Rippling Outwardly: Expanding The Notion Of Screendance Archives With Augmented And Mixed Reality
Jeannette Ginslov

Abstract
In this article I propose that augmented reality (AR) and mixed reality (MR) have the potential to expand the notion of a Screendance archive. This takes the form of a hybrid installation, where visitors are invited to download an AR app onto their mobile phones, or tablets, to access a Screendance archive tagged to images in an installation space. This type of archive, is conceived as a piece of artistic work for hybrid installations, and is intrinsically related to collaborative artistic, philosophical and technological research. It has the ability to highlight temporal shifts between past and present and demonstrates how archived somatic states may ripple outwardly across technologies, bodies, and space, to audiences who embody these states within the wider somatic field. For these MR interactions to work, methods in relation to filming, editing, and archiving are re-examined. Documentation and archiving methods are reviewed through a phenomenological lens and once distributed within the AR/MR archive installation, a postphenomenological perspective reveals how new relations with technology, materials and media are discovered. Furthermore, the use of AI is perceived as enhancing the rippling out of affective somatic states that becomes an embodied materiality¹ (orig. emphasis), a relational feminist posthumanist perspective, that, permanently changes ways of seeing and experiencing dance on screens and the notion of a Screendance archive.

Keywords: Screendance, archive, installation, embodied materiality, Augmented Reality, AI

Introduction
In this article I propose that augmented reality (AR)² and mixed reality (MR)³ have the potential to expand the notion of a Screendance archive. Since 2011, I have worked with Susan Kozel, in collaboration with other artists and researchers, creating several Screendance AR archives as hybrid or MR installations and exhibitions, with the aim of sharing bodily states with viewers through technological and philosophical experimentation. Each collaboration attempted to tackle the problem of archiving and disseminating subtle bodily states that are often lost or depleted in conventional archival forms. This type of archive is conceived as both a piece of artistic work for hybrid installations, and is intrinsically related to artistic, philosophical and technological research. Visitors to the installations are invited to download an AR app onto their mobile phone, or
tablet, enabling them to access and experience this Screendance archive/installation. Once installed, they hold their device in front of an image, and the AR app triggers the video tagged to that specific image (Figure 1).

In this way the AR app allows the visitor to immerse themselves in the resonant bodily states of the dancers archived in the video and tagged on the image in the installation. This type of interaction with an archive, not only highlights temporal shifts between past and present but also demonstrates how archived somatic⁴ and affective⁵ bodily states may ripple outwardly like resonant waves across old and new technologies, bodies and space, servers and Wi-Fi, mobile devices, and apps, to audiences who embody these states within a wider somatic field. By triggering the archive with the app on their device (Figure 2), the interaction becomes a performative act, as without audience participation, the archive lies dormant.
For these MR experiences, interfaces, and affective interactions to work and be felt, alternative methods, in relation to filming, editing, archiving and dissemination are needed. Differences between documentation and archiving methods are therefore discussed, such as the use of an embodied camera rather than a static camera on a tripod. Furthermore, the paper highlights how, if embodied methods are used during the archiving process, they not only capture and amplify the somatic states of a dancer in the archival footage, but also aid in the production of affective video creation in the edit. Once uploaded, distributed, and shared within an AR/MR archive installation, from a postphenomenological perspective, the article reveals how we form new relations with technology when seeing-feeling resonant somatic states are discovered by visiting the installation archive.

Furthermore, such relations or entanglements with technology propose a more performative approach to archiving, as an audience’s participation is needed to activate and complete the reception of archived somatic materials. When this occurs, visitors to the installation, in their embodied present, may feel waves of somatic experiences from the past, rippling out at them from their mobile devices. This rippling effect is a dance of agency brought about by an audience’s relation with human and nonhuman materials, the past and present. Additionally, if AI is used within an AR/MR archive installation it may have the potential to permanently change existing ways of seeing dance on screen as it enhances the rippling of affect and somatic states across bodies, screens, and technologies. MR for a Screendance archive installation thereby offers practitioners and curators new ways of presenting archived materials to audiences. This became particularly relevant during the 2020-22 pandemic when presenting and accessing Screendance was limited to online platforms or to restricted visits to gallery spaces.

