The Transduction of the Archive as an Embodied Space

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Abstract   Following the mass digitization of archives and the growing production of born-digital material, we explore how interactive and immersive technologies can enable new modes of access to these collections in situated contexts. Drawing on Gilbert Simondon's concept of transduction and Mark Johnson's philosophy of embodiment, we examine the trichotomy participant-system-spectators, framing the archive as an embodied space where interpretative paths emerge through interaction and embodied cognition. This interdisciplinary discussion is grounded in two interactive installations we have developed at the Laboratory for Experimental Museology (EPFL), which serve as case studies to illustrate our arguments.

Keywords   Transduction. Digital Archives. Embodiment. Access. Interaction

Summary   1 Introduction. – 2 The Archive as an Embodied Space. – 3 Gilbert Simondon's Concept of Transduction and its Relevance. – 4 Unpacking the Different Layers of Transduction. – 5 Conclusion.

Open access

1   Introduction

Audiovisual (AV) archives constitute some of the most significant mnemonic records of the twentieth and twenty-first centuries. As complex media objects, AV materials capture the multi-layered dimensions of culture through the interplay of audio and visual channels, providing a rich and embodied account of past events, everyday life, and cultural practices. Their unique capacity to convey both explicit and implicit aspects of human experience situates AV archives as critical sources for understanding contemporary history and collective memory. In recent decades, the large-scale digitization efforts undertaken by cultural heritage institutions (Thylstrup 2019), ranging from galleries, libraries, archives, and museums (GLAM sector) to public and private broadcasting companies such as the Radio Télévision Suisse or the British Broadcasting Company (RTSArchives 2018; Wright 2017), have dramatically increased the availability of AV collections. Alongside these digitized holdings, the proliferation of born-digital audiovisual materials has further contributed to the exponential growth of such archives. Traditional methods of curation are inadequate for these vast archives, necessitating computational techniques to develop new modes of access beyond conventional interfaces and textual search mechanisms (Colavizza et al. 2021; Fossati 2012; Kenderdine et al. 2021). These developments in the archival world are paralleled by the "immersive turn" of the museum (Kidd 2018), consisting of the increased adoption of interactive and immersive technologies enabling situated, experiential encounters with digitised cultural collections (Shehade, Stylianou-Lambert 2023).

In this contribution, we propose a novel theoretical framework for the interactive exploration of digital archives within immersive spaces, drawing on the work of French philosopher Gilbert Simondon and his concept of 'transduction', a process by which potential is actualised into concrete form through ongoing structuration (Simondon 2005). Since archives cannot speak for themselves (Derrida 1996), interpretation becomes a critical act shaped by the dynamic interplay between the participant, the system, and the surrounding spectators (Reeves 2011). We adopt Simondon's notion of transduction as a conceptual lens to grasp how meaning and form emerge not from static content, but from embodied engagement and relational processes unfolding within immersive environments.

We illustrate our argument by drawing on two installations developed at our laboratory. The first, *Dancing Through Time* (Alliata, Kenderdine 2024), uses the Linear Navigator (LN), a 4K touch screen mounted on a twelve-metre motorised rail, to explore a collection of dance recordings from the Prix de Lausanne archive, an important dance competition for young dancers. The 1,500 videos are ordered

chronologically and revealed dynamically as the screen moves on the rail **[fig. 1]**.

