor & Francis Group, 2015), 7. https://doi-org.proxy.library.uu.nl/10.4324/9781315752365.

1.2.2   Embodiment in a Digital Environment

Although Merleau-Ponty's bodily account on perception first appeared in 1945, it is even more relevant today. In the article *Performing in (Virtual) Spaces: Embodiment and Being in Virtual Environments* (2007), artist and computer scientist Jacquelyn Ford Morie points out how new media technologies allow other domains of science, such as cognitive science, to test this embodied theory of perception.[31] Developments of immersive technologies that foreground the essence of bodies in perception and experience open up new and unique possibilities to create other bodily experiences than our experiences gained in our normal life. Therefore, new technologies can create a deeper understanding of how our body and perception works. Especially virtual reality (VR) technologies that *require* bodily interaction can immerse spectators in new embodied experiences.[32] Therefore, VR becomes the medium par excellence to experiment with bodies in new environments. VR allows users to feel bodily present in three dimensional and speculative worlds generated by computers by interfering with the senses of users. Enhanced with sensory tracking and feedback devices that translate sensory data, VR technologies are able to create haptic forms of perception. A full body immersion that includes mediation of sensory information for multiple senses results in an experience that excludes the physical world. The degree of feeling present in a virtual environment is constructed through different dramaturgical and technological strategies. For example, the absence or presence of an avatar that represents embodiment affects how spectators experience their own body.[33] These affordances that VR provides, let us rethink the body and "our embodied selves".[34]

Interactive art that includes these immersive technologies are not only able to situate new relationships between different bodies that are uncommon or even impossible without technology, these staged relationships are often the centre of attention. The interactive design and VR technology facilitate an embodied haptic mode of perception that can estrange the spectator or user from the habitual bodily experience.[35] Both intervene in the normative modes of embodiment and the ways in which bodies intra-act with each other. They can stage and experiment with new ways of becoming-with. They also create new ontological questions related to the virtual body and the space it is situated in and can function as an artistic form of research that allows experimenting with the boundaries of bodies in imagined spaces.

I propose that VR in an interactive design affords new experiences of embodiment, allowing spectators to explore the boundaries of their embodied bodies. Those installations can be seen as spaces to practice and experiment with ways of becoming-with as they stage unique relationships between technology, spectators and images of speculative worlds.

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[31] Jacquelyn Ford Morie, "Performing in (Virtual) Spaces: Embodiment and Being in Virtual Environments" in *International Journal of Performance Arts and Digital Media* 3, no. 2 & 3, (2007), 125. doi:10.1386/padm.3.2&3.123/1.
[32] Morie, "Performing in (Virtual) Spaces", 126.
[33] Idem, 127.
[34] Idem, 136.
[35] Anna Munster, *Materializing New Media: Embodiment in Information Aesthetics* (New Hampshire: Dartmouth College Press, 2006), 18. https://ebookcentral.proquest.com/lib/uunl/detail.action?docID=1085079.

1.3 Movement

After taking a bodily and relational account on becoming-with, I will now discuss how movement is another essential characteristic for processes of becoming-with. Embodiment and movement are inherently intertwined as all movements are embodied sensations. Merleau-Ponty states that we move our body directly as a unity, not as the sum of our individual limbs.[36] Through this holistic view of a body in motion, we navigate through the world by the bodily movements we make. In this way, experiences derive from the movements of bodies. Thus, movement is crucial in understanding becoming-with as well. Movement creates possibilities and variations. It is the potential for action. Or as Pascal Massie formulates in her paper *Diodorus Cronus and The Logic of Time* (2016): "To be in motion is to belong simultaneously to what is no more and what is not yet; it is to occupy a space between potency and actuality".[37] In other words: movement is the essence of transition. Without movement, everything would become static and processes of becoming would stagnate. It evokes new encounters, new possibilities for intra-action and new experiences. We get to understand the way we use our own body and the changing relationships with other bodies by movement. Or as Bleeker et al point out: "without movement there can be no contact with anything other than ourselves".[38] In conclusion, movement is an essential part of becoming-with. In this section I will touch upon different levels of movement, where I will focus on movement as a state of being and movement as performance. I will connect these levels of movement with interactive designs.

1.3.1 Movement as State Of Being

The following quote by Massumi suggests that our bodies are moving on different levels: "When I think of my body and ask what it does to earn that name, two things stand out. It moves. It feels. In fact, it does both at the same time. It moves as it feels, and it feels itself moving".[39] We physically move our bodies as we navigate through different spaces with our senses. These sensory input figuratively moves us at the same time. In *Process Phenomenologies* (2015), Suzan Kozel illustrates this twofold character of motion. She investigates the affective layers of dancing bodies in practices of phenomenology. She connects philosophical theories of affect with reflective notes and descriptions of dancers in order to uncover the richness and complexity of these affected moving bodies "in order to get at the essence of lived experience".[40] Kozel's research does not only show how movement can be twofold, but it also illustrates the importance of practicing philosophies through performances as "affect is part of the great invisible domain that supports and sustains the visible".[41]

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[36] Merleau-Ponty, *Phenomenology of Perception*, 173.
[37] Pascal Massie, "Diodorus Cronus And The Logic Of Time," In *The Review of Metaphysics*: 70, no. 2 (December 2016), 284. https://link.gale.com/apps/doc/A540924299/ITOF?u=utrecht&sid=ITOF&xid=b769ad4d.
[38] Bleeker, Sherman, and Nedelkopoulou, *Performance and Phenomenology,* 10.
[39] Brian Massumi, *Parables for the Virtual*, 1.
[40] Suzan Kozel, "Process Phenomenologies," in *Performance and Phenomenology: Traditions and Transformations* ed. Maaike Bleeker, Jon Foley Sherman, and Eirini Nedelkopoulou (New York: Routledge Taylor & Francis, 2015), 56.
[41] Kozel, "Process Phenomenologies," 69.

1.3.2   Movement as Performance

In *Phenomenology and Performances: Traditions and Transformations* (2015) Maaike Bleeker, Jon Foley Sherman, and Eirini Nedelkopoulou point out how bodily intra-action between matter is "a series of acts, rather than a given state of being".[42] Within intra-action, relationships between matter unfold through movement. Movement makes matter become dynamic, creating new relations that result in unfinished processes of changes and differences. Therefore, the body is not only in movement, but also performing. Furthermore, they emphasise how practices can become a meaningful exploration into philosophy: "performance can be a privileged object of phenomenological investigation as well as a means of developing phenomenological practice".[43] One of the first statements they make in their book is that there is a fundamental mysteriousness in the way we experience the world. It cannot be fully explained. And yet, they argue, we can still take a plunge into the world and "be involved with it - and find meaning with it".[44] This underlines the necessity of bodily practices and art performances to understand how we become-with. The shift from philosophical thinking towards practicing philosophies could involve embodied performances of any art form, including the meditative practices mentioned in the introduction.