To discuss and support the ideas above, some Screendance and AR projects, in which Kozel and I have collaborated or created, will be referred to in the article. The projects are described in the Somatic Archiving website: https://www.somaticarchiving.org/. They are examples of how AR/MR, and AI may be used to challenge existing notions of the Screendance archives and how they may be used in disseminating or sharing not only archival materials but affective somatic states:

- **AffeXity: Passages and Tunnels** (2013) by collaborators: Jeannette Ginslov (video & concept), Susan Kozel (artistic direction & concept), Wubkje Kuindersma (dance), Camilla Ryd (special effects), Jacek Smolicki (sound), Daniel Spikol (technical production), Oliver Starpov (dance)
  http://www.jginslov.com/affexity-passages--tunnels.html
  https://www.somaticarchiving.org/work/affexity-passages-and-tunnels.html
Documenting Or Archiving?
For the Screendance and AR/MR projects *AffeXity: Passages and Tunnels* (2013) and *Conspiracy Archives* (2017-2020), Kozel and I discussed the differences between documenting and archiving dance on video. Questions arose: What are the differences and how would they impact our artistic research? Would an understanding of the differences alter the methods, notions, and processes of archiving? Would I, when filming, approach the dancers and their movement differently? Would this be recognised and felt in the footage upon review? Would this facilitate the filming and amplification of somatic states, given that both projects were concerned with archiving and sharing affective and somatic states of the dancers? Would adopting new approaches to the processes of capturing somatic states affect myself, the dancers and ultimately the footage? We continued asking: What approach should be used if different methods ultimately affect video footage and the viewing of it? How could I acknowledge this, whilst filming?

After much discussion Kozel and I concluded that for these Screendance and AR projects, archiving dance using video was qualitatively different to documenting dance, as archiving is primarily concerned with the capture of affect and bodily somatic states, rather than movement and linear movement progression. They decided that, in its broadest sense, documentation is where the camera is often set up on a tripod in the corner of a studio or where there are several cameras in
front of a stage left to record. Both positions may require human intervention to point the camera, to follow a dancer’s movements or to change the frame size for example. However, this form of documentation does not require much human intervention and the process is mainly concerned with non-human vision, as the camera is doing all the work. Later in the edit, if using a multi-cam edit, the editor selects various angles best suited to the movement and narrative progression based on visuality, taking heed of where best to cut and join movement through the cut and the different vantage points or frame sizes. These processes may therefore be seen as being entirely ocularcentric, concerned more with vision than experiential qualities.

However, when filming for *Conspiracy Archives* (2017-2020), where the dancers performed strong somatic and resonant states of experience rather than dance sequences, I discovered through practice, that I needed to find another way of using the camera, my body and bodily senses entwined with my vision to capture these states. This method, discussed below, implied a more embodied approach to filming and editing and became the method used to archive the resonant and experiential bodies for this specific Screendance archive.

**Archiving 1: The Embodied Camera And Edit**

Archiving somatic and resonant states of experience rather than dance sequences implied that I capture the somatic states of the dancer by embodying the camera, rather than focusing on the documentation of movement that is more reliant on ocularcentric processes. I needed to embody the camera and later, the editing tools and processes.

