

Unfolding Microgravity and the Interplay Between Awe, Wonder, Curiosity, and Humility in Artistic Research

Esther Wrobel

ABSTRACT

This article discusses how the term ‘curiosity’ emerged as a leading element in the development of the action performance research project *Microgravity*. The focus is on the effect of curiosity as an activator of movement in a participatory performance in which participants are invited to explore new bodily conditions for the first time (in this case, reduced gravity through a vertical dance technique). I begin with an account of what vertical dance is, its origin, and my personal experience as a vertical dancer. Through the connection between vertical dance and space exploration and an encounter with the terms ‘awe’ and ‘wonder’ (in connection to space travel), I move on to pedagogical and creative decisions regarding ways to create a participatory performance that, due to its complete physical involvement of participants, I now refer to as an ‘action performance’. I will elaborate on the creative partners who joined the research and the interplay of curiosity and humility in relation to the terms ‘awe’ and ‘wonder’ based on the book *A Neuropsychology of Awe and Wonder* (Gallagher et al. 2015), which was the initial inspiration for the use of these terms and the establishment of the imaginary universe of *Microgravity*. I will also employ my own interpretation of these terms as a researcher, drawing on first-hand participatory experiments and data gathered from participants between 2019 and 2022.

RESUMÉ

Denne artikel afdækker hvordan begrebet ‘nysgerrighed’ opstod som et ledende element i udviklingen af den deltagerinddragende research *Microgravity*. Fokus er på effekten af nysgerrighed som igangsættende for bevægelse. Deltagerne inviteres til at udforske nye kropslige forudsætninger for første gang i mødet med følelsen af nedsat tyngdekraft, fremkaldt ved hjælp af teknikker fra vertikal dans. Artiklens første del afdækker hvad vertikal dans er, dens oprindelse, samt mine personlige oplevelser som vertikal danser. Herefter beskrives hvordan forbindelsen mellem vertikal dans og rumudforskning, samt mødet med begreberne ærefrygt og undren (i forbindelse med rumrejse) bidrager til de pædagogiske og kreative beslutninger i tilblivelsen af forestillingen, som jeg grundet deltagerens komplette fysiske involvering refererer til som en action performance. Jeg vil uddybe hvilke kreative partnere, der deltog i udforskningen af *Microgravity* som blevet undervejs til en tværkunstneriske projekt. Til sidst vil jeg uddybe sammenhængen mellem nysgerrighed og ydmyghed i forhold til begreberne ‘ærefrygt’ og ‘undren’, baseret på *A Neuropsychology of Awe and Wonder* (Gallagher et. al. 2015), som var den indledende inspiration til at bruge disse begreber og etablere det forestillede univers *Microgravity*. Jeg vil også involvere min egen tolkning af disse begreber baseret på mine involverende eksperimenter og data indsamlet fra deltagere mellem 2019-22.

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Unfolding Microgravity and the interplay between awe, care in artistic research

My intention in this article is to explore how the term 'curiosity' emerged as a leading element in the development of the action performance research project Microgravity. The focus is on the effect of curiosity as an activator of movement in a participatory performance in which participants are invited to explore new bodily conditions for the first time

(reduced gravity through a vertical dance technique). By sharing how the action performance came to fruition, I will elaborate on the interplay of curiosity and humility in relation to the terms 'awe' and 'wonder' based on the book *A Neuropenomenology of Awe and Wonder* (Gallagher et al. 2015), which was the initial inspiration for the use of these terms and the establishment of the imaginary universe of

Figure 1. Image: Esther Wrobel in 'Scenography of Moon Spot'



Microgravity. I will also employ my own interpretation of these terms as a researcher, drawing on first-hand participatory experiments and data gathered from participants between 2019–2022.