1.3.3   Digital Intra-actions

As I pointed out in previous paragraphs, new media technologies and interactive designs both allow us to explore moving bodies in new settings or spaces. In their designs, new relations are staged that result in unique forms of spectatorship that play with the conventions of the spectator's mobility. They encourage bodies to move and sense, both in actual and figurative ways. Movements are performed in the moment instead of pre-staged. Interactive designs can facilitate space to practice and experience become-with. This results in new forms of spectatorship as spectators are addressed in new ways, allowing them to experiment with movement. Artist Nathaniel Stern argues that these interactive relationships are becoming the focus of artistic research more often. He proposes to look more carefully at how we can understand these interactive relationships within the staged forms of spectatorship instead of only analysing how the installation itself is interactive. Questions that are important here are for example how the audience is literally and figuratively moved through the staged relationships within interactive designs.[45] Therefore, I study how these situated relationships establish specific movements in my case study.

1.4   Collaboration

In the previous sections I argued how embodiment and movement can be used to operationalise becoming-with. I pointed out before that we perceive through our situated body, embodied and in relation with others. The body is always in motion, active and in an endless process of becoming. In

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[42] Bleeker et al., *Performance and Phenomenology*, 1.
[43] Ibid.
[44] Idem, 3.
[45] Stern, *The Implicit Body as Performance*, 234.

this section, I focus on the entanglement between moving bodies and how these relationships are always action-orientated. Relationships are shaped and reshaped through intra-action. I emphasize how this process of becoming-with is about collaboration between active bodies. Processes of becoming-with imply a degree of reciprocity between multiple bodies that co-emerge through intra-actions. Here, collaboration shows how bodies act together and co-create and become-with. Through collaboration bodies are in continuous co-creation. First, I illustrate how collaboration is central in processes of becoming-with by referring to Haraway. Second, I look at more-than-human collaborations in open interactive design.

1.4.1   More-Than-Human Collaborations

In *Staying With The Trouble,* Haraway focuses on various multispecies collaborations. To illustrate what this collaborative relationship looks like, she uses the metaphor of *string figures*. As I mentioned before, playing with string figures can be understood as open ended and speculative thinking and making practices: "playing games of string figures is about giving and receiving patterns, dropping threads and failing but sometimes finding something that works, something consequential and maybe even beautiful, that wasn't there before".[46] Through this form of collaboration, more-than-human actors shape and reshape something new together. Haraway illustrates how multispecies art collaborations are shaped through the combination of specific qualities of the co-creating species. In those examples humans and animals contribute to art projects by their specific skills and situated knowledge. Through collaboration and contribution, more-than-human actors co-create something that otherwise would not be possible: "they entice and prolong into the fleshly present what would disappear without the active reciprocity of partners".[47] Furthermore, she argues that string figures are more than only a metaphor. It is about "literal collaborations, with people and with animals" or other more-than-human matter.[48] Without these collaborations, things would simply not exist. Therefore, the human and the more-than-human have an equal responsibility, or as Haraway calls it "response-ability" that refers to agency and the contribution to the entangled ecosystem in which they are involved.

1.4.2   Collaborations in Interactive Designs

When applying this theory of playing string figures to interactive designs, different forms of more-than-human collaborations can be recognised. Nathaniel Stern points out that art in its essence exists of collaborative relations: "Artwork and audience, action and perception, body and world, are each and always already implicated across all others. What this means is that they are collaboratively enacted, dispersed, entwined, differentiated and shared."[49] Besides art that mostly relies on the interpretation of the artwork itself, interactive art is even more about the staged relationships and

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[46] Haraway, *Staying With the Trouble*, 10.
[47] Haraway, 25.
[48] Idem, 129.
[49] Nathaniel Stern, "The Implicit Body", 233.

collaborations that are performed. For example, through collaboration between technologies and the spectator's movements, a specific experience is established. The facilitated intra-actions between technology, image and spectator together become a collaborative performance. In this regard, Stern argues that interactive installations are even deepening the understanding of these more-than-human collaborations, as they are centred: "The 'work' is the relationship that emerges and that we emerge from".[50]

Collaborative performances do not need to be forced in interactive designs to evolve. In *Design for Emergence: Collaborative Social Play with Online and Location-Based Media* (2007), Yanna Vogiazou investigates spontaneous forms of collaboration in playful multiplayer designs and argues that staging the need for possible collaboration between spectators works better than forcing them. In these studied designs, collaboration between spectators was not forced but evolved during collaborative play. Within an open and playful design, potential collaborations between spectators are staged, resulting in spontaneous and collective group performance. Vogiazou argues that there is no need for a special interface for collaboration in interactive design as spectators implement their own collaborative strategies: "it is up to the participating individuals to explore the dynamics of collective behaviour".[51]

In this thesis I will focus on this emergent form of collaboration between multiple more-than-human bodies as a form of becoming-with. Interactive designs with elements of spontaneous collaboration can enable playful relationships between spectators and technology, creating unpredictable outcomes. It is this reciprocal or collaborative mode that allows bodies to transform or move together in an open and explorative context. Interactive installations let us explore these possible relationships between spectators and technologies.

1.5   Becoming-With in an Interactive Design

In this thesis I argue that the concepts embodiment, mobility and collaboration are important components in the process of becoming-with by creating meaningful intra-actions. I will focus on processes of becoming-with in an interactive design through these three lenses. I will apply them by looking at more-than-human relationships within the performative and interactive installation *Copy Paste Dance* by Monobanda. *Copy Paste Dance* is a multiplayer interactive installation working with virtual reality techniques in which users are immersed in a virtual stage that invites a dancing body. The question I seek to answer in this thesis is:

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[50] Stern, 233.
[51] Yanna Vogiazou, *Design for Emergence: Collaborative Social Play with Online and Location-Based Media* (IOS Press, 2007), 153. https://ebookcentral.proquest.com/lib/uunl/detail.action?docID=286996.

How can we understand becoming-with as a characteristic of spectatorship in the interactive art installation *Copy Paste Dance*?

Spectatorship refers to the screening situation that is constructed through the relationships between screen, image and spectator (for a better understanding of spectatorship, see section 2.2). To answer this main question, I will look at the evolving processes of becoming-with by the concepts embodiment, movement and collaboration as I argued above. These three are part of the created spectatorship of the interactive installation. This results in three sub-questions:

1. How does the installation create an embodied form of spectatorship?
2. How is movement facilitated within the installation?
3. How are collaborations staged between more-than-human bodies?

In the next chapter I will explain how a concept-driven dispositif analysis is a suitable method to investigate more-than-human relationships that are facilitated within the case study. I will shortly explain how the dispositif analysis allows me to witness fluid intra-actions between more-than-human bodies by analysing the relationships between technology, spectator and the presented virtual images.

Chapter 2   Analysing Spectatorship

Interdisciplinarity in the humanities must seek its heuristic and

methodological basis in concepts rather than methods.