An embodied camera implies taking on a phenomenological approach or method. Borrowing from Maurice Merleau-Ponty\(^1\) one needs to understand embodiment that emphasises the body’s role in mediating internal and external experience. Merleau-Ponty posits that the Körper, the objective body and Leib, lived subjective experience, combine as a state of self-experience, which he named embodiment. This is about body-mind integration and states of being as a form of knowing, from a first-person perspective. Furthermore, embodiment requires that we change ways of seeing ourselves in the world, to ways of experiencing it, originating from deep within the body. This implies exploring embodied consciousness, or the mind in the body\(^8\) through the *felt-sense*\(^9\) (orig. emphasis). The *felt-sense* is a bodily knowing that “is not an immediately identifiable specific emotion or sensation, but something ‘fuzzy’ and difficult to pin down, yet also clearly ‘there’ inside you, telling you about your situation”\(^10\). This shifts literal modes of *seeing* and knowing to modes of *sensing* and knowing. In this way it constructs knowledge from a first-person perspective and thereby pushes the experiential to the fore. By relying less on visuality to create knowing, it assumes ways of knowing through the bodily senses as being the way to verify knowing something.
However, Merleau-Ponty proposed later that embodiment is about the self, entwining with the world in the shape of a chiasmus, a never-ending and twisting figure of eight, entangling body-self-world. Here you are entwining with the flesh of the world:

Visible and mobile, my body is a thing among things; it is caught in the fabric of the world...they are encrusted into its flesh, they are part of its full definition; the world is made of the same stuff as the body.

The flesh of the world is the place for living experience in which the dualistic Cartesian subject-object relation blurs, forming the chiasmus. This chiasmic relationship is between body-self-world. Here, you are caught up in the world and the world is caught up in you, for “where are we to put the limit between the body and the world, since the world is the flesh?” It is here we should “reject the age-old assumptions that you put the body in the world and the seer in the body, or, conversely, the world and the body in the seer as in a box.” The chiasmus therefore “forbids us to conceive of vision as an operator of thought that would set up before the mind a picture or representation of the world,” as vision is embodied, with all the other sense modalities. One does not just see things and act upon seeing them. One is caught up in the world, with one’s vision, felt-sense and actions that are affected by people and things in the world.

This forces one to ask questions about mediation, how to archive somatic resonant states or embodiment using a video camera? If one is caught up in the world through the chiasmus where vision is embodied and caught up with the other senses, how does this afford relations with technologies, and in this case the camera and edit? Answers may be found in Martin Heidegger’s notion of readiness-to-hand, where there is a merging of the body with technology. He cites an example of a carpenter using a hammer, where the carpenter is so familiar with the tool that he no longer maintains a conscious awareness of how to use it but is only aware of hammering. Engaged in this action, the hammer becomes perceptually transparent, and becomes an extension of his Body Schema as the tool withdraws from being a separate object to the artisan and is drawn into the action that is being performed. Here the carpenter’s Body Schema adjusts to the technology, creating an intuitive relationship with it, such as one experiences when riding a bicycle.

Merleau-Ponty however, describes the notion of embodying technology as becoming incorporated through use. The incorporation of technology may be found in his thought experiment of imagining a blind man navigating a street with a cane. Where does the blind man’s self begin in relation to his material engagement of the cane. Is it at the tip, the handle or halfway? It is found in the circuit of material engagement between the cane, the environment and the man’s...
perceptual experience. Stick, man, and pathway form a circuit of information. The stick, an extension of his Body Schema, is a perceptual tool that transmits material differences in the environment which he feels through the cane, to which he adapts. Once mastered, the stick becomes transparent and withdraws from his focal awareness to become an element of his “motor-perceptual repertoire”\textsuperscript{17}. The man incorporates the stick into his Leib, as it is inseparable from his Body Schema.

Using these notions, I began to explore how the camera could become incorporated into her Körper and Leib. With this I would extrude rather than capture, film or shoot the dancers. Extrusion is derived from the notion of lava extruding from a volcano, a more organic process of shifting matter from one site to another through a volcano or a camera aperture. To enable these extrusions, I incorporated the camera into my Body Schema and by doing so, it becomes part of my Leib. Taken literally, I used the camera as an extension of my Body Schema through incorporation, and by doing so created a bodily extension, extending my Körper and Leib through the materiality of the camera. This meant that I could not leave the camera on a tripod and let it film without my embodied consciousness guiding what the lens should extrude. Rather, I held the camera in my hands, my legs become the tripod to see-feel with my embodied being what the dancers were doing through the embodied device. In fact, I no longer felt the materiality of the camera as my Body Schema reacted instinctively to seeing-feeling through the lens. In this way she is always present and listens with her entire being to what the dancers are doing, as my felt-sense responds to the somatic performance of the dancers. However, at times I do mount the camera on a tripod when required, such as when the choreographer asks me to leave the rehearsal floor or stage. I then secure my camera on a tripod in such a way that it stays completely malleable, that is I use it with all the settings very loosely set.

