

Virtual Creativity
Volume 12 Number 1

© 2022 Intellect Ltd Article. English language. https://doi.org/10.1386/vcr_00059_1

Received 24 April 2022; Accepted 16 July 2022

NOAH MILLER
Simon Fraser University

ALEXANDRA KITSON
Simon Fraser University

JOHN DESNOYERS-STEWART
Simon Fraser University

JIM BIZZOCCHI
Simon Fraser University

EKATERINA R. STEPANOVA
Simon Fraser University

BERNHARD E. RIECKE
Simon Fraser University

Sipping the virtual elixir: An autoethnographic close reading of *Ayahuasca Kosmik Journey*, a self-transcendent virtual experience

ABSTRACT

Self-transcendent experiences are often an integral component of ancient cultural practices that use psychedelic substances during spiritual ceremonies, such as ayahuasca ceremonies. Yet, ayahuasca contains dimethyltryptamine (DMT), which is illegal in many countries. Due to its illegality, ayahuasca experiences are scarce despite potential benefits of increased quality of life and reduced psychopathology. Virtual reality (VR) can provide a safe and legal glimpse of psychedelic experiences, such as an ayahuasca ceremony. These experiences may in turn evoke self-transcendent emotions without hallucinogenic substances, extending the power of art and technology to stimulate self-transcendence. To explore the potential, limits and experiential qualities that immersive experience design can afford for cyberdelic experiences, we conducted an autoethnographic close reading analysis of Atlas V's

KEYWORDS

virtual reality
autoethnography
close reading
self-transcendent
experiences
immersive experience
design
transformative experi-
ence design
cyberdelic

Ayahuasca Kosmik Journey. Autoethnography allowed us to study complex and personal experiences while close reading connected those experiences to the design of the artefact. This allowed us to gain insights into the connections between design and experience and critically analyse the experience. The resulting reflection unveiled prominent psychological lenses in our subjective experience, including agency, embodiment, discomfort and self-transcendent emotions. Our analysis explicates the paramount role of spatiality, the sensorium and theme with embodied interaction for the self-transcendent effects of vastness, the role of contrast in narrative transitions and how meaning is rooted in previous experiences. Our analysis unveils the potential and the limitations of immersive technology to emulate self-transcendent experiences through extending our senses and transcending the self.

1. INTRODUCTION

You're sitting, legs crossed, on a mat. It's dark, only a dim torch and the moonlight offer glimpses of the lush tropical forest that surrounds you. A shaman in front of you chants in a language you don't understand but his eyes tell of a deep wisdom. He has been on this journey many times before and you are grateful for his guidance in what lay beyond.

Your surroundings begin to shimmer and move. The images become clearer, and you find yourself surrounded by centipedes, scorpions, and tarantulas. The air feels stagnant, and you can feel the presence of swiftly moving bodies around you. Desperately, you look around for relief, but you are surrounded. Frantically, you try to shake them off and catch a fleeting glimpse of the shaman. For a brief moment, you are relieved, before being surrounded again.

It's almost too much, but you persevere and resist the urge to remove the headset.

That is a version of what many of the authors felt as we first encountered *Ayahuasca Kosmik Journey* (2020a) (from here on referred to as *Ayahuasca VR*). Our goal was to explore the possible ways virtual reality (VR) could support self-transcendent experiences and how immersive design elicits diverse qualities of cyberdelic phenomenological experience. We did so by engaging deeply with *Ayahuasca VR* as active participants. We focused on the design artefact as experienced rather than trying to understand the intentions of the designers. Once published, an artefact's effect matters more than the creators' intention. With this arms-length approach, we might make these somewhat ineffable effects more accessible for VR experience design.

Given the self-transcendent nature of actual ayahuasca ceremonies, we wanted to investigate this virtual facsimile that aimed to reproduce its effects. While recognizing the limitations, we nonetheless approached the experience with an open mind, hoping it might provide at least a partial perspective of what it might be like to have a self-transcendent experience elicited by ayahuasca. In investigating this experience, several questions arose:

1. What experiences and emotions are elicited by *Ayahuasca VR*?
2. What design elements are used to encourage self-transcendence in *Ayahuasca VR*?

3. How might one's prior experience shape this VR experience?
4. What design considerations can be gleaned from this experience?

Through this research, we explore how certain design elements can lead to experiential outcomes related to self-transcendence to inform the creation of mediated self-transcendent experiences.

2. THEORY

2.1 *Ayahuasca and self-transcendence*

Ayahuasca is a brew that contains the psychedelic compound dimethyl-tryptamine (DMT). This substance is part of a healing ceremony that has been practised for over a millennium by Indigenous peoples of the Amazon.

Across the world, spiritual tourists and researchers have noticed the unique healing and transformative aspects of ayahuasca ceremonies. Studies have shown benefits including reduced depression and psychopathology and increased quality of life (Jiménez-Garrido et al. 2020). Long-term users of ayahuasca also see an increase in self-transcendent personality traits (Bouso et al. 2012). Both its cultural significance and the scientific study of the effects of ayahuasca demonstrate its transformative and self-transcendent potential.

Self-transcendent experiences are defined by a reduction in self-centeredness and increased connectedness with the world and others (Yaden et al. 2017). These experiences exist on a spectrum of intensity and meaning from a fleeting feeling to a life-transforming moment. While peak self-transcendent experiences are rare, less intense experiences are more common and can be brought on through self-transcendent emotions. Self-transcendent emotions are those that focus our internal perspectives outside of ourselves to the world and people around us (Pizarro et al. 2021). These include elevation, compassion, admiration, gratitude, love and awe (Yaden et al. 2017). Self-transcendent emotions are associated with positive outcomes in well-being, connectedness and prosociality (Stellar et al. 2017).

