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Christine Vial Kayser

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Christine VIAL KAYSER

Project 2019-2020:

DYASPACE

***Dialogic perception and aesthetic experience in digital exhibits
A multidisciplinary approach involving humanities and neuroscience***

Acronym: DYASPACE

Preliminary note

This project was elaborated in view of answering a call for International Research Project in Social Science, launch by the ESRC (Economic and Social Research Council)¹, which was unsuccessful, because it did not meet the criteria of ESRC (*i.e.*, 50% of the concept and aims should be related to Social Sciences). The project will nevertheless be conducted in its theoretical dimension by the author. The experimental aspect intended in partnership with psychologist is at the moment suspended.

CONCEPT NOTE

WHAT

The project consists in the analysis of the cognitive and emotional determinants of the aesthetic experience looking at how a viewer interacts with digital, immersive artworks. We shall examine the modalities and effect of the encounter between the outer (physical, social) and inner (bodily, self-image) environment of the visitor. To do so, we shall compare immersive artistic settings made of digital images, with the experience of original artworks, in an actual museum.

In an art gallery, the physical environment consists of the design, the architecture, the lightning, the sound, the furniture, as well as the artworks and the objects associated with the visit –the labels, leaflets, audioguides. The social environment comprises the urban context, the visitors and staff. The bodily environment is the visitor's own body, genre, age, clothing (see Falk, 2009 Tröndle, Kirchberg, Tschacher, 2014 for studies on their influence). Visitors move in these environments, as self-perceived "agents" with their own inner space or self-image, constructed through their memories, emotions, life history etc. They are surrounded by an invisible peripersonal space (see Vignemont, 2015 for this concept).

The experience appears as a succession of encounters between various environments, with their own logic and spatial dimensions: the subjective inner space of the visitor, his/her the peripersonal space, the space within and around the artwork, the virtual space accessed through technological devices, the intersubjective social space, the physical space of the gallery, the historical space to which the work and the environment belong, and the narrative space in which all these elements are embedded.

Those spaces are not neutral. They are symbolically, semantically, meaningful, bearing signs/indexes of meaning: the architecture of the gallery projects the sign of aesthetic space, space of knowledge, possibly space of historical significance, or of wealth, or Modernity... [see Santoyo-Orozco, 2019 for the idea of architecture as sign]. The space within or surrounding the artwork (its auratic space) is heavily determined by school, style, period, artist's imagination and social position, culture, genre, and technic. Digital artworks have a specific quality of fluidity, weightlessness. They are like screens to trespass.

As they are loaded with cognitive and affective content, these spaces can be considered as "fields" (as in a magnetic field), animated by a form of energy (Gell, 2009), based on the stakeholders (the artist, the visitor, the curators) varied intentions.

¹ <https://esrc.ukri.org/funding/funding-opportunities/open-research-area-ora-for-the-social-sciences-2019/>

Outer space intermingles with individuals inner/imaginary space that can be a) synchronised with the outer space (in situations either culturally familiar, emotionally pleasing or by frequent usage)² or b) desynchronised (in unfamiliar, ecstatic, aesthetic situations), creating unique “experiences”. Thus the environment interacts with the ontology of the individual that enters it (see Jedrewski, 2017 on the notion of ontological field) while individual’s inner space affects the perception of the outer space (see Pasqualini et al. 2013 for the binary interaction with architecture).

This interaction is dynamic because the observation of a work of art has a duration and is to be understood as a succession of moments (Bachelard, 1957) more or less fractioned or fluid in immersive artworks. The reunification of time and space is materialised through the motion of the body, its gestures, its standing (Leroi-Gourhan, 1964). Thus bodily posture and behaviour are a sign of the cognitive and emotional reactions to the aesthetic experience.

We aim to tackle this dynamic by capturing proprioception, eye movement, trajectories, pauses, facial expression, words production, emotional, cognitive arousal, post-experience memory), as well as group behaviour in **four different situations** of experiencing art:

- 1) an experience in **Virtual Reality** in which the viewer’s body is virtually transported into another space (that of an artwork);
- 2) an experience in **Augmented Reality** in which the viewer wears a device on his head that makes him/her believe he enters with his body into another realm;
- 3) an experience in an **actual museum**, to compare with the situation 1) and 2)
- 4) AR can be experienced in different contexts and will allow us to test the experience in hospitals and prisons in particular.