Figure 1   Two visitors engaging with *Dancing Through Time* by interacting with the 4k touch screen of the Linear Navigator on its rail

Figure 2   Visitors in the Panorama+ watching a silent film of the Mutoscope and Biograph Collection immersed in the virtual world of the vertical strips of the *BiographScope*

The second, *BiographScope* (Alliata et al. 2024), uses the Panorama+, an omnidirectional stereoscopic large space, to immerse visitors in a collection of silent films from the end of the nineteenth century, from the Mutoscope and Biograph Collection of the Eye Filmmuseum. In this installation, the analogue films are represented by digital

reproductions of the original strips of frames that can be selected and played **[fig. 2]**.[1]

2 The Archive as an Embodied Space

With systems such as the Linear Navigator or the Panorama+, "embodied metaphors" rooted in our bodily experiences and interactions with the world are operated (Johnson 1987). Digital collections are spatialized and mapped to real space, radically changing how one engages with the archive. In *Dancing Through Time*, the 1,500 dance performances are distributed chronologically along the rail of the LN, metaphorically representing the axis of time. By moving the screen on its rail and thus literally walking through time, the whole archive can be explored fifteen performances at a time **[fig. 3]**. Similarly, because of the omnidirectional nature of the Panorama+, in the *BiographScope* visitors physically orient themselves within the collection of silent films thanks to both egocentric and allocentric perspectives (Kenderdine 2015, 34). By entering the immersive space, they are thus subjected to the embodied metaphor of stepping into the archive, engulfing themselves in the archive and inhabiting it. It is precisely this metaphor of inhabiting the archive that has led us to consider the archive as an 'embodied space' in its architectural sense because, as Novak (1991) argues, "a space modulated in a way that allows a subject to enter and inhabit it is called architecture" (279). Consequently, we have named systems that provide a spatial navigation of a digital archive 'Spatial Navigation Systems'.

Adopting an architectural perspective offers some interesting venues of thought. In his seminal work *The New Vision*, Hungarian artist and photographer László Moholy-Nagy argues that space "must be tested by the means by which space is grasped, that is, by sensory experience" (1928, 57).[2] Similarly, Austrian art historian August Schmarsow argues that "bodily movement through space rather than stationary perception of form [is] the essence of architecture" (Schwarzer, Schmarsow 1991, 50). These assertions strongly suggest that only embodied beings can experience space, highlighting the relevance of Johnson's philosophy (2015). As argued in Kenderdine (2015), we believe the dimensions of the body proposed by Johnson (2008) can serve as the basis for

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1 Note that both installations are the subject of dedicated publications (Alliata, Kenderdine 2024; Alliata et al. 2024), delving into the technical details, the design process and their formal evaluation through user studies. Hence, in this contribution, they will only be used as examples.

2 It is likely that his wife Lucia Moholy contributed to these writings, as she reported in her own accounts of the artist (Forbes 2016).

an 'embodied framework' to capture how visitors can explore digital archives with Spatial Navigation Systems.

First, the *sensorimotor body* refers to our corporeal existence, emphasising kinaesthetic perception and proprioception (Kwon, Iedema 2022; Sheets-Johnstone 2011). This sensory awareness is essential to experiencing the archive as a space to be inhabited and navigated. Drawing from enactivist theories (Thompson 2010), this dimension foregrounds spatial cognition of the archive as an emergent, sensorimotor process. Compared to Johnson's original framework (2008), we then introduce an additional dimension: the *interactive body*, which foregrounds the participant's agency and acknowledges that visitors are not merely perceiving the installation but actively shaping their own trajectory through the archive. In *BiographScope*, for instance, the visitor dynamically reveals the contents of the collection by moving through the virtual space. They make intentional choices, selecting which strips of frames to play and whether to activate or mute the sonification of the silent films. These decisions are performed in a public setting, under the gaze of others, leading to the next dimension: the *social body*. This dimension acknowledges the role of interpersonal dynamics in shared environments such as museums, where interaction is both performative and relational (Reeves 2011). Then, the *cultural body* addresses how cultural contexts shape bodily experience – from gestures to interpretative frameworks – and highlights the influence of personal and collective histories on how visitors engage with the archive (Drucker 2022b; Falk, Dierking 2016). Finally, drawing from Johnson (2015), we include the *affective body*, which foregrounds the emotional dimension of embodied experience. This aligns with recent scholarship in museology emphasising the affective turn in exhibition design to foster deeper visitor engagement (Agnew 2007; Kidd 2015).