Self-transcendent experiences also occur in response to threatening stimuli, as traditionally conceptualized in experiences of the sublime (Gordon 2017). When, in the presence of something greater, people may feel overwhelmed, and if they are unable to accommodate the experience, it could lead to fear. Surviving this fear gives a profound quality to the sublime, rendering it integral to the transformative capacity of the experience. These are common within psychedelic experiences and also in *Ayahuasca VR*.

2.2 *VR and self-transcendence*

The immersive nature of VR offers particularly intriguing opportunities for cyberdelic self-transcendent experiences. Rastelli et al. (2022) showed how hallucinogenic VR imagery produced with DeepDream leads to increased cognitive flexibility typically associated with psychedelics. *Isness* is a notable VR experience that was demonstrated to produce effects comparable to psychedelics (Glowacki et al. 2020). See the Cyberdelics Society (2020) for a list of more examples.

2.3 *Ayahuasca VR*

Ayahuasca VR takes the user on a virtual journey that simulates the experience of ingesting the brew. Through seventeen years of experience with ayahuasca

retreats, this experience is grounded in the personal experiences of the director, Jan Kounen, with the rituals of the Shipibo people. The VR experience aligns with first-person accounts of ayahuasca inducing rich imagery of kaleidoscopic images (Shanon 2002), snakes and ethereal beings (Der Mardersian et al. 1970). While *Ayahuasca VR* only offers a glimpse of the authentic experience, the virtual environment, nonetheless, reflects important aspects of the original and is worthy of rigorous examination on its own terms to better understand VR's capacity to produce self-transcendent experiences.

In the case of this autoethnographic close reading of *Ayahuasca VR*, we believe that understanding the real-world experience, a virtually mediated representation and the relationship between them can inform the creation of transformative virtual experiences. Our examination of the virtual artefact includes careful attention to both the subjective experience itself and the details of how the virtual experience is constructed.

3. METHODOLOGY

To capture and reflect on the subjective experience that emerges in *Ayahuasca VR*, we engaged in a collaborative autoethnography. Autoethnography is a first-person methodology that allows for close exploration of one's subjective experience and how it fits within a larger cultural context not achievable through third-person methods (Jones et al. 2016). Then, to gain insights into how the design of the VR experience might have elicited, supported or inhibited our phenomenological experiences, we engaged in close reading of the VR experience. Close readings rigorously identify and analyse the details of media artefacts (Looy and Baetens 2003). Both of our methodologies, autoethnography and close reading, engage directly with the artefact itself. We therefore make no claims about authorial intent.

4. PROCEDURE

We explored *Ayahuasca VR* as part of a larger project looking at VR experiences related to self-transcendence. The full team was composed of eight researchers with expertise in VR, transcendent experiences, experience design and media studies, six of whom authored this article.

Each researcher independently experienced *Ayahuasca VR* following the below procedure. All of the researchers experienced *Ayahuasca VR* at least once, referring to a screen recording and notes for further analysis. To ensure we captured the full depth of the experience, the lead author went through *Ayahuasca VR* over ten times.

Each researcher began by writing a disclaimer outlining their expectations, their world-view and any relevant past experiences. These written disclaimers allow us to reflexively look at our relationship to the artifact and how that might shape our experience.

Next, we each prepared for the experience through a ten-minute meditation to become more open and attentive to the experience. We started a recording of our experience and then launched the VR experience, aiming to be fully immersed in it. We explicitly refrained from analysis at this stage. Later, we engaged in autoethnographic journaling of our experience.

5. ANALYSIS

After the initial experience, we began the close reading process by rewatching the screen capture of our own experience in *Ayahuasca VR* and analysing it

through a set of evolving analytical lenses over a series of iterative discussions with the research team. We used a preliminary set of analytical lenses to focus on the design elements that helped shape the experience. Our initial analytical lenses were split into psychological and design lenses. The psychological lenses consisted of *embodiment, cognitive states, connection, self-transcendence* and *emotions*. The design lenses were *narrative, content and theme, interactive design, interface and sensorium* and *spatiality*. By reviewing the notes on the phenomenological experience along with the initial close reading of the design, we made connections between the phenomenological experience and design elements. This stage was iterated over a few days.

Afterwards, we met online in small groups to conduct open probing sessions to further understand our experiences. After the probing sessions, the whole team met online to discuss our observations, note shared findings and revise the analytical framework. After the preliminary findings were discussed, the lead author continued to re-experience *Ayahuasca VR*, reassessing and identifying design elements. Individually and in group meetings, we all continued our analysis and discussion for several months. Over the course of our analysis, our psychological lenses evolved to better capture the significant experiential elements captured by the autoethnographic process. For example, while we began with a lens for connection, we found that agency was a much more significant lens for understanding this experience. Our final psychological lenses were *Agency, Embodiment, Discomfort, Meaning and Metaphor* and *Self-Transcendent Emotions*. The design lenses remained unchanged.

6. DESCRIPTION OF EXPERIENCE

Below we present a description of the VR experience based on the conglomeration of the authors' experiences for your reference. However, we recommend you try the experience yourself, watch the playthrough video (Atlas V 2020b) or view the trailer before you continue reading to get a more complete understanding of our findings.

You sit facing a shaman sitting cross-legged on a mat in the middle of the jungle [Figure 1]. Moonlight pierces through trees and vines. A voice speaks about going to the other side and meeting plant spirits. As you try to understand, your vision starts to fog. Your world shimmers and



Figure 1: The shaman who guides your journey. Image courtesy of Atlas V © 2020.

moves. As the visions clear, you realise you are surrounded by centipedes, scorpions, tarantulas, and snakes. They wind tighter and tighter until a giant snake comes out of the dark and devours you.

As you descend into the snake's guts you hear an old man chanting [Figure 2]. The space feels tight and uncomfortable and then goes dark. You emerge into a giant cathedral-like area with two passageways, a blue one above and a red one below. You ascend towards the blue one as white and blue snakes pour downwards and red snakes travel up. At the top, the shaman's chant slowly fades out and the snakes disappear. You find yourself in an endless white and blue expanse of fractal forms. For a brief moment, you feel at peace. Looking around curiously you notice that you can control your movement. The sounds of the old man start to get louder, and you start to descend.