Our case studies will be:

- 1) the **immersive experience of Virtual Reality**, of Van Gogh Paintings in *Atelier des Lumières*, Paris, or of Impressionist paintings, at Château d’ Auvers-s-Oise (TBD) . It will compare to a visit at the **Musée d’ Orsay** (of the same artworks).
- 2) the experience of **Virtual Mona Lisa**, an **Augmented Reality** device³, followed by a visit of the actual Mona Lisa in the Louvre and a comparison with its use in specific contexts (hospitals, prisons).
- 3) the experience of Danish-Icelandic artist **Eliafur Eliasson**’s VR digital sceneries, compared with that of actual landscapes (sunset, fog...).

What are VR and AR? (see *Invaluable*, 2019).

Both VR and AR produce virtual spaces and offer an encounter with the artworks markedly different from traditional museums: there are no original works to be seen. Both settings can include music and an explanatory sound-track. Some AR applications use smartphones or tablets, and others use headsets thanks to which the experience is as immersive as in VR. In both cases, the auratic space of the original work is erased – or possibly extended to the entire virtual space in which the visitor wanders. We feel as if we enter the painting, going behind its surface (as Alice in Wonderland). N. B.: The attractivity and sense of the marvellous which those devices seem to generate might be due to the trespassing of the auratic space of the artwork. This is one of the questions to be addressed.

Yet there still are differences between the two technologies:

- VR immerses the viewer in a projected space, where the viewer enters as a group and can share his impressions with others, move his body freely according to his emotional reactions (lie on the floor, stand up in a corner, move around..).
- The visit using AR such as the Virtual Mona Lisa is achieved by wearing a device on the eyes in which the body is erased: the visitor sees the virtual space moving around him/her as if

² Leleu-Merviel and Laudati distinguish between spaces made familiar by frequent visits in which one has its habits, a sense of belonging – which they categorize as « inhabited, for dwelling, for usage » and spaces not frequently visited which are for « consumption ». We may remark that cultural habit make a space of consumption familiar even if infrequently visited (such is the case of a bank website, a post-office in one’s country etc. Leleu-Merviel et al., 2017, p. 18).

³

he/she was moving within it and seeing changes with his eyes but without a bodily feeling. Only his/her hand is still in the real world, pressing on remote control (see Christophe Lopez studies on the matter). He/ she enters alone in this virtual space.

- In VR the visitor can walk away from the space but cannot consciously alter it (even though his/her body movement may interact with the flow of images, provoking changes, of which he/she is unaware). In AR, the visitor can press on remote control to move forward or backwards and choose several options. The experience seems to retain actively conscious and cognitive features (to be verified).
- In VR the actual architecture of the site is used as a screen, it is thus both present and absent: for example, l'Atelier des Lumières is a former foundry⁴. The architecture is typical of the 19th century and still very present: there is a chimney; multiple metal staircases and pillars; a canal runs through it. The round chimney twists the image; metal pillars interact with Van Gogh views of Paris, adding an industrial touch but are sometimes at odds with the image projected when it consists in flowers (**fig. 1**); the canal dramatises the image projected on the water which is seen to flow. Yet these features are at times covered by the image and somewhat "erased". The rhythm of the architecture waxing and waning is an crucial factor of the overall experience, in as much as the rhythm of the images themselves. What are they evocative of? The vague nostalgia of the 19th-century industrial ruins?

In the case of Auvers, the exhibition is located in a 18th-century castle, which architecture is partially visible. At times images are projected on elaborate chimney and window frames.

In Eliasson's installations, the architecture is similarly both present and absent. It appears and disappears with the flow of images, creating a rhythm, a beginning and an end (**fig. 1.1**).



Fig. 1.1 Eliafur Eliasson, the Weather project, 2003, Tate, London

- In AR, all images are digital. Yet in some case AR content is shown in confrontation with an actual space (**fig. 2**). As shown here the virtual space can be more enticing than the real space (it has more depth, is brighter, richer in content).



- **Fig. 1** Atelier des Lumières, Paris, Van Gogh exhibition. The metal pillars interact with the projected images

⁴ <https://www.atelier-lumieres.com/fr/latelier-lumieres-dhier-aujourdhui>



Fig. 2 AR used in a museum to add information (a missing painting)

- In our examples, we shall thus compare virtual spaces (in VR, and AR) which are completely immersive. In cases 1 and 2 views of the whole artwork (painting) or a series of paintings, alternate with enlarged details showing brushwork. The images of the paintings are combined with views of actual sceneries and archives showing the historical settings. A narrative constructs both, be it educational, informative and explicit or emotional, implicit. In the case of *Atelier des Lumières*, images appear/disappear in slow motion constructing an emotional narrative (see Pujol, Roussou, Poulou, 2012 for an analysis of archaeological VR setting). Some details are animated (birds flying, water and clouds moving, eyes winking) introducing a sense of life seized on the moment.