From Vertical Dance Towards Participation

At the outset of this artistic research project, during my Master of Fine Arts studies at the Danish National School of Performing Arts, I focused on finding a way of sharing my personal experience as a vertical dancer. The scholar and artist Kate Lawrence described vertical dance in the following manner: 'It is a hybrid form that appropriates equipment designed to be used by rock climbers and/or industrial access workers and uses it to suspend dancers against walls. These walls are then used as dance floors, which gives rise to new physical techniques and perceptions of space for dancers' (Lawrence 2017, 11). In the years I have been practicing and performing, I have noticed that, while dancing, I get a magical feeling that I am somewhere else – somewhere entirely different from our regular world. Due to the spatial relation to gravity, I feel that I am expanding from the inside and the outside. In vertical dance, the main pressure and release point of the body shifts from the feet to the centre of the body, the pelvis, where the harness is attached to the rope. This radically changes the conditions in which the body meets its external surroundings and requires a great deal of core muscular strength. Here is a glimpse of how it can feel:

From my body archive:² *I take a giant step. I am in the air for several seconds, and I land just off the side of the building on a thick, glass panel. I take a long lunge to the end of my pendulum, grab hold of a gap between the windows with the edges of my fingers, and pause. I free one hand from the cold, flat glass, place it closer to the middle of my body, and press a little while also pulling with the hand that is left on the panel. My legs and pelvis*



Figure 2. Photo of Esther Wrobel taken by Dave Navndrup Black during the creation of *Breathing From The Ground Up* by Se Byen Vertikalt (artists: Mette Møller Overgaard, David Navndrup Black, and Esther Wrobel) Struer Tracks Sound Biennial 2021 in Struer Harbour.

can float away from the glass wall; now; most of my body is hovering over a concrete place in a kind of handstand. A few children below are circling on bicycles, like a tiny flock of birds in reverse order. They are up; am I down? My legs separate and move in a slow walking motion in the air. I listen to city sounds, but mostly I hear and feel the air. I am in the centre of the city in the middle of the air. I am hanging around, like everyone else in town, but the place I am in is a totally different space with different rules. I am in a harness on the side of a building, and here, I can breathe. Here, I swim like a fish (Wrobel, 2018).

How can one reorganise the internal connection between the brain and body to help stir movement when the conditions of gravity are drastically changed? It has been my experience that it is possible to overcome the physical challenges and strain of the horizontal position if one believes one is actually standing on the wall rather than hanging on a rope. Imagining an alternative reality allows for fantastical physical exploration to occur, and one can find oneself able to move with new superpowers, such as flying, floating, gliding, and soaring. In other words, vertical dance requires the ability to say 'yes' to an alternative reality.



Figure 3. Photo of Esther Wrobel taken during a workshop with Lindsey Butcher at the La Boule Aerial Dance Festival, La Boule, 2011

Pedagogical Considerations

How, in a short time, can a participant feel comfortable and safe enough to learn the basic principles of moving in a harness and, moreover, explore and even play in altered gravity? What I needed to construct boiled down to two main elements: the physical and the imaginative. I had to facilitate the technical conditions so that the participants would not rely on previous rigorous physical training and find an imaginative 'other place' they could say 'yes' to.

On the cover of the book *A Neurophenomenology of Awe and Wonder* (Gallagher et al. 2015, hereafter ANPOA&W), there is a picture of the face of an astronaut in a spacesuit. His eyes are open wide, and behind him is nothing but space. I was intrigued by the theme of space travel and was immediately drawn to

the words 'awe' and 'wonder'. In the sense that they motivated feelings that could be put into action, these terms, I felt, related to my sentiments about vertical dance. ANPOA&W is introduced as follows: 'This book is about the first scientific study of these experiences (Awe and Wonder) in the context of space travel. The aim of this study was to explore what traditionally might be called the inner space of experience while traveling in outer space' (Gallagher et al. 2015, 3). The researchers explain that the setting of outer space is vital for an objective meeting of inner and outer observations. It is my understanding that the context of space travel, in relation to awe and wonder, supports genuine feelings and experiences in an objectively real, magnificent situation. 'Space avoids the temptation to either reduce awe and wonder to mundane experience or explain it completely by reference to some internal processes caused by external stimuli' (Gallagher et al. 2015, 3).