- Mieke Bal, *Travelling Concepts in the Humanities*

Rethinking the human in a more-than-human way demands the rethinking of methodology that is commonly used in academic research. Therefore, I will not focus on representation or narrative, but focus on the relationality between the objects in my case study and how these relations enable the two spectators to feel, move and act in specific ways. The analysis of moving images that evoke a process of becoming within the relationships of more-than-human asks for more experimental methodologies. One of these methods is the *concept-driven dispositif analysis* that enables me to investigate the relationship between screen, image and spectator created within the objects to this thesis. First, I will argue that a concept-driven dispositif analysis is a suitable methodology for this thesis. I will shortly explain what is understood as a dispositif in relation to media studies by referring to media theorist Frank Kessler. In relation to the outcome of the dispositif analysis I will use Maaike Bleeker's concept of spectatorship, Nanna Verhoeff's explanation of how to apply concepts within analysis and the manual of Nanna Verhoeff and Karen van Es to explain how the concept-driven dispositif analysis is applied in this case study research. Finally, I will complete my methodology by presenting my case study.

2.1   Concept-Driven Dispositif Analysis

To get an understanding of dispositif, I first refer to the Italian philosopher Giorgio Agamben who builds upon the key concepts of Michel Foucault, suggesting that the dispositif is the specific relationship between elements, or in his words *apparatuses*, in the virtual. The components of a dispositif can include all sorts of human or more-than-human matter, such as discourses, institutions, philosophies, linguistics, non-linguistics, beliefs or living beings.[52] A dispositif can also contain something imaginable or potential as it "determines not only what is and can be considered possible but also what can even be imagined and anticipated as potentially realizable, as something one can hope for, or act to bring about".[53] This potentiality is also in relation to the concept of becoming-with. Analysing the relationships within the dispositif makes visible different power relations, understanding how subjectivity is shaped. In this way, the concept of dispositif can be seen as a temporal and spatial configuration of more-than-human agency in constructing meaning and experience.

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[52] Giorgio Agamben, *What is an Apparatus? And Other Essays,* trans. David Kishik and Stefan Pedatella (Stanford: Stanford University Press, 2009), 14, https://soundenvironments.files.wordpress.com/2011/11/agamben-what-is-and-apparatus.pdf.
[53] Sverre Raffnsøe, Marius Gudmand-Høyer and Morten S. Thaning, "Foucault's Dispositive: The Perspicacity of Dispositive Analytics in Organizational Research," in *Organization*:23, no. 2 (2016), 292. https://doi.org/10.1177/1350508414549885

In his unpublished seminar paper *Notes on Dispositive* (2007) media theorist Frank Kessler provides a historical and theoretical framework of the dispositif in which he points out that the understanding of dispositif had broadened and applied in media theories in different ways. In the light of media theory, Kessler refers to Jean-Louis Baudry who speaks about a created *impression de réalité*, understanding the dispositif as a screening or viewing situation shaped by the relationship between technological and material qualities, film format and spectator within cinematographic settings.[54] This more open understanding of the dispositif allowed media theorists to apply this conceptualisation to other media context to analyse the "triangular relationship between technological affordance, textual modes and forms of spectatorship".[55] This complex configuration fluctuates and is situated in space and time, making the dispositif analysis suitable to analyse and compare the material and spatial setup constructed in a specific media context. Kessler aims that "the concept of dispositif should be seen, above all, as a heuristic tool offering ways to account for the complexities of media(texts) in situational contexts offering, or aiming at producing specific spectatorial positions".[56] In this context, I will use a dispositif analysis to study the more-than-human relationships that are staged within my case study.

2.2   Spectatorship

In *Thinking Through Theatre and Performance* Maaike Bleeker defines spectatorship as "the state of being a spectator".[57] She explains how dramaturgical strategies invite "modes of looking and interpreting".[58] In their manual Verhoeff and Van Es explain that "the analysis of the dispositif or specific screen situations can help us to understand how spectatorship is constructed".[59] Spectatorship can thus be seen as an outcome of the dispositif analysis:

> The dispositif of a specific screening situation can shed light on the way the text or image is presented to the spectator, and structures how the spectator makes sense of these images. Moreover, it situates the spectator in relation to the image.[60]

In other words, the dispositif is constructed by a triangular relationship between screen, spectator and text. Verhoeff and Vane Es illustrate how spectatorship can be understood in the context of a dispositif:

[54] Frank Kessler, "Notes on Dispositive," (Utrecht: Utrecht University, 2007), 7. http://www.let.uu.nl/~frank.kessler/personal/Dispositif%20Notes11-2007.pdf
[55] Kessler," *Notes on Dispositive,*" 17.
[56] Ibid.
[57] Maaike Bleeker, "What Do Performances Do to Spectators?," in *Thinking Through Theatre and Performance*, red. Maaike Bleeker, Adrian Kear, Joe Kelleher en Heike Roms (Londen and New York: Bloomsbury Publishing PLC, 2019), 33.
[58] Bleeker, "What Do Performances", 35.
[59] Nanna Verhoeff and Karin van Es, "Dispositif Analysis: How to do a Concept-Driven Dispositif Analysis" (Utrecht: Utrecht University, 2018), 4.
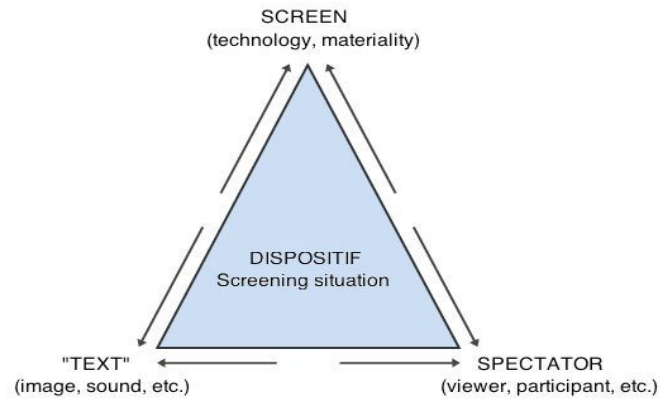[60] Verhoeff and Van Es, "Dispositif Analysis", 4.

Figure 1: The triangular relationship between screen, spectator and text form the dispositif of a screening situation, by Nanna Verhoeff and Karen van Es.

My analysis is concept-driven as it derives from the focus on embodiment, movement and collaboration. The three concepts function as three different lenses to direct my concept-driven dispositif analysis. As Verhoeff argues in *Research Design: The Theory/Object Dynamic* (2012), the analysis should focus on "the specificity of the object, the theories and concepts by which we approach it, and related media phenomena".[61] To apply this onto this thesis, my analysis foregrounds the specific characteristics of the applied technologies, the form of the presented images and the effects of the surrounding sounds, and users behaviour. As I mentioned before, the concepts embodiment, movement and collaboration that can be understood as operationalisations of the concept becoming-with are functioning as three different lenses that structure my analysis. Guided by these concepts, I can analyse different forms of spectatorship that are constructed in the interactive installation through the dramaturgical strategies applied by the artists. My analysis will also be structured in a way that every paragraph elaborates on one of the three concepts. Paragraph 3.1 shows how spectators experience a feeling of virtual embodiment. In paragraph 3.2 I analyse how spectators are moving. In paragraph 3.3 my analysis focuses on how spectators act together in a collaborative way in a shared virtual space. The three resulting forms of spectatorship together illustrate how spectator, image, and screen become-with within this installation. As a result, the analysis shows how we can understand elements of becoming-with in different forms of spectatorship.