Falling from the blue light you descend towards a deep ominous red opening. You seem to be back inside the fleshy red belly of the snake, but there are holes scattered throughout the tunnel with creatures hiding inside. The holes pulsate and then show green and black fractal shapes once again. These fractal shapes decay and the world turns black.

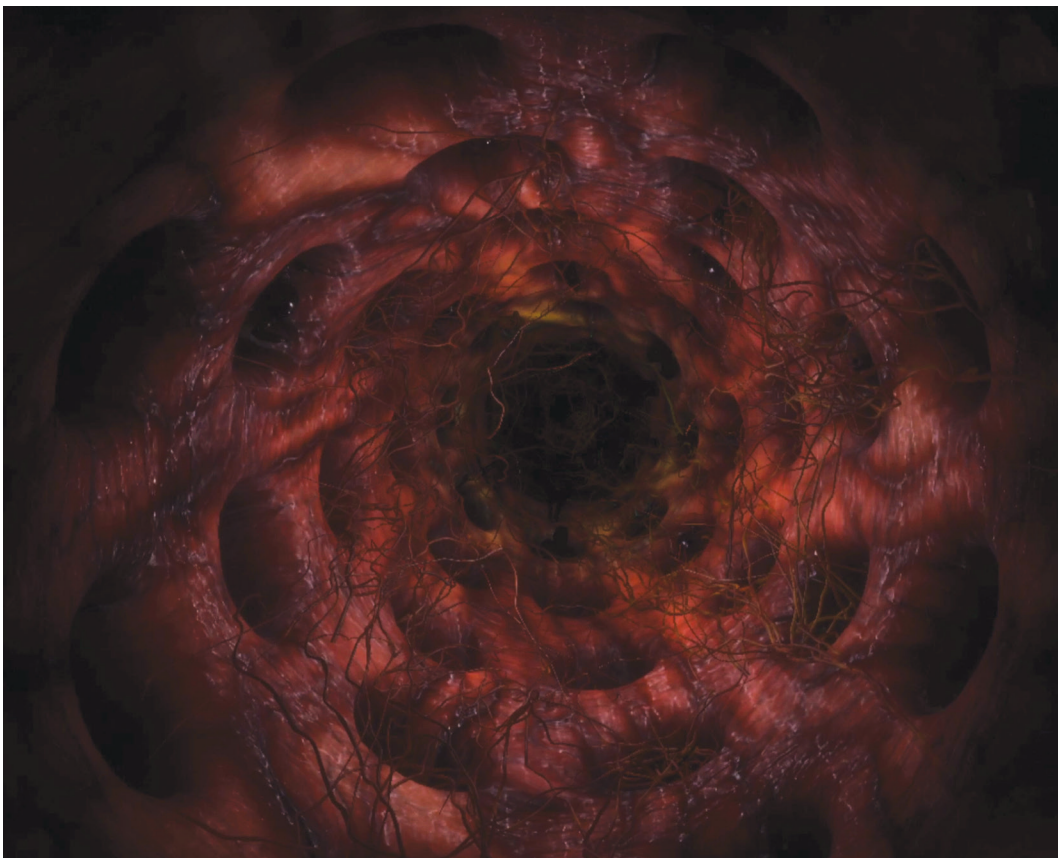


Figure 2: The fleshy red belly with holes. Screen capture used with permission from Atlas V © 2020.

Dimly lit skulls surround you as you start to ascend. The tunnel gets darker and darker.

Everything becomes quiet again as stars and galaxies appear around you. A bright blue light appears before you and pulls you towards a figure in the distance. Giant shapes zoom by you as you move closer to what is now a white bird [Figure 3]. The shapes become bigger and faster as you close on the bird. You head straight for its eye and become engulfed within it.

Your normal vision returns to you. You see the shaman again. You are back where you started but the forest still shimmers around you. Two beings appear and weave a beautiful electric ribbon in the air that wraps around you and the shaman. Soon it encapsulates you in a colourful cocoon. After a few moments, you see smoke and the wrapping dissipates. The shaman has brought you back to reality and releases a delightful chuckle to denote that your journey has ended.

7. FINDINGS

Here we present findings from our autoethnographic close reading. The close reading section describes the design elements discovered through iterative analyses. The autoethnographic section illustrates the phenomenological experience we had with *Ayahuasca VR*.

7.1 Close reading: Design elements

Here are the significant design elements we found in our close reading of *Ayahuasca VR*. As with any creative artefact, these elements were not discrete and separate, but designed and experienced in conjunction with each other.



Figure 3: Approaching the bird during the climax. Image courtesy of Atlas V © 2020.

7.1.1 Narrative

The narrative experience is framed as a first-person journey – a journey that traverses space, time and mind. The immersant encounters a shaman and a number of virtual creatures (especially snakes and insects) during the course of a traverse through the experience.

7.1.2 Content and theme

The thematic core of the journey's content is *contrast*. The contrasts of this journey provide layers of transition throughout the experience and are repeated several times. There are three ongoing contrast binaries that are presented throughout the journey. These binaries, shown in Figure 4, are *order vs. chaos*, *confined vs. vast* and *dark vs. light*. These three oscillating elements do not oscillate in sync, but shift at different times, allowing for the contrast from each theme to be presented differently each time it occurs. These interweaving themes present both synergy and unpredictability.

The transition from a chaotic sphere of pulsating arthropods to snakes slowly forming an orderly tunnel is one example of the contrast between order and chaos. While the experience begins and ends with confinement, the other elements progress from one extreme at the beginning towards the other at the end, oscillating between them along the way. The experience starts with a dark confined sphere of chaos accompanied by loud rustlings, while the end wraps the user in a light blue form with soft sounds.