In her lecture 'The Routes of Vertical Dance', Wanda Moretti discussed how vertical dance emerged in the 1970s in the aftermath of the first moon landing, which forever changed how we look at ourselves and the



Figure 4. Cover photo: *A Neurophenomenology of Awe and Wonder. Towards a Non-Reductionist Cognitive Science*

planet we inhabit (Moretti 2018). Discussing the artistic manifestation of vertical dance in the promotional material for her film *Moon and Movement*, she noted that a unique ‘vision of the world took shape’ (Moretti 2020). As an effect of competing superpowers during the Cold War, the training that NASA astronauts and Russian cosmonauts underwent, such as horizontal suspension (which is similar to vertical dance) and parabolic flights³ was on public display as a means of displaying strength. These practices captured the attention of movement artists around the world. A famous example is a work by Trisha Brown from 1970, ‘Man Walking on the Side of a Building.’⁴

Inspired by the history of vertical dance in Moretti’s research and the inspiring terms ‘awe’ and ‘wonder’ in the context of space travel in *ANPOAGW*, I began to see space as a most desirable backdrop to the *other place* I was searching for: the imaginary universe for the participatory experiment.

In an experiment described in *ANPOAGW*, the team created a simulation of a room where astronauts reside on the International Space Station (ISS) while orbiting the earth:

The design of Experiment 1...tried to leverage the affective aspects of the narrative, leaning on a framing narrative to support the sense of immersion...Research assistants explained that there would be a “launch” and participants...were whisked into a mixed-reality space, made to resemble a space capsule, with portholes (served by LCD screens) that would provide digitally-generated views of the earth from space. (Gallagher et al. 2015, 69)

This neurophenomenological experiment combined both cognition and experience; the participants were fitted with physiological sensors (An electroencephalogram (EEG), electrocardiogram (ECG) and Functional near-infrared spectroscopy

(fNIR) and required to fill in questionnaires and sit for an interview. This resulted in an emphatic ‘yes’ to the question, can experiences of awe and wonder be elicited in a simulated environment?

The layout and scientific rigour of the experiment discussed in *ANPOAGW* was inspiring, reassuring, and well-structured. It offered a basis for both form and content. I therefore decided to conduct an experiment inspired by *ANPOAGW* to evoke sensations of awe and wonder through an embodied experience of altered gravity in the space travel context. I planned a one-on-one ‘launch’ simulation titled *Moon Spot*, treating participants as if they were astronauts on a mission to Earth’s moon. I arrived at a technical solution we call ‘The System.’⁵ It involves a counterweight between a side pick harness and a deadweight that creates a seesaw effect, which allows the person to have contact with a floor instead of a wall and yet retain the physical agency to jump or float with a relatively low gravity effect – similar to walking on the moon. ‘The System’s’ technical apparatus and the moon as an exciting destination together offered the imaginary other place I sought.

Camille Butingsrud reported her experience on her website (<https://camillebutingsrud.weebly.com/news.html>) after her participation in 2021: ‘I felt I could play with these new bodily forces. What followed was a joyful and intense exploration of moving as a new body in a new space, enabled to create what felt like enormously expanded moves, finding myself upside-down or flat in the air as part of the session’. It was enjoyable and inspiring to watch and guide as each person explored different bodily experiences as part of *Moon Spot*.⁶

To gather data from participants, I used questionnaires developed in the project described in *ANPOAGW*, with alterations to fit the bodily aspects of the experiment. At the end of the original questionnaires were definitions for awe and wonder, with an addition of a third and fourth term: curiosity

and humility. These definitions were outcomes of the analysis of interviews and writings from astronauts that had spent time in orbit around Earth on the ISS. 'Our focus was on phenomenology, that is, the experiential aspects of these descriptions' (Gallagher et al. 2015, 6). The definitions are as follows:

AWE: A direct and initial experience or feeling when faced with something amazing, incomprehensible, or sublime.

WONDER: A reflective experience motivated when one is unable to put things into a familiar conceptual framework.

CURIOSITY: Wanting to know, see, experience, understand more.

HUMILITY: A sensation about one's relation to the universe or one's significance.