The level of audience satisfaction for these devices appears very high:

- a) based on attendance – and the figures given by the organisers.
- b) based on positive reactions observed by the author during two visits to *Atelier des Lumières* and *Auvers* in June 2019: round of applause at the end of the show, respectful silence, facial expressions (smile), excitement (body tension, eyes wide opened), and active engagement (making selfies, lying on the ground as in rapture). The positive reactions are possibly stronger than in a visit to actual museum. Similarly, Eliafur Eliasson's installations are extremely popular, triggering meditative and ecstatic experiences (observation based on the author's visit at Tate Modern on 11th of December 2019).

Part of the reason is that virtual visits present themselves as “spectacles”. Furthermore, the physical qualities of lightness, anti-gravity, bird's view, swiftness permitted by the technology affect the “flow experience” which is an essential aspect of experiencing art (Falk and Dierking, 2000; Kirchberg and Tröndle, 2015; Cattaneo, Schiavi, Silvanto, Nadal, 2017). Last, the immersive character produces a shield from the real and an affective bubble. It affects the impact of the environment.

The use of Virtual technologies in artistic spaces thus offers a significant experimental case study, in which questions of the relation between imagination, representations, emotions, the body and the material can be grasped.

So we shall ask:

- What contributes to the emotional value and cognitive content of the experience, how cognitive content and emotional value are related?
- Is there a feeling of “wellness”, of wonder, and what is it based on? How does it manifest itself?
- What is the role of the senses in the experience of virtual images (vision, audition, tactility); the role of the perception of one's bodily gravity, enclosure, expansion, verticality, orientation, relative size, eye's height; do we value the feeling of infinity, of fluidity, of lightness? Do we feel the same on other occasions? In the scenery? In other non-immersive artworks?
- What is the role of our motor activities (Gallese and De Dio, 2012) – such being able to lie on the floor, being immerse in very large images? What is the role of our biological mechanisms –induced by the virtual presence of natural elements– in the triggering of positive or negative

affordances? (For such previous studies on biological factors in the aesthetic experience in films see Grodal, 2009; Azavedo and Tsakiris, 2017).

- What is the influence of music, of light, of hues?
- How does it compare with the influence of “slow visit devices”, *i.e.* special preparation made by the visitor, that forces him/her to relax, appreciate the “here and now”, open up his imagination and emotional modes – such as the practice of yoga or sophrology before the visit?
- Is there a difference in feeling when using an immersive AR device compared to a smartphone which provides an image inserted in the real environment?
- What is the effect of being in a group or alone?
- What is the medium/ long-term benefit of this experience?
- Are viewers more sensitive to viewing the original artwork/ original scenery after this virtual visit?

WHY

These questions have been those of the phenomenology of art for the last 50 years (Dufrenne, Taminiiaux, 1957; Talon, 1999). Similarly extensive research by artists and art theorists has explored: the role of the frame of the artwork (the parergon of Jacques Derrida), of the symbolic space inside the work, of the space surrounding the artwork and the way the artwork occupies the gallery, the relation of the viewer’s body to sculpture versus painting. This concern was especially that of Minimalism, Installation art, Relational aesthetics (Krauss, 1979; Bourriaud, 1998; Metais, 2019; Bowen, 2019). It led to recent museum studies (Falk, Dierking, 1992; Kulkik, Stock, Kashtan, 2011). Artists are creating immersive installations since the 1970s (see Barbara Hammer, *Evidentiary Bodies* **fig. 10** and Bill Viola’s videos **fig. 11**) but are becoming more prevalent.

- Yet the complex physical, cognitive and emotional interaction of the viewer’s body – understood itself as a trusted environment - with both the artwork, the gallery space, other visitors, has not been much studied in cognitive science. The literature on it is recent (Tröndle, 2014, Vartanian, 2019; Seamon, 2019) and limited. Several projects are now being conducted in a multi-disciplinary way, such as: “E-motion mapping museum experience” of the Swiss Centre for research; “Body & Image in Arts & Sciences Project” (BIAS) from UCL/Warburg Institute. Yet they do not appear to interrogate the use of VR as immersive space, the role of affects, the concept of space interaction.