Figure 3 Close up of the Linear Navigator showing the main interface of Dancing through Time, in which fifteen dance performances are visible at any time. Selecting one of the vertical slits opens the full video view

In both installations, only a fraction of the whole collection is visible at any given time. In *Dancing Through Time*, the Linear Navigator screen reveals fifteen items at once. In *BiographScope*, the number of visible items varies, but new film strips gradually appear as visitors move through the Panorama+'s virtual world. This partial visibility is not a technical constraint but a curatorial choice that foregrounds the exploratory nature of access, where the archive is progressively revealed through embodied interaction. On one level, the sheer volume of material precludes an all-encompassing, total view of the archive. On another, this spatial structuring enacts a shift from external observation to internal inhabitation: visitors no longer survey the archive from the outside but encounter it step by step, from within.

We term the interpretive trajectories that emerge from this experience 'archival paths'. These are not algorithmically generated sequences or pre-linked narratives, but conceptual constructs that arise as each participant navigates the space, making situated selections shaped by proximity, motion, and curiosity. The archive is not experienced as a fixed structure but as a contingent field of potential, co-shaped by interaction.

This metaphor draws inspiration from the 'architectural path': the sequence of spatial impressions a person experiences while walking through a building. In architecture, meaning is not delivered all at once but unfolds through bodily movement and perceptual progression. The Swiss French architect Le Corbusier popularised this idea with his concept of the "promenade architecturale" arguing that "architecture must be walked through and traversed [since] a chimerical man with the eye of a fly and vision simultaneously circular [...] simply does not exist" (Corbusier 1961, 45). Long (2016), however, argues that such a concept was already present in the revolution operated by Viennese modern architects at the turn of the twentieth century. Indeed, building on Schmarsow's radically new conceptualisation of architecture at the turn of the twentieth century (Schwarzer, Schmarsow 1991), Viennese architects experimented on how space could be navigated and inhabited, highlighting the crucial role of movement in creating an "affective path" (Long 2016, 50), echoing the affective body in our framework.

Although our archival path draws inspiration from these architectural ideas, there is a crucial difference between Le Corbusier's and Long's ideas of a path and our proposition. The former is predetermined by the architect, whose goal is to create an implied itinerary within the building to guide its inhabitants with more or less freedom, while the latter is emergent throughout the interactive encounter and depends on the situated context and the visitor interacting with the system who thus becomes an active

co-creator of the experience, a "participant" operating in front of spectators (Reeves 2011).

In summary, in this contribution we are framing access to large digital archives using Spatial Navigation Systems, interactive and immersive technologies that spatially structure digital content into embodied spaces in a situated context, as an experience akin to traversing an architectural building. Through the participant's interactions under the gaze of spectators, unique perspectives on the collection emerge, which we have termed 'archival paths.' In the remainder of this contribution, we mobilise the work of French philosopher Gilbert Simondon and his concept of 'transduction' to capture the intricate relationships governing the trichotomy of participant, system, and spectator.

3   Gilbert Simondon's Concept of Transduction and its Relevance

Gilbert Simondon addresses his concept of 'transduction' in several texts (2005; 2015; 2019). He primarily defines it as an "operation through which an activity propagates gradually within a domain, by founding this propagation on a structuration of the domain that is realized from one place to the next" (Simondon 2005, 32). It is the process by which concrete realities are actualised from a field of virtuality, an infinite reservoir of potentialities. Crucially, however, the 'virtual' is understood here not as a representational simulation, as in Virtual Reality, but as a dynamic field of potential, where meaning emerges through interaction.

