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What Choreography is or might be in the Post-Digital Era? A Study on the Kinaesthetic Expressions of Digital Performance

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The purpose of this article is to analyse how the concept of choreography developed in the post-digital era. The modern term choreography indicates the making process of a 'relational performance architecture' consisting of the hybridisation of kinaesthetic and mediatic presences (Birringer 2004). Accordingly, the paper aims to discuss recent the decline of digital performance based on the migration (Bishop 2018; Monda 2020) of the kinaesthetic experience in choreographic artifacts. By considering three artworks performed in the context of the DRHA Conference Exhibition 2023 – a demo in Extended Reality, a performance in Virtual Reality, and a digital installation with the application of Artificial Intelligence. The subject will be discussed, going through three definitions of choreography. Firstly, choreography is examined as the transcodification of the movement qualities into a 'liquid architecture' (Novack 2010) planned to transmit and translate somatic information throughout digital circuits. Secondly, the paper explores the concept of 'mobile architecture' (Manning 2013), which underlined a conception of choreography as an event for the ontogenetic architecture of environments in movement (Manning & Massumi 2014). A third approach considers the multiple ways of writing/coding/designing computer-generated movements by transmedia strategies (Jürgon 2016). The term transmedia choreography is investigated taking into consideration how the knowledge embodied by experiencing movement, can shape the dialogue between several media choreographed together to establish a 'kinesfield' (Schiller 2003), an interactive platform designed for disseminating intangible cultural heritage (Monda 2022).

Introduction to the case study: 3 Artworks from DRHA Exhibition 2023

Titled *Performing Cultural Heritage in the Digital Present*, the 27ᵗʰ edition of the International Conference Digital Research in Humanities and Arts (DRHA), examined how digital strategies can be used to promote a broader range of research practices for exploring the intersections between tangible and intangible cultural heritage. Chaired by Antonio Pizzo and Gabriella Giannachi, I was involved as program curator in the event hosted by the Università di Torino between the 10ᵗʰ to the 13ᵗʰ of September, 2023. In this context, the DRHA Exhibition was planned to provide a common ground to put theory and practice in dialogue. It allowed a reflection on the conference subject, by leading delegates and guests, in the experience of eleven different digital artworks including: performances in virtual reality, innovative sound installations, video projections, as well as immersive and interactive objects co-designed by Artificial Intelligence. Curated by Federica Patti and organised in collaboration with UniVerso – the permanent observatory on contemporaneity of the Università di Torino – the exhibition supplied a crucial space for supporting the *learning-by-doing* and experimenting with aspects that cannot be expressed through spoken language. Designed as an exhibition in the different rooms of the *Rettorato* building, each contribution focused on the central role of the visitor's body for the transmission of intangible in-form-actions. In this respect, the article takes into consideration three artifacts performed in the DRHA Exhibition 2023 as a case study, to articulate the expanded meaning of the term choreography and raise questions on its less known application in the post-digital era. The paper draws attention to three artworks that explored the objectification of movement language by applying different choreographic strategies. These are:

a) *Odin Theatre: Entangling Practices* (Parente & Marouda 2023): an Extended Reality (XR) experience where choreography is a bodily score that archives the intangible cultural heritage from Odin Theatre's somatic training practices. In the project, the performer's choreographed body is the source to shape the avatar design, as well as the matrix to generate the liminal space where the hybridisation takes place.

b) *Peaceful Places* (Landi & Lanza 2023): a performance in Virtual Reality (VR) based on the objectification of emotional memory. This artifact helps us to observe how choreography might be a channel to enable the synaesthetic transformation of human emotion in a haptic dimension and allow the *immersant* (Birringer 2008) travel through sensations from the past to the present for founding a future self.

c) *Lights! Dance! Freeze!* (Papatheodorou & Wolpert 2023): an interactive installation with Artificial Intelligence created by Random Quark on the imaginative culture

of movement. Here, choreography is applied using a transmedial strategy that aims at mediating different technologies – such as motion tracking, Artificial Intelligence, and moving images – to translate precise elements in the user's physical thinking; and thus, transform bodily conceptualisations into cine-choreographic narratives.