2.3   Copy Paste Dance

Copy Paste Dance is a multisensory interactive installation by the artistic duo Monobanda, in collaboration with ImproVive.[62] The installation is an artistic outcome of the overarching research project *Kinesics* that researches body language in virtual reality in a multiplayer game setting. The

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[61] Verhoeff, Nanna. "Research Design: The Theory/Object Dynamic," in *New Media Studies Method Reader ed.* Ann-Sophie Lehmann, Marianne van den Boomen and Bram de Rijk (Utrecht: Utrecht University, 2012). https://dspace.library.uu.nl/handle/1874/366183.
[62] ImproVive and Monobanda. *Copy Paste Dance.* 2019, interactive and performative installation.

installation engages spectators physically and emotionally by creating a feeling of being present and activates their relationship with the environment they are situated in. Therefore, I refer to these spectators as users in the nexts paragraphs, foregrounding their active role in the installation.[63]

By virtual reality technology, users are immersed in a virtual stage that responds to both the users' movement in real time. Users are both equipped with a Oculus Quest or HTC Vive VR-headset and two hand controllers. The combination of these devices track and mimic the users' movements in virtual space. Their bodies are visualised by an avatar, a speculative character shaped as a dancer. The used technology enables the two users to inhabit the same virtual space. Both are able to see, hear and virtually touch each other. Moveover, the installation enables them to record their virtual movements and copy-and-paste, scale and move them within the virtual space. In this way, users can create self designed choreographies with multiple versions of themselves, create theatrical scenes, or simply play and experiment with their copied avatars. A third camera position slowly circles around the virtual stage, projecting the performance to the outside world. For a more in depth analysis, I refer to chapter 3.

Copy Paste Dance can be seen as a virtual and interactive dancing performance by the users themselves. It brings together users, virtual reality techniques and speculative images and stages different relationships between them. The interactive installation stimulates emergent or spontaneous collaboration and play as the design lacks any form of game rules. Instead, it rewards every expression or movement by the possibility to populate the space with this movement. In this way, users are invited to experiment with their virtual bodies. The specific experiences emerge from within the complex relationships that are facilitated it exists as an assemblage of relationships and from within these relationships specific experiences emerge.

Monobanda is an artistic duo of experience designers that explores the human state of play. Their focus lies on the playful interaction between the human body and interactive technology. They are based in Utrecht in the Netherlands. The artists operate on the borders between science and arts and often collaborate with research institutes, scientists, and institutions in the social domain. With their work, they fill in the gaps between art, science and education. They often start with interest in a specific topic, without any research question to explore freely the unfolding possibilities of that topic. This open form of doing artistic research gives space for experimentation. Within this experimental context, the concept of play works complementary when one can understand gaming as an open playground to experiment. This research project is in collaboration with the Dutch game studio ImproVive that is specialised in the development of multiplayer VR games.

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[63] Kaija Kaitavuori, Kaija, *The Participator in Contemporary Art*, (London; New York: I.B. Tauris, 2018), 37-39.

The data used for my analysis is formed by a video documentation of users' behaviour focusing on the embodied interaction. The documentation took place at the KABOOM Animation Festival 2019 in Utrecht and Amsterdam. Kaboom focusses on animation films and workshops for children and families. Therefore, the users of the installation were mainly children and young adults between 10 and 20 years old. The footage was shot during play by one of the artists, Niki Smit. The documentation entails nine participants, recorded over thirty minutes of play. All users were aware of the fact that they were recorded. Furthermore, I used the accountability report of the research project Kinesics that gives insights in the artistic choices, descriptions of user behaviours, different lessons that were learned during the artistic process, and evaluations based on users behaviour. The accountability report was written in the form of ten blog posts that were published on their website and social media platforms. Additionally, I used my own observations of several open conversations with the artists to understand the design process, the artistic choices and the design itself in more detail.

Chapter 3   Becoming-With in Virtual Reality

Why not walk on your head, sing with your sinuses, see through your skin, breathe with your belly?

- Gilles Deleuze and Félix Guattari, *A Thousand Plateaus*

With the operationalisation of becoming-with presented in chapter 1 and the use of the methodology presented in chapter 2, this chapter includes the analysis processes of becoming-with in the interactive installation *Copy Paste Dance*. The focus in this case study analysis lies on the different forms of spectatorship that are set up through intra-actions between text, screen and spectators. My aim is to point out three forms of spectatorship, based on the concepts *embodiment, movement* and *collaboration* that can characterise processes of becoming-with.

The interactive installation incorporates VR technology that creates an immersive experience for the spectators using this technology. Only when using the VR headset and two hand controllers they can enter the three dimensional virtual space. The offered technology does not only divide the physical from the virtual, but it also results in two forms of spectators: one or two embodied, active and participatory spectators in virtual reality (hereafter mentioned as 'users' as they use the technology that separates them from other types of spectators), and one or multiple passive spectators that watch the spectacle from the sidelines (hereafter mentioned as 'audience'). The types of spectators can change from one to the other: a member of the audience can become one of the users acting in the installation and vice versa. The image or world that is presented to both users as the audience is speculative; it is an imaginary world designed by the artists. The body of the users is represented by a speculative avatar.

In paragraph 3.1 I focus on different layers of immersive and embodied experiences that are established in the installation. In this analysis, I focus on the presence of the individual user and the presence of multiple avatars. Paragraph 3.2 is an analysis of how users move within the installation. In paragraph 3.3 I focus on co-operative activities that unfold when two users are working together.

3.1   Virtual Togetherness

When entering the scene, the users become immersed into the virtual and interactive 360 grades environment by using a headset and two hand controllers. By placing the headset over their faces and holding the controllers in their hands, users are immersed into the virtual environment that establishes an embodied form of spectatorship. There are two headsets and two pairs of controllers available so that one or two users can participate at the same time. In this virtual space, embodiment is represented by one or two avatars that follow the users' movements in VR. In this section I show

how an embodied form of spectatorship is constructed through more-than-human intra-actions that are staged in the installation.