- The growing use of virtual reality and Artificial Intelligence in our daily life adds another dimension of space to our experience and is infringing on the artistic experience (through VR, AR, as well as information provided through AI devices such as smartphone, robots, beacons to register and monitor people behaviours). Their cognitive and emotional qualities are crucial to understanding the new forms of subjectivity and intersubjectivity that might explain their success, their addictivity, and what may come out of it. The intimate and performative character of smartphones may have an element of trust, which acts as a shield from the alien environment and might be understood as *affective scaffolding* (Colombetti and Krueger, 2015). It leads people to isolate themselves from the environment to bend on their smartphones (**fig. 3**). The use of AR and AI has been the topic of a limited number of cognition and affective studies (Savva, Scarinzi, Bianchi-Berthouze, 2012; Clowes, 2013, 2019).



Fig. 3 Shanghai Biennale, visitors in the interactive space, engaging with their phone and not the interactive experience, December 2018. Photo C Vial Kayser

Robots in museums (such as Berenson at the Quai Branly and Pepper at Smithsonian) have humanoid features, and people interact with them as with humans (Styx, 2019) (**fig.4**).

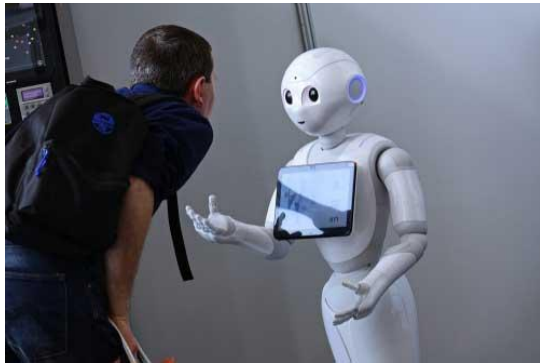


Fig. 4 Visitor with a robot Pepper at the Smithsonian

Other institutions use AI to engage the viewer's body in the environment, as with the interactive table/immersive room of Cooper-Hewitt museum in New York (**fig. 5**) or the Cleveland museum Artlens gallery.⁵

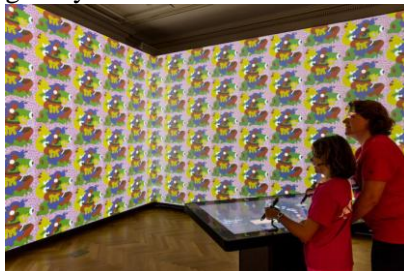


Fig. 5 Cooper Hewitt Museum, New York, « Immersion room »

These positive emotional affordances have not been taken fully into account. The intangible, immaterial and a-corporeal semantic associated with virtual images and AI might be overstated. Indeed we think that the body is still actively involved in these interactions.

Neuroscientists have attempted to measure the role of emotions in aesthetic experience (Vartanian and Goel, 2004b; Chatterjee, Widick, Sternschein, 2010). Yet the emotional potential of AI, AR and VR devices has so far been quite neglected (Clowes, 2019, 2013).

Multi-disciplinary and collaborative projects on the topic are rare – despite a few notable exceptions: the GDR *Esthétique Arts & Sciences*- Esars conceived and led by Zoi Kapoula; the Swiss *E-motion project* and UCL/Warburg “Body & Image in Arts & Sciences Project” (BIAS). They have produced several multi-disciplinary publication (see Freedberg, Gallese, 2007; Ticini, Rachman, Pelletier, Dubai, 2014; Scarinzi, 2015; Kapoula, Volle, Renoult, Andreatta, 2018). Yet many neuroscientists understand aesthetics as a search of beauty and harmony, while art theorists know the importance of the “ugly” and dystopia in acquiring knowledge of the self/environment. The contributions of art history and visual art theory in these endeavours are scarce (Onians, 2007) and contested (Fimiani, 2009).

⁵ https://news.artnet.com/art-world/cleveland-museum-art-studied-digital-engagement-visitors-results-encouragin-1567123?utm_content=from_artnetnews&utm_source=Sailthru&utm_medium=email&utm_campaign=Europe%20Afternoon%20June%207&utm_term=New%20Euro%20Newsletter%20List%20%2890%20Day%20Engaged%20Only%29

HOW

The methodology is based on theoretical premise and an experimental protocol.