Choreography as Liquid Architecture

At the DRHA Exhibition 2023, Adriana Parente and Iulia Marouda presented *Odin Theatre: Entangling Practices*, a demo from a research project founded on the translation of the analogue body – which is assumed to be a living archive in the Odin Theatre's training practices – into an Extended Reality (XR) experience conceived for training users to embody the performer's acting techniques.

> Odin Theatre group has a long tradition of more than 60 years, in which it has developed its psychophysical techniques and practices for actor training. In this interactive artwork made for Oculus Quest 2, Parente & Marouda are showcasing some exercises that represent a translation process, by extracting the intrinsic qualities in each one of them and interpreting them into interaction scenarios. The project additionally explores how an entanglement of exercises can renegotiate the learning process and create space for new ways of experiencing one's own scenic presence. (Parente & Marouda, 2023)

In the last three decades, the technologizing of dance[1] performed throughout the actualisation of pragmatical research projects underlined the possibilities coming from capturing movement's qualities to study the choreographic intelligence (Grove et al. 2005) and visualise aspects of our physical thinking beyond the physical body in cognitive artifacts (Dixon 2007). These projects include: Merce Cunningham's Lifeform software (1989); the CD-Room, William Forsythe's Improvisation Technologies (Kuchlmeister et al.1999); the publications Material for the Spine by Steve Paxton (2008) and Anna Teresa De Keersmaeker's A Choreographer Score (De Keersmaeker & Cvejić 2012); the multidisciplinary project Motion Bank (Forsythe & DeLahunta 2008–2014); A Transmedia Knowledge-base for performing art (Fernandes 2016); until the recent AI prototype Living Archive developed by Google Art and Wayne McGregor (2019). Moreover, some interdisciplinary projects e.g., WhoLoDance (2016–2018) – studied the potential of capturing, processing, and mediating choreographic intelligence by digital objects and virtual reality (Cisneros et al. 2019: 1–32).

The project *Odin Theatre: Entangling Practices* can be considered aligned with the above-mentioned research tendency, where digital devices are programmed to cooperate in the transmission of the performer's embodied and tacit knowledge. The experiment starts by asking visitors to wear an oculus, thanks to which they are projected in an Extended Reality. Here, they can choose to explore the section on movement or sound. By playing in the set designed for movement training, users are relocated to a dimension with two avatars. The task is to learn the avatars' movement sequences following their actions. The challenge for the user is reorienting the equilibrium and proprioceptive abilities in altered conditions where the Oculus obstructs the average viewer's capacity. In contrast, if the visitors select to play with the sound section, they are projected into the room where the demo is performed but transformed into a container of many bubbles. The qualities of the movement – such as the volume (big or small), the speed (fast or slow), and the level of the action (up or down) – change the sound setting where the visitors move, transforming the number of bubbles, as well the dimension and the location as they take in the XR.

Parente and Marouda's research started by considering the performer's body as the archive where all the memories from movement experiences reside. Those memories include a subject's emotional, sensorial, anthropological, and socio-cultural spheres and the skills a person embodies by training the body through focused actions and perceptions. In this regard, the ideology of the 'body-as-archive' developed by André Lepecki (2010: 28–48) is closely related to the project. Thus, the actor's body is assumed as a *dispositif*[2] through which the users have access and *anarchive*[3] the intangible cultural heritage incorporated throughout the years of Odin Theatre's training practices. In these terms, in the XR experience, the 'principles that return' – theorised by Eugenio Barba in his book *The Paper Canoe* (1995) – become very tangible; or rather, an expert visitor can perceive those principles of movement recognised in different traditions of Theatre Anthropology by the funder of the Odin Theatre (Barba 1995).