3.1.1 The Presence of the Body in VR

As I mentioned in my theoretical framework, we experience the world through intra-actions between bodies and the environment. In this VR installation, the triangular relationship between technology, speculative images and users that are staged by dramaturgical strategies, focus on the experience of embodiment. This established embodied experience can be seen as the raison d'etre of VR experiences. The simulation of sensory input into the virtual environment, such as visual and tactile information, creates an immersive and embodied experience in which the user is partly cut off from the physical world. Note that a fully immersive experience is not achieved as the installation does not interfere with all human senses, such as auditory information. Thus, the existing connections to the physical world such as the unmediated auditory sense avoids a full body immersive experience.
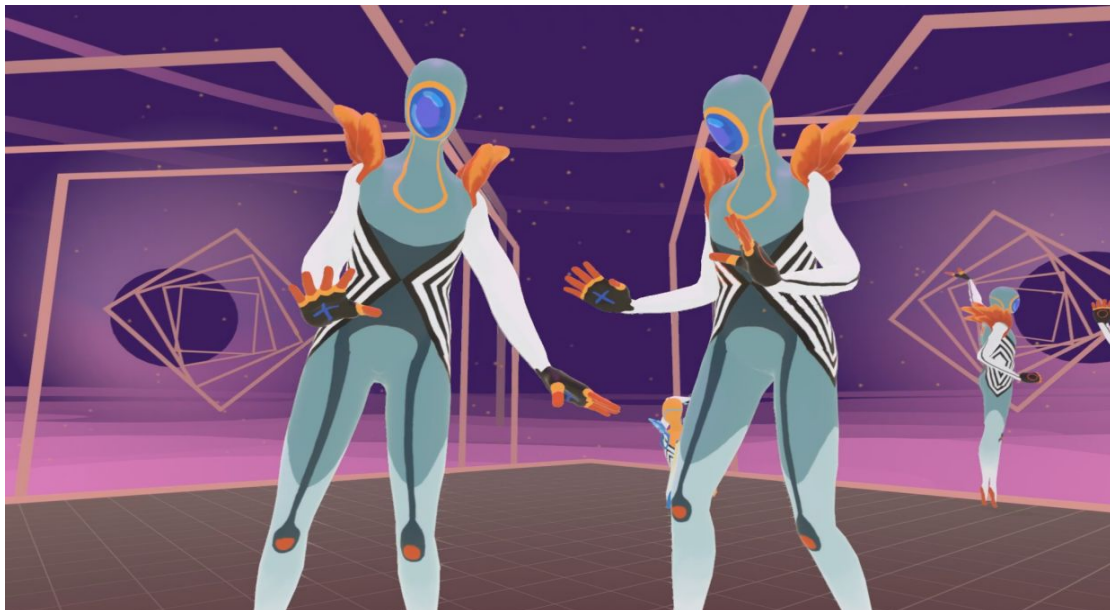

Figure 2: Three representations of the same user in *Copy Paste Dance*. The user is looking at the virtual representation of its hands but at the same time watches itself from a third eye perspective, looking at its hands from a distance.

However, the experience of immersion and feeling bodily present is still achieved. Real time movements of the user in the physical space are tracked by the tracking device in the headset and the controllers. Movements are represented in a responsive and virtual full body image from the eye perspective of the user. This computational image of the user's body is called an avatar, merging human and technology (for my analysis on the representation of the avatar, see paragraph 3.2.2). For example, when looking at its hands, the user sees a speculative representation of the avatar's hands instead of his or her own real hands (Figure 2). The result of this intra-action between user, technology and image is the experience of being bodily present in the virtual word and establishes an embodied form of spectatorship.

The user's ability to record, copy and paste their own bodily movements by using the hand controllers creates an extra dimension of the embodied presence in VR. In this way, the user is able to catch its own movements by recording it and the possibility to create a new avatar that replays and repeats this movement. Both users have the ability to modify the virtual environment by moving through space, placing the recorded copies of their avatar as they prefer. The presence of multiple avatars sets up new encounters and possibilities for intra-action that includes touch. In order to see this copy, the user needs to step away from the just created copy. This creates an unnatural and disturbing feeling of stepping out of your body and watching yourself from a distance without the interference of a screen. The graphical representation of oneself through the body of the avatar, a self view, is combined with a third eye perspective that observes the copied representations, establishing a reflective perspective and allows the user to recognise itself. Therefore, users found themself in between mirroring avatars of former movements and active avatars of themselves and their co-user.

The interaction between technology, spectator and speculative images create an immersive feeling of presence in a virtual world and an embodied form of spectatorship. To a certain degree, the user loses the awareness of its physical body in the physical world, created by the mediated sensory input presented to the spectators. The body becomes the controller of the virtual experience. In this way, the installation simulates how the body shapes experiences and is shaped through experience, as similar to the body acting in real life. However, to state that the spectator leaves its body 'behind' when immersed into VR is not entirely correct as the body moves in the physical and viral environment simultaneously. The user experiences two intertwined bodies at the same time: its physical body and the body of the avatar in VR. Hence, it is important to note that this feeling of presence is twofold. As the user is not immersed completely, one is still aware that it is present in the physical world as well.

3.1.2   Present Together
As I pointed out before, not only the feeling of your own virtual presence establishes an embodied and immersed form of spectatorship. The presence of the copied avatars or the avatar of the co-user is creating an extra layer of the embodied experience; a feeling of co-presence. This makes the virtual environment a shared environment. The presence of multiple bodies contributes to a haptic illusion, as presence is asynchrone. This means that users can be located close to each other in VR, but not in real life. Therefore, users can experience the feeling of touch, even if there is no physical contact in real life. The representation of another avatar that is inhabited by another user also affords the ability to interact with each other in ways that move beyond habitual communication. It is this point where the embodied form of spectatorship becomes even more interesting as virtual bodily movements become meaningful. The other user affords a third eye perspective, another semiotic lens that opens up a dialogue between both users. In this way movements become meaningful. In their accountability rapport, Monobanda explains that in their earlier multiplayer prototypes users had difficulties with

communication and reading each other's body language as both were separated from each other in this design: "We realised that we should have placed the players closer together to support communication between them".[64] Therefore, physical closeness in VR seems important as not necessary for the interpretation of body language. The tracking devices in the two hand controllers and the headset simulated both intended and unintended body movements into VR. Tiny nuances in bodily behaviour become visible and are readable for the co-user. In this way, both users can interact or even communicate through body language. In this way, the intra-action between screen, image and users affords the ability to move and interact freely and intuitively, using body language and mimicking scenes. This stresses the potential of technologies that create new affordances to use the human body in VR that would not be possible in the physical world. The results of all these bodily intra-actions in VR move beyond the experiences of the normal modes of perception.

3.1.3   Staging Embodied Spectatorship

The intra-action between screen, spectators and image creates different layers of haptic illusions and immersion, resulting in an embodied form of spectatorship. The co-presence of other bodies, such as the presence of another user plus the moving copies avatars, creates a specific situation that allows both users to interact with these bodies in new ways. In other words: the relationship between screen, image and spectator affords new possibilities for bodies to become-with. In this way, *Copy Paste Dance* lets us explore the boundaries of human bodies in relation to more-than-human bodies such as VR technology and speculative images.

3.2   The Performing Body

As mentioned in the previous section, the relationships between screen, image and spectators opens up new affordances for users to move their own bodies and to interact with each other in a way that differs from their normative ways of moving. The specific and situated intra-actions between more-than-human bodies afford users to experiment with movements represented by an avatar. Because of the established embodied spectatorship, users can move intuitively and freely. However, important in the understanding of how movement is facilitated and how users move in this installation is to look closely at the triangular relationship between users, images and technology, and how the installation itself is staged in the physical space.