Theoretical premise

We shall use cognitive sciences (psychology and neuroscience) as well as the humanities (phenomenology, pragmatics, cognitive philosophy, cultural and museum studies). We posit that the experience of art, like any action of a subject, is supported by an intention involving our “living body” because, as wrote William James “the world we experience is presented at all times with our body as centre, centre of vision, centre of action, centre of interest”⁶.

The artistic experience is thus linked to a search of satisfaction/ conatus, which is at least of three types: cognitive/educational; immersive/meditative/sensory; social (Falk, and Dierking, 2000; Kirchberg, Tröndle, 2015).

During the visit, the viewer is not as if in apnoea, suspending his life, body and culture to engage transcendently with the artwork, as assumed by Kantian aesthetics.

The experience is largely determined by the environment, which presents itself as a set of possibilities of action/ interaction leading to positive or negative perception (affordances) (Gibson, 1986; Luyat & Regia-Corte, 2009; Menninghaus, Wagner, Hanich, Wassiliwizky, 2017). We engage with the environment through our vertical/horizontal bodily coordinates, frontal view, lateral hearing, which all concur to the shaping our emotions, imagination and even superior cognitive capacities (Johnson 1987, 2007; Scarinzi, 2012). Thus our experience is *embodied*, i.e., it uses both body and mind, sensations and representations, emotions and analytical abilities.

It is also *enacted*, built on exchanges between the body-mind and its environment in an active process; *embedded*, taking place in a physical, social and cultural environment and moment, and *extended* using external objects to constructs the exchange between the body-mind and the perception (Newen, De Bruin, Gallagher, 2018).

The artist, as a mediator between the collective and the individual, transmits the tensions between the individual and the social, the conscious and the unconscious to forms and materials. They are then communicated to viewers through complex mechanisms involving intersubjectivity (Durt, Fuchs, Tewes, 2017), empathy and mirror neurons (Freedberg, Gallese, 2007; Onians, 2007).

The aesthetic experience complexifies perceptive mechanisms because an artwork does not allow for direct, sub-conscious reading of what it is about, what cognitive or emotional benefit it may provide, how to handle it. It is a form of dissent from habitual, conventional, and socially accepted affordances. During the artistic experience, the viewer’s representations and belief about the world, drawn from daily experience, are thus confronted with alien objects (the artworks).

An obvious example is the painting *This is Not a Pipe* by Magritte, 1929. Another is the *Campbell soup can* by Andy Warhol, 1962.

Semir Zeki has remarked that fauvist paintings, which do not have “natural” colours are analysed in a visual area of the cortex (V5) which is not that of natural scenes (V2), while figurative paintings are interpreted in that area (Zeki, 1999, p. 200-202.).

Even figurative paintings before the 20th c. are never a copy of the real but a specific interpretation of it, as shown in the unfathomable presence of Leonardo Da Vinci’s *Mona Lisa*, which cannot be grasped merely as the portrait of a famous lady. In the case of ethnographic museums, artworks are the signs of hidden (magical, religious) presence or manifestations of things gone.

Artistic spaces are manmade environments. They are cultural, affective and adaptative niches, suitable for a particular social activity, sharing elements of familiarity (trust) and habitus (transparency) that evolve with technology itself. The process of grasping what the artwork is about goes through several stages, more or less complex depending on the nature of the work, its closeness to the real. It is also

⁶ William James, « L’expérience de l’activité », dans Id., *Essais d’empirisme radical*. Marseille, Agone (2005). Cité par Richard Shusterman, *Le corps et les arts : le besoin de soma-esthétique*, *Diogène*, 2011/1 (n° 233-234), p. 9-29. En ligne <http://www.cairn.info/revue-diogene-2011-1-page-9.htm>.

influenced – positively or negatively– by the environment (Sterelny, 2010) and the viewer’s expectations, and prior knowledge.

Contrary to a self-centred perception proposed both by Cartesian philosophy and phenomenology we insist here on the role of the shared public space, with its artworks, language signs, architecture and people, in creating a common, intersubjective and personal experience reshaped by object perception, as expressed by Bruno Latour:

"It's clear that each object —each issue— generates a different pattern of emotions and disruptions, of disagreements and agreements. There might be no continuity, no coherence in our opinions, but there are a hidden continuity and a hidden coherence in what we are attached to. [...] Objects – taken as so many issues – bind all of us in ways that map out a public space [... a] hidden geography” (Latour, 2005).