This understanding is consistent with modern shifts in archival theory, which increasingly characterise archives not as static repositories of fixed meaning, but as dynamic and fluid entities shaped by interaction, interpretation, and recontextualization. As Cook's genealogy of archival paradigms demonstrates, the archive has evolved from a juridical site of evidentiary preservation to a participatory space of collective memory-making and community stewardship (Cook 2013). The most recent, community-oriented paradigm sees archiving as an interactive and dialogical process, where authority is distributed and significance is co-constructed. Moreover, as Brunow (2017) and Paalman et al. (2021) argue, digital audiovisual archives demand performative practices of access leveraging spatial, affective, and embodied forms of engagement to activate them.

In this light, we propose to understand the digital archive as a transductive field – open-ended and contingent – where archival paths are not predetermined but co-emerge through acts of navigation, interpretation, and embodied encounter. The shift is

thus not simply from analogue to digital, but from static storage to activated potential, where archives become spaces of transformation rather than containers of fixed memory.

The mobilisation of transduction in this context aligns with De Assis's (2017) reading of Simondon in music performance. Citing Jacques Garelli, he highlights transduction's emphasis on "a logic of creation" (De Assis 2017, 698). This processual nature, defined as "an activity [that] propagates gradually" (Simondon 2005, 32), contrasts with the Aristotelian hylomorphic view of archives as static repositories, opposed by current debates on the communal (Cook 2013) and performative (Brunow 2017; Paalman et al. 2021) turns of the archive. Instead, transduction foregrounds the emergence of new interpretations through interaction (the archival paths), echoing Gumbrecht's (2004) shift from a culture of meaning to one of presence. Since Simondon prioritizes events over fixed meaning, we can view archives as fluid systems where individuation continuously generates new relationships. Lastly, De Assis (2017) applies Deleuze's idea of conceptual 'thickness' to transduction, noting its multiple interpretations across Simondon's work.

Following De Assis's approach, in the next section, we will therefore resort to unpack, layer after layer, the thickness of Simondon's transduction, applying it to analyse the exploratory act of a participant navigating an archive by engaging with a Spatial Navigation System in a situated context. Because of the embodied nature of the metaphors that these systems operate, we will weave Johnson's bodily dimensions (Johnson 2008; 2015) throughout these different layers. We will thus conclude that the different elements of the interactive experience assemble in a complex chain of transductive and interpretative processes, echoing the argument proposed in Rodríguez-Ortega 2024.

4 Unpacking the Different Layers of Transduction

4.1 The Spatial Navigation System as a Transducer

At its core, a transducer mediates between potential and actual energies. Simondon illustrates this with the example of a continuous electric relay, which modulates energy flow based on external information (De Assis 2017, 699). In this context, the interface functions as a transducer, facilitating engagement between visitors and the digital archive. Reading this first interpretation of transduction, the interface immediately comes to mind, that which digital humanist scholar Johanna Drucker describes as "a site of between-ness, of negotiation or exchange across thresholds and boundaries" (Drucker 2022a, 1). Conventional perspectives on the interface describe it as

"the boundary or contact surface for human-computer interaction" (Woletz 2018, 102), focusing on the input and output devices.

Spatial Navigation Systems expand this definition, operating as an 'embodied interface' that not only integrates physical movement into digital interaction but establishes it as an essential component of the cognitive interpretation of the digital archive.[3] In *Dancing Through Time*, the necessity of proximity due to the touch inputs of the LN further reinforces this embodiment: participants must stay close to the screen, moving as it moves and often being accompanied by other visitors shadowing the interaction. A similar principle applies to the Panorama+, where visitors in the *BiographScope* reorient themselves to embrace the entire 360-degree display. The system fosters an embodied metaphor of being 'inside' the archive rather than viewing it externally. This spatial immersion is further reinforced by a multi-channel sound system, intensifying the sensory experience (Blesser, Salter 2007).