3.2.1   When Moving

When entering the virtual space, the users walk on a huge three dimensional stage that is bounded by visual borders. After these borders, there is a limitless sky. There are no further instructions, narratives, rules or goals. The only objects in this space are the two avatars and their possible copies. Both users move within two spaces simultaneously, namely in the physical and virtual. The dual way

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[64] Monobanda, blogpost 7, https://monobanda.eu/blog/designing-switched-hands

in which the user moves is both influenced by the restrictions of both spaces. The way in which the installation is staged in the physical space has an enormous effect on the user's virtual experiences as it could limit the user's movements in the virtual space. In order to move freely through the virtual, the physical environment needs to be free from obstacles. Because the image of the virtual space is limitless, the physical environment will at some point interfere with the spectators freedom to move. The virtual stage is thus wider than the physical stage. If the physical space allows the users to walk further, they are able to walk from the virtual stage into the clouds, but this is not encouraged by the force of bottomless image. Besides the more intuitive way of moving through the body, spectators can also jump from one site to the other by using a button on the hand controllers. This feature only allows the spectators to transport their avatars on stage. The only way to get off stage is to walk from it, but this feels unnatural as the floor is invisible. Therefore the technique restricts bodies as well. However, there are always possibilities to play with restrictions. Being creative with these restrictions is a way to rethink the boundaries of both virtual and physical space and the role of technology in the shaping process of new experiences.

The installation itself does not provide any auditory information or sound effects as headphones are absent. This situation allows both users to hear sounds from the physical environment, including each other's voices. In this way, the physical environment influences the way users react and move in the virtual. This situation leaves room for any curatorial strategies that influence virtual experiences: the way in which the installation is staged within the physical space decides partly how users experience the installation in the virtual. For example, when the installation is surrounded by other installations that play music, the users in *Copy Paste Dance* will likely move on the rhythm of the music as well, inviting users to a specific mode of motion. Also the awareness of a plausible audience that looks at the user while participating, creates a feeling of being watched that also could influence the level of feeling comfortable and the way users move.

3.2.2   On A Virtual Stage
One of the lessons Monobanda learned from the playtests with *Copy Paste Dance* that relates to the open character of the installation:

> Instead of forcing a specific player's behaviour by rules, we gave players the opportunity to experiment. We learnt that it is important to put trust into the players and their own inventiveness. Instead of forcing them to do what you want them to do, we should create situations that fluently reward a multitude and variety of actions.[65]

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[65] "Kinesics: Making Copy Paste Dance, " Blog, Monobanda, last modified Januari 15, 2021, https://monobanda.eu/blog/kinesics -making-copy-paste-dance.

In this way, users were awarded for every movement, or as Monobanda formulates users are "reward the act of doing instead of only rewarding success".[66] No action is right or wrong. Users are only experiencing the joyful effect of playing with their body in VR. The open form of installation invites users to experiment within spaces and the bodies that are in there. This led to an endless range of possible movements and interactions. Some users created their own game and created different game rules (see paragraph 3.3). In other moments, co-users 'lost' each other in the multiple copied avatars. They found each other back again by waving intuitively at each other, as one would do when losing someone in a crowd. Others explored virtual closeness by trying to touch the co-users avatar or their own copies. This led to different forms of emergent form of play with unexpected outcomes and sceneries. For example, users that were not physically close to each other in reality, could touch or hold each other in VR. Through illusion of touch, users used their copied avatars to build tunnels, or locked each other up in a cage (figures 3.1 and 3.2).

Figure 3.1: Two users that are not physically near are capturing another avatar through the illusion of touch.

Figure 3.2: The avatar is catched in a cage made by multiple avatars touching each other.

However, the space is not as open as one might initially think. The stage encourages or forces a performance. Or in other words: the stage performs. The stage automatically puts the users in the spotlight. The virtual space is therefore not only a space to walk around in but a space to perform in. It becomes a participatory art form that gives users the freedom to perform whatever they want. Dancing was one of the most common user activities (Figure 4.1 and 4.2). Others build a theatrical scene in which their copies functioned as objects or as their opponent. By mobilising the stage together, users become performers and co-creators. Staging the spectators in this way creates more than only a mobile form of spectatorship that enables users to move intuitively. It creates a performing form of spectatorship as it demands a performance.

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[66] Monobanda " Making Copy Paste Dance".

Figure 4.1: A dancing user of *Copy Paste Dance*   Figure 4.2: The representation of the user's dance on screen

3.2.3   As A Dancing Avatar

The way in which the avatar is shaped mediates both users experience themselves and the other. When entering the virtual scene, the user is not only playing its own role but also a new role that is mediated in the interactive installation. In this way, the image of the avatar has an important impact on how the user and its role is represented. Therefore, the visual design of the avatar is not only an artistic expression, but the new role represents the design of the avatar. The avatar is visualised as an elegant and flexible body with tipping toes that refers to a dancer. The way the avatar moves, stimulates specific movements by the users, especially dance movements. In this way, the avatar implies a dancing body and contributes to the performing form of spectatorship. Note that the avatar has no references to gendered bodies. In this way, users of any gender could feel addressed as gender was eliminated from the design.

3.2.4   Staging Performative Spectatorship

The relationship between screen, spectator and image allows users to inhabit a performative space with multiple performative bodies, creating a performative form of spectatorship. The image of the virtual space and the image of virtual bodies invite users to perform. Therefore, the images are not only artistic expressions but also invite spectators to specific performative behaviour. Moreover, the way in which the installation is situated in the physical space has an important influence in the way users behave. The situatedness of the installation in the physical space and the presence of possible audiences that are watching the performance influences how users move as well. Even if users feel themselves embodied and present in the virtual environment, sensible information from the physical environment makes users aware of their twofold presence. The users might find themselves between the two spaces that users inhabit simultaneously. The physical stage is more restricted because of walls or other objects, in contrast to the endless virtual space. Also technology in a way restricts motion, but the open playfield allows creativity for users to find those boundaries and play with it. The design awards every movement or any creative expression. In this way, users rethink the boundaries of technology, the image and their own human body.

3.3   Performing Together

The design of the interactive installation contributes to an open playground as the interaction lacks any game rules or goals. Therefore, users can experiment with their body freely through interaction with image and screen. Even stronger put: the interactive installation foregrounds the relationality between users, technology and image. Users showed many movements and activities that show elements of collaboration that include collaboration with the co-user, and more-than-human actors.

3.3.1   Open Design Stimulates Emergent Collaborations

During playtests with earlier prototypes that worked towards the development of *Copy Paste Dance*, Monobanda realised that the driving force behind emergent play and collaboration was to be both present in the same open space:

> During playtesting with children, we saw that some of them liked the lobby of the game more than the actual game! The lobby was just this empty room where you wait together until you are both ready to start the game. We saw a lot of emergent play happen between players in this empty room. Then, when they started the game, they were both put in their own maze, and were separated from the biggest driver of play; each other. We saw attention dwindle quickly.[67]

As a result, they decided to design the installation of *Copy Paste Dance* that facilitated physical closeness of bodies in VR:

> Players need to be guided in their actions in order for a game designer to facilitate the intended playful state. But in our search to create totally novel situations that only VR could offer, we strayed too far from a basic premise that already works so well in real life: physical closeness and a wide spectrum of expression. (...) So, we decided to go back to the source - two humans close to each other in a situation that emphasises every movement.[68]

Both quotes illustrate how the artists realised that physical closeness in VR is key in facilitating bodily interaction between the users. As I pointed out before, the co-presence of users makes the virtual environment a shared space in which users can experiment and perform together. Some users created their own game together in a spontaneous manner. For example, users challenged each other to play hide and seek by creating the maximum amount of copied bodies to hide behind it. Their own

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[67] "Kinesics: Designing Switched Hands," Blog, Monobanda, last modified Januari 15, 2021, https://monobanda.eu/blog /designing-switched-hands.