WHAT FOR (expected outcome)

The expected outcome will be theoretical but also applied.

At a theoretical level

- The objective is to confront philosophical intuitions (in particular of phenomenologists), empirical observations –by artists, curators, art historians– and neuroscientific data potentially supporting these intuitions, regarding: the cognitive (sense-making) power of art; the importance of the context – architectural, cultural and social – in this process; and the role of the “living body” of the viewer/s, with its implicit inner and peripersonal space. The experience involves a horizontal dimension (the viewer looking at artworks and other people), a vertical dimension (the sense of one’s body presence, verticality, gravity and the architectonic volume) and a dynamic process of encounters between at least **5 components, which are both material and immaterial:**
 - 1 the physical space in which the viewers and the artwork are immersed;
 - 2 the implicit space of the artwork (surrounding it, its virtual inner space);
 - 3 the virtual space of digital technologies;
 - 4 the intersubjective space of social encounters and practices
 - 5 the inner space of the viewer (internal image of self, which is both physical and imagined);

1 Physical, architectural/urban space in which the viewers and the artwork are immersed

The visible spatial context that includes both the viewer and the artwork, such as the outdoor (the urban, natural space) or indoor (museum architecture, stage). It can have various qualities, of which we may want to test the effect on the experience. In most cases, the space around the work is considered as being of aesthetic quality *ie* separated from the ordinary, but it is not always the case (see Street art, graffiti). In our case study the presence of industrial remains is significant of the machine and contrasted with artworks evoking natural spaces.

The presence of other people in these spaces plays a role in qualifying them – whether they are “art lovers”, watch, or unrelated (passers-by...).

2 Implicit space of the artwork

The space around/within the work of art has been studied amply by artists especially in the 1960s (minimal art, Land art) but also in Installation art and in the performing arts. It has also been theoretically examined by anthropologist regarding ethnic, ritual, magical art supposed to have a vicarious agency (Gell, 2009).

This space has for long been restricted to a small vacuum around the work until it became the entire room (in "Site-specific Installation art"). Critical studies also indicate that the larger space (the gallery space, its corridors, its windows) affects the experience of the artwork (as revealed by some artists such as Richard Serra), and so does the political and infrastructural context (Bowen, 2019).

3 The virtual space of digital technologies

It appears to be both social and internalised. It is present in the art gallery, through smartphones and immersive digital images. We would ask what "regimes of desire" they answer, what quality of experience they provide (cognitive, affective, aesthetic).

4 Intersubjective space

Phenomenology informs us about this concept, but mostly presents it as existing in a 2D space, a "plan of immanence" in which one "ego" meets another, without taking into account the 3D space in which the two subjectivities are contained. This 3D space can be actual (yet virtual) or mental. When mental, it can be memorial, cultural, affective, cognitive. It is probably the product of encounters between "alter egos", but also of the environment they are immersed in (Métais, 2019).

5 The inner space of the viewer

The spectator's inner space is built over time through an encounter between his body and mind, self and environment. It may interact with the outer space through a peripersonal space. This space is probably the crucial space to study as it screens the accessibility, desirability (or threat) of other spaces according to their physical or symbolic distance, and affordances.

On an applied level, this project will contribute to the design of artistic environments (actual and virtual) and add knowledge to the benefits of using AR, VR and Artificial intelligence to complement the experience. It will help improve the quality of the experience of visiting museums, biennales and outdoor art and lead to new interdisciplinary strategies to design art spaces as systems (SMART environments)⁷. It can also provide information on the benefits of art in stressful situations (hospitals, retirement homes, prisons, homeless shelters, business districts, schools, etc.) and help conceive integrative, adaptive environments. This research may yield results useful to the field of museum studies, art mediation, art therapy.



Fig. 6 Chateau d’Auvers sur Oise, Virtual visit on Impressionism

⁷ <http://www.hyperbody.nl/research/projects/smart-environments/>



Fig. 7 Barbara Hammer, *Evidentiary Bodies* (still), 2018 (detail). Three-channel HD video installation (colour, sound). Dimensions variable; running time: 9 mins. 30 secs. Courtesy of The Barbara Hammer Estate, COMPANY, New York, and KOW, Berlin. © The Barbara Hammer Estate.



Fig. 8 Two films combine fire and water. 2015 Courtesy Bill Viola Studio. Photo: Kira Perov. Fire performer: Robin Bonaccorsi. Water performer: John Hay.

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