In both installations, proprioceptive and kinaesthetic awareness are essential to engagement, resonating with architectural theories that emphasize movement as central to spatial perception (Moholy-Nagy 1928; Schwarzer, Schmarsow 1991). While *Dancing through Time* was installed in Beaulieu, Lausanne, for the Prix de Lausanne 2024, the logs of visitors' interactions were recorded. They showed that, over the week of the Prix, participants walked an average of 8.83 ± 0.92 m. The embodied nature of these interaction modalities echoes Massumi's (2002, 135) statement that "the body, sensor of change, is a transducer of the virtual".[4]

This engagement, however, extends beyond direct interaction, as both participants and spectators interpret the audiovisual outputs of the system – what is displayed on the screen, what is heard through the sound system, and what is perceived through movement within the immersive space. As Rodríguez-Ortega (2024) argues, human subjects (as physical bodies) first physiologically transform light and sound waves received from the system. Then, they cognitively interpret these visual and aural outputs as meaningful cultural signs within their specific social and contextual framework (Falk, Dierking 2016), as it resonates with their cultural bodies and echoing Drucker's (2022b) notion of the "social subject".

Beyond this, however, we argue that visitors also engage in a second layer of cognitive interpretation shaped by their sensorimotor

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3 Stockinger (2015) aptly reflects that digital media are only a "potential cognitive resource" that must be transformed "in order to become a user or a user community relevant one" (58).

4 Massumi, like Simondon, uses the term 'virtual' as a field of potentials, rather than in the sense associated with Virtual Reality.

body. As they navigate the system, they do not only decode individual elements but also construct meaning through embodied metaphors, enacting them through physical movements and mapping the archive spatially as they move through it. Simultaneously, the system itself offers a structured yet open-ended space for interpretation, where each new state builds on previous interactions. What has already been seen, what remains visible in the visitor's field of view, and what other materials are in proximity all contribute to the archival path's emergence. As Massumi (2002) describes in his discussion of hypertext, systems with a high "quotient of openness" (138) allow meaning to emerge relationally, shaped by both the structural affordance of the system and the interpretive actions of the visitors.

In sum, the Spatial Navigation System functions as a transductive interface, structuring interaction between the archive's potentialities and the participant's agency and shaping visitors' interpretative processes as they enact embodied metaphors. Rather than merely mediating, it reconfigures both system and participant, shaping their evolving relationship. Indeed, as Anna Munster (2006) observes, technology articulates a dual movement of constraint and enablement, shaping how participants can function within specific contexts.

The system dynamically updates in response to participants' manipulations, and participants, in turn, adjust their decisions based on these changes, generating emergent archival paths. This continuous interplay leads directly to the next layer of transduction: its processual nature.

4.2 Transduction as a Temporal Process

Transduction is inherently processual, unfolding "gradually within a domain" (Simondon 2005, 32). Simondon describes it as "something transmitted little by little, something that propagates, eventually, in amplified form" (De Assis 2017, 700), emphasizing its dynamic nature. Each interaction within a Spatial Navigation System can be seen as an 'ecceity' – "a passage, a singular point in timespace that dramatizes it, curving it, folding it, giving it transient form and temporal structure" (De Assis 2017, 706). De Assis, drawing on Deleuze and Guattari, distinguishes 'haecceity' from 'ecceity,' noting that Simondon's apparent misspelling without the 'h' reinforces the idea of emergence, i.e. an event coming into being rather than a stabilized entity. This perspective aligns with the concept of the archival path, which is not predefined but emergent, materializing through a sequence of interactions and driven by the participant's choices influenced by both the system and the spectators.

A Spatial Navigation System does not present an archive in its entirety; it progressively reveals it. Unlike an external,

comprehensive view of a collection, these systems immerse visitors within the collection in a process of discovery, where meaning unfolds over time. This paradigm echoes recent discussions of digital complexity, such as the metaphor of the megadungeon, a "model for the digital that is capable of capturing its complexity" (Berti et al. 2023, 187). In this view, "the only way to explore [the digital archive] is through partial, playful engagement with its vertiginous, multidimensional, phantasmagoric depths" (188). This resonates with the digital reappropriation of the figure of the Parisian urban flâneur into the "information flâneur", who navigates digital spaces through curiosity-driven exploration (Dörk et al. 2011), highlighting the performative aspect of the viewer (Schipper 2017).