This enables me to follow the dancers in a state of complete embodied awareness as if I am still beside them on the floor, extruding their performance. I never allow my embodied being to leave the viewfinder, as I see-feel the resonant affective states of the dancer/s that are fully incorporated or entwined with my Leib. This extrusion is a chiasmic techne as I entwine my being with the dance occurring in the situated world and my being engages with the affective somatic resonances and materialities performed by the dancers, through my embodied technological lens and device. Once these states are extruded through this chiasmic techne, I then place it on the timeline to be edited, to further refine and amplify the moments of somatic resonance.

In front of the extruded clips in the timeline, I avail myself to editing the video footage through my felt-sense, to select, refine, and thereby archive and embody the somatic states of the dancers. Rather than focusing on movement sequences or using pre-determined narrative structures to guide the edit, I rely on my
embodied *felt-sense* to edit the footage that I see-feel on the timeline. In addition, I use layers of footage, mixing the transparency levels to create and amplify the affective resonance of the clip that will appear in the AR installation. The focus is on the experiential and not on linear narratives nor on sequences of movement but rather an amplification of affective somatic states, that will later ripple outwardly into the viewer holding a mobile device. The sound accompanying the video also aids in this rippling effect. This I define as stage one of the process of archiving: affective video creation.

**Archiving 2: Rippling Outwards**

Once stage one is complete the affective videos are finalised and uploaded onto an AR app, Vuforia, which tags or assigns each video to an image in the installation, so that when the viewer holds their phone over the image the video and installation spring to life (Figure 3).

This may be considered stage two of the archiving process and is currently being investigated in the artistic residency *CATALYSTS: Somatic Resonance*, listed above. This artwork is examining how affective “potential may arise from awakening latent energies over time, across media and flesh, expanding what dance can be and how bodies can remember”\(^{18}\). The interdisciplinary team of artists and researchers is involved in the choreography, affective video creation, archiving, philosophy, and AR/MR creation, to explore *affective choreographies*, (a philosophical term that Kozel has coined and is currently exploring) of the digital, analogue, embodied temporalities, and materials within the AR/MR installation experience. According to Kozel, *affective choreographies* require researching the placement of the tags in the installation space, investigating levels of transparency of the videos and the positioning of the archived videos onto the images, all in relation to the viewer moving through the installation using a mobile device. The combination of all these different materials and actions may be understood as a choreographic process that sets out to not only intensify the
somatic resonance of each video, but also make the experience of engagement or viewing more affective for the viewer. To do so, the team is exploring the notion of kinaesthetic algorithms or kinaesthetic AI and describe how AI may be used in rippling the somatic states of the dancers, informed by Guðjónsdóttir’s “FULL DROP into the Body”\textsuperscript{19} outwardly, across the fields of archived media and the visitor’s body in the MR installation space. Additionally, they are raising questions about the use of AI, the ethical implications of its use, for example how to avoid Big Data Companies harvesting data from location-based media. That however is beyond the scope of this paper but is discussed in a documentary video\textsuperscript{20}.