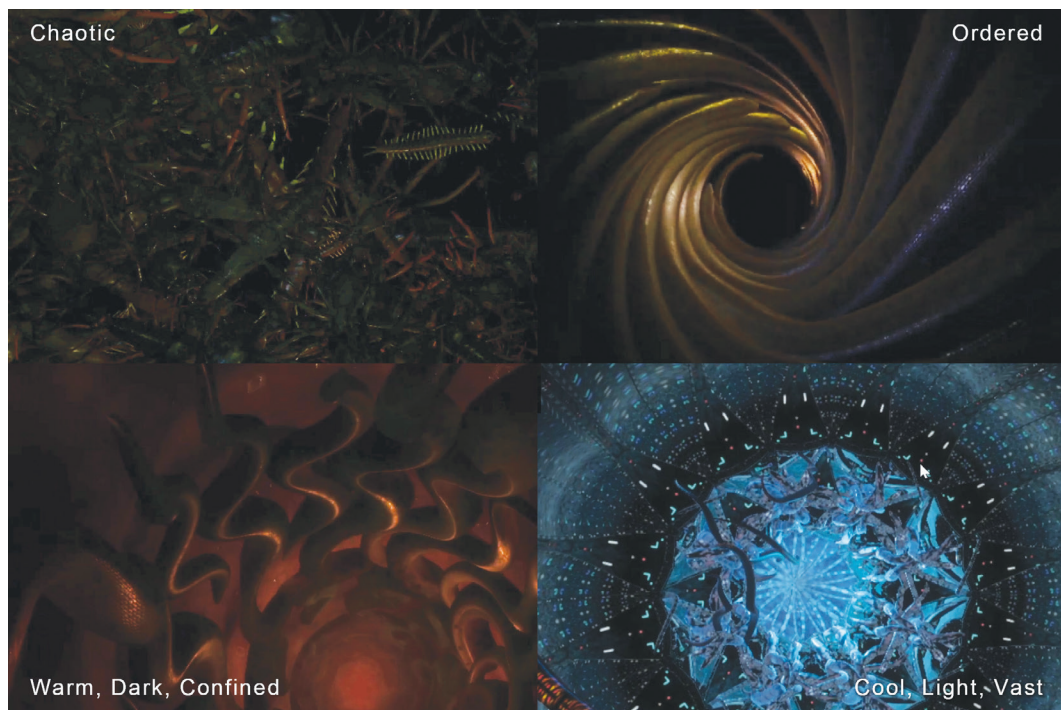


Figure 4: Examples of contrasting themes identified in four segments of Ayahuasca VR. Screen captures used with permission from Atlas V © 2020.

7.1.3 Spatiality

The spatialized journey of the narrative reveals another recurring contrast between the confined and the vast. The slow oscillation between confined spaces and vast ones can be both decentring and mesmerizing for the immersant.

7.1.4 . Interface and sensorium

The interface sensorium reveals shifting tones in the lighting, colours and sounds throughout the journey. The lighting shifts between dark and light, while the colours shift between red and blue with a spattering of neon colours throughout the experience. The sounds of the experience shift between loud and chaotic to soft and peaceful. These elements are typically tied with each other having dark red loud scenes in contrast with the light blue peaceful scenes.

7.1.5 Interactive design

The interactive design of *Ayahuasca VR* is relatively limited. There is freedom of gaze, but very little effective agency. It allows full 360-degree viewing control during the experience, but offers limited ability to direct motion or change events. Beyond controlling your perspective, there are only three interactive choices that modify the experience.

The explicit opportunity for interaction in *Ayahuasca VR* is that you must sit at the beginning for the experience to start. If you stand, the experience will never start. However, this moment of potential choice may go unnoticed if you begin the experience seated. Next, the first implicit interaction offered is when a sphere of pulsating arthropods and arachnids surrounds you. If you vigorously move your head, they become slightly transparent, revealing the shaman in front of you. The second implicit interaction is within the bluish-white fractal area, where you move in the direction of your gaze. Notably, both implicit interactions went unnoticed by most of the researchers.

7.2 Autoethnography: Psychological lenses

7.2.1 Agency

Agency, or its lack thereof, is an important consideration in both VR and psychedelic experiences. Similar to a psychedelic trip, *Ayahuasca VR* is an 'on rails' experience with occasional moments of agency. The experience involves no controllers, only momentary subtle interaction through head movement. Even with these moments of potential agency, many of us were unaware of this capacity to take control.

Only one of us recognized their ability to make the sphere of arthropods and arachnids transparent by moving their heads. The transparency did not allow the user to escape the imagery completely. Rather, it offered a temporary break in the intensity, which was appreciated by that researcher, allowing them to ease themselves into the experience.

Only two of the researchers noticed the gaze-directed movement in the white fractal area. This was the first time the experience calmed down and became peaceful. For the two members who did experience this agency, it brought joy and curiosity. This moment felt quite significant. Conversely,

it also made them more aware of the overarching lack of agency. For these researchers, this generalized lack of agency made the brief experience of real agency meaningful.

These moments of implicit interaction seem to be carefully designed as subtle moments of agency. The control emerges so naturally that they might not even be noticeable. However, because they require the immersant to act through their actual body, we believe they do support a certain sense of embodiment.

7.2.2 *Embodiment*

More generally, embodiment in *Ayahuasca VR* was influenced by the lack of a virtual body, the spatial design and the previous experiences of the immersant.

While ayahuasca users have reported body detachment during high doses of the drug (Riba et al. 2001), *Ayahuasca VR* coincidentally does not contain a virtual body. One researcher expressed a desire to have a virtual body that may add to the metaphor of transcending the self. However, without a virtual body, many researchers experienced some level of ego dissolution, that is, reduction in the awareness of self during the experience. One anonymous researcher stated that the lack of a visual body aligned with their expected experience. Their understanding of body detachment in psychedelic experiences primed them for the loss of virtual bodily representation, facilitating their sense of ego dissolution.