(Gallagher et al. 2015, 179)

After being given the definitions, participants were asked to state whether they had experienced one or several of them. I was less interested in curiosity to begin with, as my main focus was on awe, wonder and the wish to ignite them. As for humility, I decided to leave it out entirely, as I viewed it at the time as unrelated. This assumption turned out to be incorrect, as later, when *Microgravity* began to take form as a cross-disciplinary research project with more focus on space travel, the terms 'care' and 'empathy' emerged repeatedly and became prominent. When looking back at the source of humility in *ANPOAGW*, one can draw a clear connection and identify a similar quality in its essence. I will elaborate on humility later.

The questionnaires filled out by the *Moon Spot* participants showed that the one common thing they all shared was the experience of curiosity. This result carried through to the next experiment, titled *A Visit to Saturn's Moon*. In addition to 'The System', *A Visit To Saturn's Moon* included a virtual reality simulation of an ice cave on Enceladus, a small frozen moon orbiting Saturn (drawn in the program Tilt Brush,

which was recommended by Simon Lajboschitz).⁷

This simulation was co-facilitated with dance artist and climate activist Tanya Rydell Montan and influenced by conversations with animator Michelle Kranot about the term 'immersive storytelling' from VR filmmaking and thoughts on how 'far' can we go. Enceladus' mysterious potential for life made it a worthwhile destination. This was an attempt to instil additional feelings of awe and wonder, like the awe described by US astronaut Gus Grissom: 'Nowhere else can you realize so fully the majesty of our Earth and be so awed at the thought that it's only one of untold thousands of planets' (quoted in Gallagher et al. 2015, 5).

The integration of VR as an immersive tool added to the 'disappearance' of the participants. A participant's description of a highlight supports this claim: 'When I finally lifted off and jumped up and got caught by gravity, I saw a crystal in front of me and forgot about the real world completely. I was like underwater yet not, and I realised the feeling of weightlessness and began swimming around'. In *A Visit to Saturn's Moon*, we can see an integration between the visual and physical as modes of 'total' transportation to somewhere else. Yet, out of 12 participants, 6 reported experiencing awe, 5 reported wonder, and 11 reported experiencing curiosity. As the report was consistent about the presence of curiosity, I began to pay more attention. What is the difference between the terms 'awe', 'wonder', and 'curiosity' in the context of undergoing an embodied moonlike-gravity crash course? Why is curiosity the most consistent feeling of all? Could it be that, in movement, other interpretations of these terms emerge that override those presented in *ANPOAGW*?

While in *ANPOAGW*, curiosity and humility are absorbed within the concepts of awe and wonder, in *Microgravity*, the opposite process occurred, and the nature of each concept began to unfold. I realised that 'awe' had a momentary effect (a 'wow' moment) when fully embedded in a physical practice. Wonder is

also harder to relate to continuously. In the context of being immersed physically in another field of gravity, it seems that participants spend some moments thinking about how things are happening but quickly return to the situation of being in a different gravitational relationship. I began to recognise curiosity as the activator that can propel participants into motion. When it comes to movement and exploration, awe and wonder can be viewed as more passive.

I now understand curiosity as a bridge towards motion of any kind – especially in the case of learning through bodily action in new physical conditions. Once curiosity is awakened, the participant can move from curiosity towards play and the unknown (often finding joy and freedom). A similar process happened to me as a researcher. Although I initially included space travel as a background element, my own curiosity about space and space research was triggered. I could not control it. I realised how little I knew about what gravity actually is and became quite thirsty to learn

Figure 5. From the left, we see Tanya Montan Rydell in the System of Microgravity and Esther Wrobel supporting her. Photo taken by Paula Peña on November 19 during a curated residency at Åben Scene.



more about the science of space. What do we know about other planets and the universe? How would it truly feel to be an astronaut on a remote moon? This awakening toward actual space began propelling the research in a new direction.

Scale and Care: Reflections on Humility

‘The feeling that washes over you is the sense of scale of the universe. The feeling I got was one of recognition that “we are living on such a tiny island in a vast ocean”’ (Greg Chamitoff, Canadian astronaut, quoted in Gallagher et al. 2015, 5).