[68] "Kinesics: The 'Aha' Moment at the End,"Blog. Monobanda, last modified Januari 15, 2021, https://monobanda.eu/ blog/the-aha-moment-at-the-end

constructed goal was to find the hiding user between copied avatars. Another cooperative performance was to move in sync with all avatars that resulted in a specific dance or a wave. In an earlier prototype that experimented with an open virtual environment as well, users were hugging each other in VR and showing physical closeness in VR, while they were standing meters away in the physical world (figure 5). When choreographing together and incorporating this physical closeness in VR, collaborative movements become a co-creative and shared performance. It shows how users can become intimate with their own and other avatars. Moreover, as body language comes into play, establishing a communicative form of expression that is interpreted shows how embodiment and movement become interactive and relational. Through collaboration, the dance or performance is a collaborative and social outcome.

Figure 5: Users are hugging each other in VR through a collaborative and emerging form of play.

3.3.2   Staging Co-Creative Spectatorship

Note that these collaborations are not only collaborations between humans but also includes collaborations between more-than-human actors. The intra-action between users, image and technology shape and reshape their perception and activity by interfering with it. In this relationship, both the human and other than human matter act in an equal way as they both have an equal power for refiguration. Through intra-action user, screen and image are co-constructive; they evolve collaboratively. Therefore, it is not only about co-presence or physical closeness in VR. It is about how different relationships between users, technology and image are being staged within the interactive installation and how this affords users to experience and act. These experiences are meaningful in the way we discover our body in other environments than estrange us from daily experiences. It shows how we are in relation to technology, how it shapes us. On our account, through our movements and the relationship with technology we form the image of ourselves in VR. But as we have seen in the

former paragraph the image shapes us and our movements as well. Bodies, images and technologies are enacting with each other, shaping and reshaping, providing feedback on the evolving images we see and transforming them again by action. All active actors are in collaboration in the creation of experience. It is this co-constructive form of spectatorship in which users, image and screen co-create a performance and each other. Or in other words: this installation shows how the staged relationships between more-than-human actors become together.

Chapter 4   An Intra-Active Dispositif

In conclusion, the concept-driven dispositif analysis applied in this thesis shows how the situated intra-actions between screen, image, and user(s) in *Copy Paste Dance* create an embodied, performative and co-creative form of spectatorship. The installation invites multiple, moving, participatory and performative human bodies into a virtual and responsive environment, facilitating multiple intra-actions between more-than-human actors. The open character of the installation allows users to experiment with their body in infinite possibilities and opens up new possibilities for more-than-human collaboration and creation. The installation accentuates the embodied presence of both users in speculative environments by translating the users' movements into VR, allowing an intuitive form of movement. This intuitive motions in VR shows how users perceive, think, and move with their bodies in environments that are different from the normative world. The combination of techniques and images create new affordances for the body to move and interact with its environment, creating different bodily experiences that go beyond normative experiences. Moreover, it shows how the interactive installation lets users move and collaborate in new ways. The staged more-than-human relationships show how more-than-human collaborate and can be seen as both co-creators of this virtual experience. This open form of intra-action in which players are encouraged to interact and to engage with co-users and their avatars by the combination of technologies and responsive images can be seen as "a continual process of becoming".[69] The VR techniques illustrate in this installation how the relationship between technology and user can become a potential for creating new embodied experiences that could decentralise the human and move towards another understanding of how we are entangled with non-human actors such as technology.

Copy Paste Dance is unique in the way it is able to focus on tiny nuances in bodily representation. This results in intuitive movements of bodies in digital and virtual interaction. Previously, these forms of body language and the representation of the human body was and remains often missing in online games and communication tools that are largely dominated by words. Therefore, *Copy Paste Dance* and the overarching research project *Kinesics* do not only question the connection between body and perception, they also critique the dominant role of spoken or written language in meaning making, especially in the digital domains that are becoming more and more important now that social distancing became a new standard in our daily lives.

The interactive installation also offers specific insights into how we use our body in VR. It does only touch upon the question of what it means to move our body in multiple realities simultaneously, it

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[69] Sandy Appleöff Lyons and Lisa Brown Jaloza, "More Human than Non/Human: Posthumanism, Embodied Cognition, and Video Games as Affective Experience" (paper presented at the Philosophy of Computer Games Conference, Malta 2016), 11. http://pocg2016.institutedigitalgames.com/site/assets/files/1015/appleoff_lyons_jaloza_-_more_human_than_nonhuman-1. pdf.

also questions our understanding of the relationship between these experiences and our body or identity. It deepens our understanding of how we experience ourselves and our body in relation with the environment we are situated in. This installation thus provides a better understanding of the influence of technology on our human experience by exploring these more-than-human relationships in collaborative, explorative and playful ways. In this way, *Copy Paste Dance* decentralises human agency by focusing on the relationality between more-than-human actors. The imaginary, speculative world can be seen as a living lab in which users can move freely and intuitively in virtual environments by the intra-action with screen and image. It foregrounds new contexts that amplify the fundamentally relational process of embodiment and more-than-human relationships. In this way, virtual reality opens up imaginary ways to expand the understanding of what we are, instead of confirming the culturally determined ideas of what we are. Therefore, installations such as *Copy Paste Dance* are key in understanding ourselves in digital worlds that might become reality in the future.

However, this installation only gives specific insight into these questions as the relationships in the installation are situated. This calls for a very specific reading of becoming-with as this thesis provides. Combined with other examples and studied materials, we can understand these relationships in more depth. Every study would deepen our understanding in how we become-with in digital worlds. As I argue in my theoretical framework, very little is known about the human body immersed in VR. It is still unclear how it feels to be inside the body of an avatar or to feel completely immersed in virtual realities for long periods of time. Therefore, this specific study could be complemented by other case studies of interactive art that foreground more-than-human intra-actions. As a critical note, the studied materials in this thesis were very limited, partly due to the Covid-19 pandemic and the subsequent lockdowns that made it impossible to study more users participating in this installation. The thirty minutes of video material showed interesting and meaningful user behaviour, however this is only a fraction of the possible behavior that could emerge. Furthermore, the users in this case study were mostly young children and young adults. Only one adult participated in *Copy Paste Dance.* Moreover, there were only small differences in cultural backgrounds of the participants. Most of them were Dutch, only one participant had another European cultural background. User behaviour, the manner of movement, and experiences could differ when the participants were more diverse.

The role of arts in understanding more-than-human bodies in experience and perception is very important as the arts allow new potentials and ways of thinking. *Copy Paste Dance* shows us how we can think differently about our body, perception and meaning through intra-action with more-than-human actors. Designs can acknowledge more-than-human agency and how we become-with the more-than-human together, critiquing Anthropocentric thinking. Therefore, the role of artists such as Monobanda are of great value to society. Both this thesis and this specific case study slightly broadened our understanding of more-than-human relationships. The exploration of the possibilities of *Copy Paste Dance* could be expanded by more studied materials and diverse

participants. The overall study of more-than-human relationships needs other interactive arts and artistic research as every case study situates other intra-actions. For further studies, I suggest that they incorporate cultural differences and other situated more-than-human intra-action. More explorations of human-technology relationships are necessary to expand our knowledge of ourselves and the world around us.