*Rippling outwardly,* is stage two of the archiving process may also be viewed through a philosophical lens. This draws firstly on Don Ihde’s\textsuperscript{21} pragmatic postphenomenological perspective and Rosi Braidotti’s feminist posthumanist, perspective where embodied interactions with technology and materials occur, similar to the viewer’s experience at the installation. These emerge through the “incorporation”\textsuperscript{22} or mutual constitution of contemporary technologies that actually “re-embodify our fleshly experience”\textsuperscript{23}. This *re-embodiment*\textsuperscript{24, 25, 26} occurs through human-technology relations, where the user forms unique relations along a continuum with the technology, allowing them to access and extend themselves into new forms of embodiment beyond their naked bodily senses.

Using Ihde’s perspective, CATALYSTS – *Somatic Resonance* may be seen as revealing these types of relations with technology and could be described as embodiment relations. Here there is a symbiosis or unity with the technology and when familiar with its use, the handheld device used by the visitor becomes perceptually transparent. Hence the mobile device, phone or tablet could in this installation become perceptually transparent when the videos are highly resonant or affectively engaging. These interrelations thereby transform and shape the visitor’s experience of the installation, as the device is incorporated in their bodily awareness as an extension of the world they are experiencing, the archive. This reflects new relations with technology, new ways of seeing-feeling archived somatic states that are discovered through embodied relations with the archive. However, these entanglements require a performative approach to archiving as an audience’s participation is needed to complete the reception of archived materials.

For Ihde these human-technology relations are produced by “inter-relational and reflexive”\textsuperscript{27} experiences with the technology that focus firstly on individual experience in relation to mediated imagery, making Ihde’s *I-technology-world* definition clear (orig. emphasis). With these interrelations subjectivity and “self-knowledge (are) gained reflexively and in strict interaction with our experience of being-in-a-world”\textsuperscript{28}, and in this case the MR installation. Secondly, these interrelations also include *background relations* with technology that are understood as *present absences*, not directly experienced but contextual to human life, like
WiFi or the internet, that continue to shape a person’s experience in the MR installation. As such, they renew and augment the *Body Schema*, human perception, agency, and cognition. We therefore find that we are no longer a subject in a closed body, but experience our subjectivity from a first-person perspective, through our performative relations within the MR installation.

The use of AR/MR/AI in *CATALYSTS – Somatic Resonance* may then be thought of as having the potential to permanently change existing ways of seeing dance on screen, enhancing the rippling out of affective and somatic states across bodies, screens, temporalities, and technologies through a MR. This form of installation is attributed to the rise of and the development of the Internet, advances in computer programming, coding, instrumentation, and the miniaturisation of wearable and mobile technology since the beginning of the new millennium. Here ecosystemic approaches between human and nonhuman objects, online and in the real world, were explored against the background of feminist posthumanism. Since then, borrowing from Braidotti\(^29\), the posthuman subject is defined within a philosophy of multiple belongings, “a relational subject...that works across differences and is also internally differentiated” yet grounded and accountable. The merging of the human with the technological is a feminist “post-anthropocentric posthumanism”, resulting in a new form of subjectivity in an ecology with multiple layers of interiority and exteriority and “everything in between” (ibid.). According to Braidotti\(^30\), this new form of subjectivity “expresses multiple ecologies of belonging, while it enacts the transformation of one’s sensorial and perceptual co-ordinates”. This may be understood as occurring through an embodiment of differing materials, practices, actions, and experiences, as an *embodied materiality*, as performative actions within the MR installation trigger multi layered archives of varying materials and these experiences are embodied by the visitor through participation in the installation. The work is thereby reliant on distributed embodiment across varying degrees of human and nonhuman materials and experiential perspectives. It starts from a first-person experience and ends with a wider somatic experience of a shared *embodied materiality*, that is felt across bodies, images, technologies, and resonant forces that *ripple outwardly* across and through the visitor participating in the MR installation.