In sum, transduction's temporal nature highlights the emergent and iterative construction of meaning in interactive archival encounters. The archival path is best understood as a sequence of 'ecceities', as a continuous process of participant-system interactions, open-ended and evolving. These interactions progressively disclose the archive, shaping not just access but interpretation itself. Yet, for transduction to occur, an initiating element is required – what Simondon calls the "structural germ" (2005), to which we now turn.

4.3 The Participant as the Structural Germ

In Simondonian terms, the archive functions as a metastable system, holding a reservoir of potential that remains latent until activated by interaction. The infinite recombinations and exploratory paths embedded in the collection form this field of potential energy, held in equilibrium until a participant starts interacting, serving as a "structural germ" bringing "singularities" (Simondon 2005), i.e. prior knowledge, expectations, and cultural identity in our context. These singularities evolve through interaction, shaping the participant's experience and the emerging archival path. Taking the experience of engaging with hypertext as an example, Massumi highlights the crucial role of the reader in exploring hypertext's "quotient of openness", "creating resonances and interference patterns moving through the successive, linked appearances" (Massumi 2002, 138). Furthermore, he discusses the importance of affect and emotions as other entities resonating throughout the transductive process, echoing the affective dimension of the body (Johnson 2015). Recognizing that participants themselves are transduced through interaction thus challenges static search paradigms that fail to accommodate evolving user needs (Whitelaw 2015).

Andrea Pinotti's reinterpretation of immersion, drawing from the myth of Narcissus, frames the participant of immersive experiences as one who perceives an image as immediate, present, and unframed,

"crossing its threshold" (Pinotti 2021, 38). This perspective resonates with Spatial Navigation Systems, which immerse visitors inside the embodied space of the archive, inviting them to enter and inhabit it instead of simply accessing it from the outside. Furthermore, as with the mirroring pool in Narcissus's myth, visitors exploring a digital archive metaphorically see themselves in the collection, bringing their individualities, their singularities, as the starting point of their interactive experience and resonating them throughout the emergence of the archival path. This was evident in *Dancing Through Time* when it was exhibited at the Prix de Lausanne 2024. Visitors frequently explored the archive via the country of origin or the names of dancers, seeking figures they knew or admired. One respondent, for instance, described looking up "dancers that you've looked up to since you were young" (Alliata, Kenderdine 2025). Such behaviours illustrate Johnson's (2008) cultural body, where personal context drives engagement. Echoing Greenblatt's (1990, 19) notion of resonance, each item in the archive has the capacity "to evoke in the viewer the complex, dynamic cultural forces from which it has emerged", as the visitor interprets it as a meaningful cultural sign within their own cultural frameworks. Thus, the emergence of concrete archival paths produces unique and novel perspectives of the archive being explored.

In sum, the participant initiates the transductive process as a structural germ, carrying singularities that shape the unfolding interaction. Through engagement with the system, these singularities, alongside the participant's affective body, propagate, resulting in an emergent archival path. This transductive process however does not occur in a vacuum, it is always in the situated context of the trichotomy participant-system-spectators. Hence, we now turn to Simondon's concept of associated milieu to characterise these dynamics with respect to transduction.