The confined spatial design may have also added to the embodied aspect of the experience. The instances of confinement at the beginning and the end engendered discomfort, causing some researchers to desire an escape. Some also described this confinement as enhancing their sense of presence. While the experience could be perceived from the perspective of some unknown character, it is hard to disregard a visceral reaction that you are directly experiencing.

Notably, for two anonymous researchers, *Ayahuasca VR* evoked vivid somatic memories of past experiences with psychedelics. One anonymous researcher who completed an authentic ayahuasca ceremony in the Amazon described being able to taste the ayahuasca brew in their mouth when the narrator described it. Both researchers found the visual effect at the beginning when the woods started to wave to be eerily similar to the early stages of a psychedelic experience. This temporary illusion of an authentic trip was broken by the sphere of arthropods and arachnids.

7.2.3 *Discomfort*

Discomfort was one of the most prominent sensations experienced in *Ayahuasca VR*. From the start, you are surrounded by centipedes, scorpions and tarantulas for several minutes. The discomfort (and worse) that this engenders is common in real ayahuasca ceremonies. Ayahuasca ceremonies can consist of the user experiencing a range of discomfort, including fear, negative thoughts, vomiting, nausea and so on (Fotious and Gearin 2019).

Nausea is specifically mentioned by the narrator after drinking the brew in the VR experience. This description caused one of the anonymous researchers to recall both the distinct taste of the brew and the associated nausea. Additionally, one of the researchers, particularly prone to motion sickness, experienced nausea from the VR experience itself. In this way, a shortcoming of the medium echoed the unpleasant embodied aspects of the real experience.

One researcher felt some lasting physical discomfort after the experience, having a sore jaw, headache and a strong sense of dissociation. It is likely that the sore jaw was a result of clenching as a stress response to discomfort, while the headache may have been induced by visuals reminiscent of migraine aura, which the researcher occasionally experiences. As Yaden et al. (2017) suggest, the dissociation may have been the result of an annihilation experience of self-loss without the relational social connection to make the experience complete.

Despite discomfort being a prominent component, it was not entirely negative. It added to the overall cyberdelic experience, confronting us with a meaningful challenge to persevere through.

7.2.4 *Meaning and metaphor*

Ayahuasca VR provides various elements across the sensorium, which are stimulating, abstract and open to interpretation. While all members experienced the same stimuli, each member had a different interpretation of the symbols and imagery.

An example of this phenomenon was the most prominent symbol – snakes. Some members saw the snakes as wise creatures, while others associated them with danger and evil, likely due to cultural differences. Another is the interpretation of the wrapping of the rainbow ribbons from the ethereal beings. Some perceived a safe embrace, others felt maliciously trapped. During the skeleton sequence, some reflected on the history of humanity, others struggled with personal reflections on mortality.

While meaning could be derived from many elements throughout *Ayahuasca VR*, several researchers noted an ineffable quality to the experience. The symbols and rhythmic movements and patterns evoked a sense of meaningfulness – even when that meaning was not understood. As with transformative psychedelic experiences, some elements are beyond comprehension. Those that can be comprehended tacitly often cannot be explained to those who have not had the same experience.

7.2.5 *Self-transcendent emotions*

The self-transcendent emotions that we experienced in *Ayahuasca VR* included love, gratitude and awe.

Love and gratitude were felt towards the shaman. His visual and vocal presence throughout the experience felt comforting and reassuring. For one researcher, the chanting was grounding them towards the ‘real world’ during the experience. Alternately, one researcher reported feeling unsettled by the ominous visual presence of an uncannily inanimate human.

Awe is the emotion of perceiving vastness and needing to accommodate it (Keltner and Haidt 2003). This emotion was felt by over half of the researchers, particularly in two areas. First, the vast cathedral-like area’s expansive and intricate curved walls intertwined with snakes provided a sense of scale. Second, entering the eye of the giant bird. The scene consists of progressing slowly towards a vague white shape until you notice it is a bird. The enormity of the bird becomes apparent as you approach and is reinforced by the apparent distance travelled along the way. Several researchers noted feeling connected to the bird as it shows subtle signs of life as you approach its massive eye. Upon entering the eye of the bird, they felt overwhelmingly small in its presence. One researcher expressed feeling on the verge of a profound

self-transcendent experience that was unfortunately cut short as the visuals faded to black after entering the eye.

8. DISCUSSION

Ayahuasca VR elicited visceral embodied reactions and evoked reflective thoughts and introspection through complex thoughtful stimuli. Yet, the experience was substantially distinct among our team, with very few design elements eliciting unanimous responses.

The thematic elements of the experience seem to ebb and flow to reinforce contrasting themes of light and dark, vast and confined, ordered and chaotic. We found the contrasting elements exposed the differences in each scene. The vast open areas were more noticeable when we came from confined areas, and the peaceful quiet scene was a much-appreciated change of pace from the chaotic intensity. Each contrasting element reinforced its opposing element, making the experience more meaningful and memorable for our research team.

Our sense of agency within the experience was fittingly limited for a simulation of a psychedelic experience. Interaction was sparingly used to make it more impactful and authentic to psychedelic experiences. It allowed users struggling with the overwhelming and uncomfortable imagery at the beginning of the experience to ease the intensity and provide respite for those who needed it. After a long chaotic ride, the gaze-based movement during the peaceful section of the experience allowed for a moment of peace and wonder. The subsequent limitation of agency made this moment more significant, and the otherwise limited agency more apparent.