**Conclusion**

This article has revealed ways of using phenomenological methods to challenge traditional methods of documenting and archiving dance with a camera and AR/MR/AI to change ways of interacting with a Screendance archive. More specifically it described ways to choreograph an archive using AR/MR and AI. These technologies amplify affective states that ripple outwardly across bodies, technologies, and time within an installation. In this way it gives birth to new ways of archiving, sharing, and disseminating somatic and resonant states to visitors in a gallery. Here they experience embodied interactions with their handheld devices.
and embody the somatic experiences that they view and feel on their devices. Through this form of embodied interaction, the archive becomes performative. Their experiences become an embodied materiality, where the somatic resonance of the dancers, ripples outwardly across an archive of time, technologies, and the viewer’s body. Choreographing the archive in this way may have the potential to permanently change existing ways of seeing, documenting, and archiving dance on screen31.

**Biography**

Dr Jeannette Ginslov (PhD, MSc, MA) is an artist, researcher and published scholar whose practice as research examines embodiment in relation to Somatic Dance, Screendance and embodied technologies. She also facilitates online Screendance workshops internationally and since 2011 has collaborated with Kozel on several AR/MR installations. In 2021 she was awarded a PhD from London South Bank University. Her current research focuses on embodied materiality, computational Screendance and visual aesthetics. Most recent works: *CATALYSTS: somatic resonance*, a Screendance AR/MR collaboration that premiered in Berlin Feb 2022 and *Scatterdance* for *Nanocosmiselect*ed for the Open Call ESS & InterArts Centre Residency an interactive installation. In January 2022 she joined the School of Arts and Communication (K3), Malmö University, Sweden, as an MCS Master’s Thesis Supervisor. http://www.jginslov.com

**References**


Somatic Archiving Website: https://www.somaticarchiving.org/work/catalysts-somatic-resonance

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1 Ginslov (2021)
2 (AR) or Augmented Reality is an app that overlays digital content such as video, imagery, text, or sound on a hand-held device such as a mobile phone, or a tablet enhancing the user’s physical world.
3 (MR) or Mixed Reality or MR is the merging of real, virtual or augmented worlds that produce new and immersive environments. MR is the place where people and digital objects co-exist and interact in real time, not exclusively in the physical or virtual world, rather a mixed reality of the real and the augmented.
4 Somatic refers to somatic dance practice where practitioners are concerned with and are highly attuned to experiences of movement through their own corporeality, temporality, spatiality, motility, subjectivity, and kinaesthesia (Fraleigh, 2018).
5 Affective stems from the word affect which is often thought of as human emotions; however, affect, according to Kozel (2007), is about dynamic flows or intensities felt by the body and occur between bodies and things. They are also felt as nuanced sensations that arise from being in a situated body. Using Merleau-Ponty, Kozel (2007, p. 287) describes affect as “an acknowledgement of our being embedded in the fabric of the world alongside others” through the senses, with no division between self and world.

6 AI or Artificial Intelligence emphasises the creation of intelligent machines that work, react, and mimic the capabilities of humans and is created by machine learning. This it does by recognizing objects, understanding, and responding to language, making decisions, solving problems and by combining these perform functions. Google search engine is one of the most popular AI applications.

7 Merleau-Ponty (1964a)
8 Merleau-Ponty (1964b)
9 Gendlin (2003)
10 Boden and Eatough, 162
11 Merleau-Ponty, 1964a, 163
12 Ibid., 138
13 Ibid.
14 Ibid., 162
15 Kozel (2007)
16 Heidegger (1962)
17 Besmer (2015, 58)
18 Kozel, (2021)
19 Guðjónsdóttir’s “FULL DROP into the Body” The “FULL DROP into the body” created by Margrét Sara Guðjónsdóttir, is a somatic meditative dance practice that involves meditation, deep tissue, and fascia release.

20 A documentary video by Jeannette Ginslov (2021) about the making of CATALYSTS: Somatic Resonance with discussions around the issue of AI in the project: https://youtu.be/Jnn9S0asxe0

21 Ihde (2002)
22 Ihde (2010, 42)
23 Ibid., 111
24 Ihde (1993 and 2010)
26 Kozel (2017)
27 Ihde (2010, 42)
28 Ibid., 41
29 Braidotti (2013, 49)
30 Ibid., 193