During a residency in 2020, we were unable to invite participants due to Covid. Instead, we focused on what in *ANPOAG&W* would be called ‘scale effects’, which are ‘changes in perspective concerning relative size – feelings of smallness in contrast to the vastness of the universe’ (Gallagher et al. 2015, 6). As a tool for addressing scale perceptions through movement, we used video and projection. We filmed ourselves moving like astronauts in ‘The System’ and projected the footage near and far within the black box. As the black floor absorbed the light, we used sheets of paper to catch the images. Holding papers up while moving the projector slowly around, small astronauts appeared and disappeared. The action of carrying an image of a tiny astronaut was a pivotal moment for the research. It triggered feelings of care, despite knowing that the images of us projected as small astronauts were not real. We felt attentive, as if we were responsible for these tiny beings, and consequently, we developed two installations dedicated to the tiny astronauts. In June 2022, we shared these installations in *Microgravity* as part of a whole room with three volunteers. When asked if they felt empathy at any point, they all referred to the ‘little spaceman’ in a similar way as one wrote: ‘When we had to catch the little spaceman, and when I held him/her, I didn’t want to lose him/her’. The feeling of care is related to the sense of scale and fragility



Figure 6. Lucia Jaén Serrano's hands carry a tiny astronaut during a residency at Åben Scene. Photo taken by Esther Wrobel on November 9, 2022

astronaut Greg Chamitoff referred to in the quote at the beginning of this section. We noticed that it was the same care we also practice when facilitating the experiences. Looking back now at the term 'humility', which I set aside in 2019, it appears in 2023 that the practice and artistic exploration of scale captured within it the term 'humility' as depicted in *ANPO&W* and led to the actions of carrying and caring. Just as the goal of wanting to produce awe and wonder activated curiosity as a motivation, so eventually did humility activate our wish to practice care.

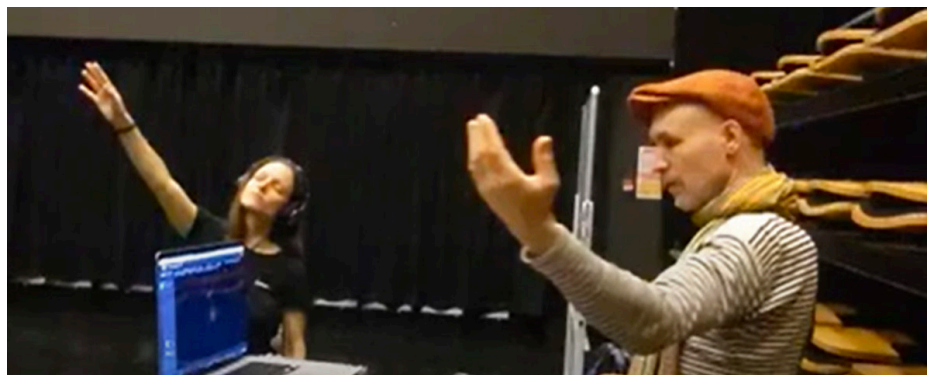
'The atmosphere is very small, very thin... It made me feel that the Earth was very fragile and unprotected...and it worried me. It worried me' (Cosmonaut Alexey Leonov from Russia, quoted in Gallagher et al. 2015, 5).

Within artistic research, there is a vital unknown element. This reminds me of what Dr. Einav Katan

Schmidt told me in a moment of distress, when I asked if it was ok that I do not know exactly where I am going: 'You have to explore the unknown', she said, 'otherwise, what's the point of research?' (Personal communication to author, April 2022). In the case of *Microgravity*, its core elements were present from the beginning: the practice of vertical dance, the wish to share through participation, the imaginary world of space travel, and the concepts, of awe, wonder, curiosity, and humility. However, their relations and hierarchy shuffled along the way, producing a new sense of their connection in a choreography that I, as a researcher, was not controlling but was rather swept into as part of it. The reorganisation of the elements happens much like that of a body suspended in a rope: a choreography of form and content, of placement in space. The research as a complete organism began to find its own internal order and inform us of what was important and needed.