Discomfort and fear, while often seen as negative, are part of many transformative experiences and may, in fact, be essential aspects. *Ayahuasca VR* confronts us with many different visual elements that make us uncomfortable, which had a diverse effect on our group. Disturbing imagery ranged from being surrounded by insects and snakes to decomposing bodies and visual stimuli that reminded one researcher of the aura before a migraine. Several of us were made so uncomfortable from these visual elements that we had a hard time being present in the experience. Others felt the necessity to openly accept and endure the difficult aspects of the experience. These emotions align with actual ayahuasca experiences, enhancing authenticity.

The embodiment felt in the experience was subtle but effective as even without a virtual body we found *Ayahuasca VR* provided several examples of embodied experience. Some found the lack of a virtual body made it easier to immerse themselves in the experience, and one felt that it made it much easier to feel disembodied. Many experiences in VR aim to enhance your presence with a virtual body. *Ayahuasca VR*, instead, focuses on embodiment through the interactive design of the experience. The subtle art of sitting down, interacting through head movement and sometimes claustrophobic spatial design all add to the embodied experience.

A hallucinatory visual effect at the beginning of the experience also caused a vivid somatic memory in two anonymous researchers. The hallucination effect in *Ayahuasca VR* was described as almost indistinguishable from the onset of psychedelics, creating a temporary illusion of authentic experience. While *Ayahuasca VR* may not reproduce the transformative self-transcendent effects of the experience it is based on, this demonstrates the potential to evoke vivid somatic memories through VR.

Ayahuasca VR elicited in us self-transcendent emotions of gratitude, love and awe. Even though the self-transcendent emotions in the actual ayahuasca experience might be quite different, VR, nonetheless, provides other means for achieving self-transcendent emotions. It does so through spatial vastness and the inclusion of characters to connect with, ultimately leading to a similar potential for beneficial experiences of self-transcendence.

Finally, while this experience may cause discomfort, it provides an open lens to make meaning from the abstract content based on the individual significance of the metaphors. This accompanied by interspersed moments of agency throughout the experience provided a uniquely meaningful experience for each individual that aligned with the variety of our own lived experiences.

While *Ayahuasca* VR is a compelling and immersive way of portraying what the real ayahuasca ceremony might be like, it falls far short of evoking a profound self-transcendent experience. While the metaphors in the experience were open to interpretation and engaged in active meaning-making, it lacked any additional elements to make the journey feel personally meaningful or unique. The subtle interactions went unnoticed by most, falling short of fully embracing VR for the interactive, embodied medium that it is.

Importantly, however, *Ayahuasca* VR reinforces the important role context plays in situating the interpretation of the experience. Each researcher's experience was shaped by their past, their emotional and physical states and the medium of VR. Situated amongst games on the Steam App Store can contextualize experiences like *Ayahuasca* VR as something to be engaged with casually and playfully rather than something to be prepared for and taken seriously. *Ayahuasca* VR makes us question how we should best prepare to engage with challenging and meaningful VR experiences. Perhaps this issue was addressed by the exhibition version, but the Steam version lacks this consideration (Diversión Cinema 2019). If VR experience designers are eventually successful at designing something profoundly self-transcendent, certainly it should be presented in a way that avoids trivializing its potentially life-changing effects and offers an opportunity for informed continuous consent.

9. CONCLUSION

Our imagined vision of VR is one that can evoke incredibly deep and meaningful experiences far beyond what is typical in most VR app stores today. Without additional sensory components such as touch and smell, VR cannot begin to accurately reproduce the vividness of the lived experience. Nonetheless, as VR evolves from it in a nascent state, we can study its strengths and shortcomings to guide it towards this imagined future.

While some experimental software has shown effects comparable to psychedelics, it seems that consumer VR, while impressive, still has a long way to go. *Ayahuasca* VR showcases a unique glimpse into the experience of ayahuasca through the eyes of the director, yet the experience is deeply rooted in each individual's embodied memory. While none of the researchers reported having a significant transformative experience, it evoked vivid somatic memories in those familiar with the ayahuasca ceremony or psychedelics. In this way, *Ayahuasca* VR demonstrates the viability of cyberdelic VR experiences that might be realized through further research and creative development. From experiences of discomfort and disgust to peace and awe, *Ayahuasca* VR is one of the most impressive VR experiences we have encountered in our research to date.

It must be noted that there is a growing concern about the westernization, commodification and 'spiritual tourism' of psychedelic rituals such as the ayahuasca ceremony (Fotiou 2017). The traditional roots of these experiences have important cultural significance and also contribute to a safe and healing experience. The Shipibo people do not seem to benefit from this shift and, instead, face exploitation and appropriation of their traditions. We therefore need to carefully understand the larger effects of creating experiences that may promote additional interest in ayahuasca and other self-transcendent experiences. It is critical to establish a mutually beneficial and respectful relationship between those seeking enlightenment and the knowledge keepers familiar with traditions that may lead to it.

Future research can look more into other VR experiences aimed to evoke self-transcendence, such as *The Blu* or *Remembering*. Another research direction could investigate VR experiences that evoke somatic memories of previously impactful experiences.

Experiences such as *Isness* have demonstrated results similar to psychedelics, and evaluating these through an autoethnographic close reading would allow for a deeper understanding of what exactly leads to that outcome and how it relates to and differs from substance-induced experiences. This could allow us to better understand the unique capacity of VR as a medium to foster self-transcendent outcomes through its own unique cyberdelic experiences.