Bibliography

Agamben, Giorgio. *What is an Apparatus? And Other Essays.* Translated by David Kishik and Stefan Pedatella. Stanford: Stanford University Press, 2009. https://soundenvironments.files.wordpress.com/2011/11/agamben-what-is-and-apparatus.pdf.

Appleöff Lyons, Sandy and Lisa Brown Jaloza, "More Human than Non/Human: Posthumanism, Embodied Cognition, and Video Games as Affective Experience." Paper presented at the Philosophy of Computer Games Conference, Malta 2016. http://pocg2016.institutedigitalgames.com/site/assets/files/1015/appleoff_lyons_jaloza_-_more_human_than_nonhuman-1.pdf.

Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, N.C.: Duke University Press, 2007.

Barad, Karen. "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter." *Signs Journal of Women in Culture and Society* 28, no. 3 (Spring 2003): 801 -831.

Bleeker, Maaike. "What Do Performances Do to Spectators?." *Thinking Through Theatre and Performance,* edited by Maaike Bleeker, Adrian Kear, Joe Kelleher en Heike Roms, 33-46. Londen and New York: Bloomsbury Publishing PLC, 2019.

Bleeker, Maaike, Jon Foley Sherman, and Eirini Nedelkopoulou. *Performance and Phenomenology: Traditions and Transformation*. New York and London: Routledge Taylor & Francis Group, 2015. https://doi-org.proxy.library.uu.nl/10.4324/9781315752365.

Carman, Taylor. *Merleau-Ponty.* London: Routledge Philosophers, 2019. https://doi-org.proxy.library.uu.nl/10.4324/9781315537542.

Deleuze, Gilles and Félix Guattari. *A Thousand Plateaus: Capitalism And Schizophrenia*. Translated by Brian Massumi. Minneapolis and London: University of Minnesota Press, 1987.

Dolphijn, Rick. and Tuin, Iris van der. *New Materialism: Interviews & Cartographies*. Ann Arbor: Open humanities press, 2012. http://openhumanitiespress.org/books/download/Dolphijn-van-der-Tuin_2013_New-Materialism.pdf.

García Canclini, Néstor. *Art Beyond Itself: Anthropology for A Society Without A Storyline.* Translated by David Frye. Durham and London: Duke University Press, 2014.

Gustafsson, Martin and Richard Sørli. *The Philosophy of J. L. Austin.* Oxford and New York: Oxford University Press 2011.

Haraway, Donna. "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s."*Socialist Review* 80 (1985): 65–108.

Haraway, Donna. S*taying with the Trouble: Making Kin in the Chthulucene.* Durham and London: Duke University Press, 2016.

Haraway, Donna. *When Species Meet.* London and Minneapolis: University of Minnesota Press, 2008.

ImproVive and Monobanda. *Copy Paste Dance.* Interactive and performative installation, 2019.

Kaitavuori, Kaija. *The Participator in Contemporary Art*. London and New York: I.B. Tauris, 2018.

Kessler, Frank. "Notes on Dispositif." Utrecht: Universiteit Utrecht, 2007. www.hum.uu.nl/medewerkers/f.e.kessler/Dispositif Notes11-2007.pdf.

Kozel, Suzan. "Process Phenomenologies." *Performance and Phenomenology: Traditions and Transformations* edited by Maaike Bleeker, Jon Foley Sherman, and Eirini Nedelkopoulou, 54-74. New York: Routledge Taylor & Francis, 2015.

Manning, Erin and Brian Massumi, *Thought in the Act: Passages in the Ecology of Experience*. Minneapolis: University of Minnesota Press, 2014. https://www.jstor.org/stable/10.5749/j.ctt6wr79f.

Massie, Pascal. "Diodorus Cronus And The Logic Of Time." *The Review of Metaphysics* 70, no. 2 (2016): 279-309. https://link.gale.com/apps/doc/A540924299/ITOF?u=utrecht&sid=ITOF&xid=b769ad4d.

Massumi, Brian. *Parables for the Virtual: Movement, Affect, Sensation.* Durham: Duke University Press, 2002.

Massumi, Brian. *Semblance and Event: Activist Philosophy and the Occurrent Arts*. Cambridge: MIT Press, 2011.

Merleau-Ponty, Maurice. *Phenomenology of Perception.* Translated by Colin Smith. London and New York: Routledge & Kegan Paul, 1962. https://voidnetwork.gr/wp-content/uploads/2016/09/Phenomenology-of-Perception-by-Maurice-Merleau-Ponty.pdf.

Monobanda. "Kinesics: Designing Switched Hands." Blog. Last modified Januari 15, 2021. https://monobanda.eu/blog/designing-switched-hands.

Monobanda. "Kinesics: Making Copy Paste Dance." Blog. Last modified Januari 15, 2021. https://monobanda.eu/blog/kinesics-making-copy-paste-dance.

Monobanda. "Kinesics: The 'Aha' Moment at the End." Blog. Last modified Januari 15, 2021. https://monobanda.eu/blog/the-aha-moment-at-the-end.

Morie, Jacquelyn Ford. "Performing in (Virtual) Spaces: Embodiment and Being in Virtual Environments." *International Journal of Performance Arts and Digital Media* 3, no. 2 & 3, (2007): 123–138. DOI: 10.1386/padm.3.2&3.123/1.

Munster, Anna. *Materializing New Media: Embodiment in Information Aesthetics*. New Hampshire: Dartmouth College Press, 2006. https://ebookcentral.proquest.com/lib/uunl/detail.action?docID=1085079.

Raffnsøe, Sverre, Marius Gudmand-Høyer and Morten S. Thaning, "Foucault's Dispositive: The Perspicacity of Dispositive Analytics in Organizational Research." *Organization* 23, no. 2, 2016: 272–298. DOI: 10.1177/1350508414549885.

Stern, Nathaniel. "The Implicit Body as Performance: Analyzing Interactive Art." *Leonardo* 44, no. 3 (June 2011): 233-238. muse.jhu.edu/article/431865.

Stern, Nathaniel. *Interactive Art and Embodiment: The Implicit Body as Performance*. UK: Gylphi Limited, 2013.

Verhoeff, Nanna. "Research Design: The Theory/Object Dynamic." In *New Media Studies Method Reader,* edited by Ann-Sophie Lehmann, Marianne van den Boomen and Bram de Rijk. Utrecht: Utrecht University, 2012. https://dspace.library.uu.nl/handle/1874/366183.

Verhoeff, Nanna and Karin van Es, "Dispositif Analysis: How to do a Concept-Driven Dispositif Analysis." Utrecht: Utrecht University, 2018.

Vogiazou, Yanna. *Design for Emergence: Collaborative Social Play with Online and Location-Based Media.* IOS Press, 2007. https://ebookcentral.proquest.com/lib/uunl/detail.action?docID= 286996.