4.4 The Situated Context of Transduction

Simondon's (2005) concept of 'associated milieu' provides a useful lens for understanding how the dynamic interplay between system, participant and spectators shapes the process of transduction in interactive environments. As mentioned, the system's response to participants' manipulations and the subsequent adjustments participants make in their decisions create emergent paths within the archive. This reciprocal interaction reflects the notion of transduction, where both the participant and the system influence each other in a continuous cycle, and echoes Johnson's (2008) ecological body with visitors enacting the embodied metaphors operated by the system. In the context of Simondon's theory, the

associated milieu encompasses not only the physical system but also the social and ecological dimensions – the collective presence of spectators, the embodied actions of participants, and the dynamic environment in which they all engage. For Simondon, the milieu is not a static backdrop but a vital, active context that continuously evolves as it interacts with the individuals within it (Barthélémy 2012, 207). In this case, the system itself serves as part of the associated milieu, adapting to the participant's actions and shaping their future decisions. As participants adjust to these changes, they contribute to the ongoing process of individuation of a concrete archival path, with each new decision influencing the state of the system.

The social context, best captured with Johnson's (2008) social body and including the passive presence and active influence of spectators, further enriches this process. Indeed, on the one hand, even the simple awareness of other people potentially watching the interaction transforms the participant into a performer (Dalsgaard, Hansen 2008; Reeves 2011). Quoting media artist Jeffrey Shaw, the interactive encounter "constitutes a 'performance' [and] for the other spectators [it] becomes 'theatre'" (Dinkla 1994, 3; emphasis in the original). On the other hand, spectators can also directly interact with the participant. For instance, when groups of people engage with the *BiographScope* in the Panorama+, we commonly observe visitors interacting between them, commenting on the silent films being played and instructing the person interacting which ones to play next.

Furthermore, these interactive experiences unfold continuously, with each new participant engaging with the system in the state left by the previous visitor. In this public and situated context, the emergence of an archival path is shaped collectively rather than being the sole responsibility of an individual participant, even in a single-user, multi-spectator paradigm. This interaction underscores the relational nature of transduction: both the participant and the spectators shape each other's actions, and their engagement with the system is not a linear, individual process but a collective, dynamic flow. This relational, open-ended unfolding of meaning challenges the notion of a single-user, isolated experience, highlighting how transduction in such environments is shaped by both the system's affordances and the social and ecological contexts in which it is situated.

In sum, the process of transduction in Spatial Navigation Systems is inherently relational, shaped by the reciprocal interplay between participants, spectators, and the system itself. Drawing on Simondon's concept of the 'associated milieu', this dynamic extends beyond individual interactions to encompass the situated context in which engagement unfolds. The participant's embodied actions, influenced by both the system's responses and the presence

of spectators, contribute to the emergence of an archival path that is collectively shaped rather than individually determined. This underscores the performative and intersubjective interpretation of archives in situated and collective experiences, where meaning is not fixed – since archives cannot speak for themselves (Derrida 1996) – but is continuously co-constructed through embodied and social engagement, aligning with contemporary views on digital archives (Cook 2013; Brunow 2017; Paalman et al. 2021).

5 Conclusions

In conclusion, this paper has explored the transformative potential of interactive and immersive technologies within the GLAM sector through an embodied, transductive lens. We have demonstrated how Spatial Navigation Systems, as transductive interfaces, go beyond traditional user interaction by facilitating a dynamic, embodied engagement with digital archives. Drawing from Gilbert Simondon's concept of transduction, we have illustrated how the process of individuation in archives emerges through interaction, where meaning is not fixed but continuously reconfigured in response to participant and system interplay. The role of the participant as a 'structural germ' has been key in this process, as each individual visitor brings their singularities to the archive, shaping the emergent archival paths through which meaning is constructed.

We have also highlighted the situated and collective nature of transduction in these interactive environments, where the system's affordances, the participant's embodied actions, and the social context interact in a fluid, open-ended manner. This collaborative approach to archival access starkly contrasts traditional models, suggesting that these digital collections, when viewed through the lens of embodied cognition and transduction, can become dynamic spaces of potentiality rather than static repositories.

Ultimately, this paper argues for the importance of integrating embodied and situated modes of access to digital archives within the immersive turn of the GLAM sector, highlighting the importance of acknowledging archives as evolving and interactive spaces for reinterpretation.

Acknowledgements

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