REFERENCES

- Atlas V (2020a), *Ayahuasca Kosmik Journey*, 15 January, <https://store.steampowered.com/app/1212940/Ayahuasca/>. Accessed 15 July 2022.
- Atlas V (2020b), *'Ayahuasca Kosmik Journey: Full playthrough'*, YouTube, 15 July, <https://youtu.be/L450KIYiHs>. Accessed 15 July 2022.
- Bouso, J. C., González, D., Fondevila, S., Cutchet, M., Fernández, X., Barbosa, P. C. R., Alcázar-Córcoles, M. Á., Araújo, W. S., Barbanoj, M. J., Fábregas, J. M. and Riba, J. (2012), 'Personality, psychopathology, life attitudes and neuropsychological performance among ritual users of *Ayahuasca*: A longitudinal study', *PLoS One*, 7:8, <https://doi.org/10.1371/journal.pone.0042421>. Accessed 3 July 2022.
- The Cyberdelics Society (2020), 'Cyberdelics', <https://www.cyberdelicsociety.com/cyberdelics>. Accessed 6 July 2022.
- Der Marderosian, A. H., Kensinger, K. M., Chao, I. and Goldstein, F. J. (1970), 'The use and hallucinatory principles of a psychoactive beverage of the Cashinahua tribe', *Drug Dependence*, 5, pp. 7–14.
- Diversion Cinema (2019), *'Ayahuasca: The Shamanic Exhibition'*, <https://www.theshamanicexhibition.com/>. Accessed 6 July 2022.
- Fotiou, E. (2017), 'The globalization of ayahuasca shamanism and the erasure of Indigenous shamanism', *Anthropology of Consciousness*, 27:2, pp. 151–79, <https://doi.org/10.1111/anoc.12056>. Accessed 3 July 2022.
- Fotiou, E. and Gearin, A. K. (2019), 'Purging and the body in the therapeutic use of ayahuasca', *Social Science & Medicine*, 239, p. 112532, <https://doi.org/10.1016/j.socscimed.2019.112532>. Accessed 3 July 2022.
- Glowacki, D. R., Wonnacott, M. D., Freire, R., Glowacki, B. R., Gale, E. M., Pike, J. E., Haan, T. de, Chatziapostolou, M. and Metatla, O. (2020), 'Isness: Using multi-person VR to design peak mystical type experiences comparable to psychedelics', in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, CHI 2020, Honolulu, HI, USA, ACM Digital Library, pp. 1–14, <https://doi.org/10.1145/3313831.3376649>. Accessed 10 July 2022.

- Gordon, A. M., Stellar, J. E., Anderson, C. L., McNeil, G. D., Loew, D. and Keltner, D. (2017), 'The dark side of the sublime: Distinguishing a threat-based variant of awe', *Journal of Personality and Social Psychology*, 113:2, pp. 310–28, <https://doi.org/10.1037/pspp0000120>. Accessed 13 July 2022.
- Jiménez-Garrido, D. F., Gómez-Sousa, M., Ona, G., Santos, R. G. D., Hallak, J. E. C., Alcázar-Córcoles, M. Á. and Bouso, J. C. (2020), 'Effects of ayahuasca on mental health and quality of life in naïve users: A longitudinal and cross-sectional study combination', *Scientific Reports*, 10:1, p. 4075, <https://doi.org/10.1038/s41598-020-61169-x>. Accessed 3 July 2022.
- Jones, S. H., Adams, T. E. and Ellis, C. (2016), *Handbook of Autoethnography*, New York: Routledge.
- Keltner, D. and Haidt, J. (2003), 'Approaching awe, a moral, spiritual, and aesthetic emotion', *Cognition and Emotion*, 17:2, pp. 297–314, <https://doi.org/10.1080/026999303002297>. Accessed 3 July 2022.
- Looy, J. and Baetens, J. (eds) (2003), 'Introduction: Close reading electronic literature', in *Close Reading New Media: Analyzing Electronic Literature*, Leuven: Leuven University Press, pp. 7–24.
- Pizarro, J. J., Basabe, N., Fernández, I., Carrera, P., Apodaca, P., Ging, C. I. M., Cusi, O. and Páez, D. (2021), 'Self-transcendent emotions and their social effects: Awe, elevation and Kama Muta promote a human identification and motivations to help others', *Frontiers in Psychology*, 12, <https://doi.org/10.3389/fpsyg.2021.709859>. Accessed 13 July 2022.
- Rastelli, C., Greco, A., Kenett, Y. N., Finocchiaro, C. and Pisapia, N. D. (2022), 'Simulated visual hallucinations in virtual reality enhance cognitive flexibility', *Scientific Reports*, 12:1, pp. 1–14, <https://doi.org/10.1038/s41598-022-08047-w>. Accessed 10 July 2022.
- Riba, J., Rodríguez-Fornells, A., Urbano, G., Morte, A., Antonijoan, R., Montero, M., Callaway, J. C. and Barbanoj, M. J. (2001), 'Subjective effects and tolerability of the South American psychoactive beverage ayahuasca in healthy volunteers', *Psychopharmacology*, 154:1, pp. 85–95, <https://doi.org/10.1007/s002130000606>. Accessed 3 July 2022.
- Riecke, B. E. (2017), 'Could virtual reality make us more human?', talk presented at the TEDxEastVan, Vancouver, BC, Canada, 18 December, <https://youtu.be/cMGOftEi4UU>. Accessed 3 July 2022.
- Shanon, B. (2002), 'Ayahuasca visualizations a structural typology', *Journal of Consciousness Studies*, 9:2, pp. 3–30.
- Stellar, J. E., Gordon, A. M., Piff, P. K., Cordaro, D., Anderson, C. L., Bai, Y., Maruskin, L. A. and Keltner, D. (2017), 'Self-transcendent emotions and their social functions: Compassion, gratitude, and awe bind us to others through prosociality', *Emotion Review*, 9:3, pp. 200–07, <https://doi.org/10.1177/1754073916684557>. Accessed 10 July 2022.
- Yaden, D. B., Haidt, J., Hood, R. W., Vago, D. R. and Newberg, A. B. (2017), 'The varieties of self transcendent experience', *Review of General Psychology*, 21:2, pp. 143–60, <https://doi.org/10.1037/gpr0000102>. Accessed 10 July 2022.