Today, we define *Microgravity* as a project that aims to democratise access to spacelike experiences. We call it an action performance due to the nature of participant engagement shifting from passive to (really) active as participants become co-explorers. *Microgravity* has moved closer towards science in

Figure 7. From the left we see Lucía Jaén Serrano and Yann Coppier testing a sonic travel installation. Photo taken by Esther Wrobel at a residency at Åben Scene in June 2022.



dialogue with SpaCe,⁸ and we have also developed a VR application based on hand-painted images in collaboration with Khora and The Animation Workshop in Viborg, with support from the Danish Arts Council and VIA University College. The four pillars of meaning – awe, wonder, curiosity, and humility (reflected in action as care) – are guidelines provided to us by astronauts and cosmonauts as described in *ANPO&W* and now are pedagogical and choreographic values that reside within *Microgravity*. While curiosity is the primary motivation for moving, awe and wonder are flashes we wish to ignite. The last to join, humility, is what we wish to practice together.

Endnotes

1 Photograph taken on October 29, 2020 by Michelle Kranot at Åben Scene Godsbanen Århus.

2 In the section titled 'From my body archive', I share my own personal entries on embodied experiences associated with vertical dance.

3 Parabolic flight creates massive falls in which, for a short time, you experience weightlessness.

4 In this work, suspended performers walked horizontally down the side of New York City's buildings, radically changing how we perceive architecture in connection to the moving body. It both opened up a new type of stage and space for magic and wonder and served as a statement on socio-political order (which I will not elaborate on here but mention briefly, as it is an important component of vertical dance as a whole). Kate Lawrence described this work in her article 'Vertical Dance: A Tool for Producing New Social Spaces': 'Dancing on walls [is an activity] that releases the disruptive power of the physical body over the functional plans of architecture and celebrates a re-positioning and valorizing of embodied practices in the built environment, re-inserting nature into the urban fabric' (Lawrence 2019).

5 The system was developed initially in 2013 in a Danish Arts Council-funded research project called Systems by Esther Wrobel with riggers Karl Gaillick and Ariellah Winther at Zaccho studio in San Francisco, USA. A later adaptation was presented in 2018 with rigger Troels Fryensberg during the production of the performance Sally's Valley at Nørregaards Teater in Odense, Denmark.

6 A video of Moon Spot can be viewed at https://youtu.be/7up_laQJf_4.

7 Lajboschitz is the husband of a good friend and the chief executive officer of Khora Virtual and Augmented Reality Studio. Khora later developed a VR application for *Microgravity*.

8 Aarhus Space Center is an interdisciplinary thematic center that covers all AU space-related activities at Aarhus University.

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Video links pertaining to the artistic research project Microgravity:

- 2022 Microgravity - Cross-disciplinary research: <https://youtu.be/cdS3C6llRDo>
- 2021 Dance & Participation (MFA Thesis): Tiny Astronauts: Looking for Awe and Wonder, Finding Curiosity: <https://drive.google.com/file/d/1hvyOrY0btHXCHvkj99-8M4mEBq0pWpDI/view?usp=sharing>
- 2020 MT LAB: Part One - Tiny Astronauts: <https://youtu.be/3Sa0-vD43w8>
- 2020 MT LAB: Part Two - Paper Realities: <https://youtu.be/hdjW8QAeOd0>
- 2019 DDSKS: Moon Spot: https://youtu.be/7up_IaQJf_4
- 2019 Testing Microgravity: https://youtu.be/S0Bdf0_65gA

BIOGRAPHY

Esther Wrobel. Esther is a dance artist, vertical dancer, teacher, and artistic director of Sparrow Dance. She holds an MFA in Dance and Participation (2018/2021) from the Danish National School of Performing Arts and is a graduate of the Mathe Asher School of Performing Arts in Gaathon, Israel (2001). Esther has been based in Copenhagen since 2003 and has worked primarily

in Denmark, France, Holland, and San Francisco. Her work as an artist and teacher lives in the seam between dance and contemporary circus. In 2012, she received the Danish Arts Foundation Award for Outstanding Creativity in the Performing Arts Field.