SUGGESTED CITATION

- Miller, Noah, Desnoyers-Stewart, John, Stepanova, Ekaterina R., Kitson, Alexandra, Bizzocchi, Jim and Riecke, Bernhard E. (2022), 'Sipping the virtual elixir: An autoethnographic close reading of *Ayahuasca Kosmik Journey*, a self-transcendent virtual experience', *Virtual Creativity*, Special Issue: 'Extended Senses: Embodying Technology', 12:1, pp. 27–44, https://doi.org/10.1386/vcr_00059_1

CONTRIBUTOR DETAILS

Noah Miller is a Ph.D. student at the School of Interactive Arts and Technology at Simon Fraser University where he studies the design, evaluation and accommodation of positive transformative experiences with VR. Using immersive technology, he develops and designs with the goal to create experiences that evoke and accommodate cognitive shifts to elicit positive changes on social and mental health issues. His eclectic interests and skills have led to him working on various international projects including research on spatial cognition, combating negative effects of isolation and VR headsets in micro-gravity in collaboration with ESA. He also does research and development of immersive technology through motion capture, animation and live streaming. He aspires to use his diverse knowledge and experiences to foster advancements in future transformative experience design and accommodation for positive change.

Contact: Simon Fraser University, 250 – 13450 102 Avenue, Surrey, BC V3T 0A3, Canada.

E-mail: noah_miller@sfu.ca

 <https://orcid.org/0000-0003-3698-7647>

John Desnoyers-Stewart is an interdisciplinary artist-researcher who creates immersive installations and performances to encourage new perspectives on immersive technology and to better understand its true potential. Combining his background in engineering and art, he is investigating and altering how technology shapes the body and its place in the physical and social world. His multi-user installations transform real bodies into ethereal forms and incorporate physical touch into the virtual world, encouraging immersants to see and experience each other in a new light. Through his artwork and research, he hopes to encourage social connection and collaborative creativity by exploring positive social applications of abstract embodiment in VR.

Contact: Simon Fraser University, 250 – 13450 102 Avenue, Surrey, BC V3T 0A3, Canada.

E-mail: john_desnoyers-stewart@sfu.ca

 <https://orcid.org/0000-0001-9354-4434>

Ekaterina R. Stepanova is a Ph.D. candidate and a researcher at the School of Interactive Arts in Technology at Simon Fraser University, Canada. She has background in cognitive science, psychology and human–computer interaction. Inspired by theatre and dance practice, her work explores how immersive art can transform our sense of self and transcend self–other boundary by mediating our bodies with immersive and bio-responsive technology. She employs theories of embodied cognition, phenomenology, somaesthetics and feminist theories to create and study how interactive art installations and VR can help foster the feeling of connection to oneself, others and the world. She combined methodologies from design, humanities and cognitive science to unpack how media artefacts affect our human experience and society.

Contact: Simon Fraser University, 250 – 13450 102 Avenue, Surrey, BC V3T 0A3, Canada.
E-mail: erstepan@sfu.ca

 <https://orcid.org/0000-0002-1983-1512>

Alexandra Kitson is a postdoctoral fellow in the Tangible Embodied Child–Computer Interaction Lab in the School of Interactive Arts and Technology at Simon Fraser University. As a designer and developer, her goal is to explore ways in which emerging technologies can augment and support well-being, mental health and social connection. Her research has been published in several conference venues and journals across HCI, psychology and design. In 2021, she presented a TEDx talk on how VR can support our mental health, which touches on the mechanisms in which VR could support youth in learning and practising emotion regulation skills.

Contact: Simon Fraser University, 250 – 13450 102 Avenue, Surrey, BC V3T 0A3, Canada.
E-mail: akitson@sfu.ca

 <https://orcid.org/0000-0003-3479-5297>

Jim Bizzocchi is professor emeritus in the School of Interactive Arts and Technology at Simon Fraser University. Jim’s research interests include the evolving aesthetics of the digital moving image, the creation of generative video-sequencing systems and the design of interactive narrative. He has published in a wide variety of academic conferences, journals and books. Jim is a recipient of Simon Fraser University’s Excellence in Teaching Award. He is a practising video artist, producing both linear and computationally generative video artworks that complement his scholarly writing. His video art has been shown extensively in a number of festivals, galleries and juried exhibitions throughout the world. Jim can often be found ski-touring or hiking in BC’s coastal mountains.

Contact: Simon Fraser University, 250 – 13450 102 Avenue, Surrey, BC V3T 0A3, Canada.
E-mail: bizzocch@sfu.ca
Web address: <https://ambientvideo.org/>

 <https://orcid.org/0000-0002-4336-5750>

Bernhard Riecke is full professor at the School of Interactive Arts and Technology at Simon Fraser University (SFU) where he directs the iSpace Lab (an acronym for Immersive Spatial Perception Action/Art Cognition and Embodiment). He joined SFU in 2008, after researching for a decade in the Virtual Reality Group of the Max Planck Institute for Biological Cybernetics in Tübingen, Germany, and working as a postdoctoral researcher at the Max Planck Institute, Vanderbilt University and UC Santa Barbara. His key research areas include human spatial cognition/orientation/updating/navigation; enabling robust and effortless spatial orientation in VR and telepresence; self-motion perception, illusions (‘vection’), interfaces and simulation; and investigating and designing for transformative positive experiences in

VR (which he touches on in his 2017 TEDx talk ‘Could virtual reality make us more human?’).

Contact: Simon Fraser University, 250 – 13450 102 Avenue, Surrey, BC V3T 0A3, Canada.

E-mail: ber1@sfu.ca

 <https://orcid.org/0000-0001-7974-0850>

Noah Miller, John Desnoyers-Stewart, Ekaterina R. Stepanova, Alexandra Kitson, Jim Bizzocchi and Bernhard E. Riecke have asserted their right under the Copyright, Designs and Patents Act, 1988, to be identified as the authors of this work in the format that was submitted to Intellect Ltd.

Copyright of Virtual Creativity is the property of Intellect Ltd. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.