By focusing on the kinaesthetic experience as a channel to exchange and re-enact such oral traditions, the project replaces the role of choreography with neither a strategy of representation nor the composition of the movement language in dance form. In this case, choreography is a system for the recursive translations of the performer's embodied knowledge. Such a system is based on programming a technology – wherever its nature is, organic body or digital one[4] – to process live an ongoing transformation of its models. Indeed, Parente and Marouda wrote:

> We are called to translate corporeal energies into virtual forces, physical bodies into their abstracted virtual counterparts, from physical and vocal techniques

to metadata to an immersive textural architecture for navigating archives. This translation chain challenges a rereading of history as a reconfiguration of documents, oral tales, and reconstructions through affective transmissions, where poetic virtual spaces evoke particular intra-actions with knowledge itself (2023: 6)

What appears to be innovative in this project is the application of choreography as a creative system conceived to allow the users to perform virtual navigation of the living archive. Such a matrix originates in the avatar design. The exchange of in-form action between analogue and digital bodies is resolved in a generative geometry, on which the virtual environment is established. In this context, choreography concerns the transcodification of the kinaesthetic qualities and movement abilities into a liquid architecture planned to transmit and translate somatic information throughout digital circuits. According to Marcos Novack, who theorised on the concept of liquid architecture, 'This is an immense transformation: for the first time in history, the architect is called upon to design not the object but the principles by which the object is generated and varied in time' (1991: 284). Appropriately, the attention to principles, not the digital artefact, makes choreography central in this research. The Extended Reality is designed to project the performer's training movement principles. Such a choreographic organisation of the performative dimension enables the establishment of communication on a precognitive level for sharing values based on intangible embodied knowledge and kinaesthetic experience. Furthermore, the integration in the XR of the visitor's interactive body participation leads to experiments on choreography as a channel for training the users' navigation in the virtual space. In these terms, as a liquid architecture choreography acts equally as a movement technique, which is not fixed in a single figure, it should be seen as a generative geometry 'smoothly or rhythmically evolving in both space and time' (Ibidem) in relation to who is enacting it. As much as a movement technique, such liquid architecture is transmitted orally by digital meta-gestures. It empowers the prosumers' performance, increasing their proprioception and enlarging their kinetic abilities in digital space. As Susan Broadhurst (2006) suggests the intertwining of the physical and the virtual generates a 'liminal space' where there is 'potential for a reconfiguration of creativity and experimentation' (Broadhurst & Machon 2006, xix). In these terms, in the post-digital age, choreography should not just mean dancing writing or movement composition. Following Johannes Birringer's studies, we should approach choreography as a 'relational performance architecture' constituted of the hybridisation of kinesthetic and mediatic presences (2004: 22).

Choreography as Mobile Architecture

The second artwork, *Peaceful Places* by Margherita Landi and Agnese Lanza, is a Virtual Reality (VR) performance developed to reflect and react to the consequences of social distance caused by the global pandemic. The choreographers' purpose was to propose a *dispositif* for re-enacting the pure feeling disclosed in a hug. Alfred Whitehead (1978) hypothesised on the 'pure feeling', describing such phenomenon as something that matters because it is felt, but we cannot actually or intentionally register. One's experience archives it and affects his/her self-awareness, reorienting what counts in life.

Peaceful Places starts with Margherita Landi asking the participants without oculus to stand in a circle as in a ritual and to pay attention to their bodies' feelings for a while. Afterwards, she gives some tasks to the audience, such as following simple movements they will watch in the performance and reproducing them by simulation. Subsequently, very gently, she helps the participants to wear the oculus. Through the device, they are transported into a big circular garden delimited by marble doors with columns. Here, eight figures slowly appear and move close to the garden's centre, where the immersant is. They are four couples with different relationships: a grandfather and grandson, a mother and a son, a mother and an adult daughter, and childhood friends. The users stay in their virtual spots, just turning to observe the surroundings. In such a stillness, they virtually navigate, driven by the empathic relation they establish with the intangible stories behind each hugging. The gesture affects the moving selves, who become part of a haptic dimension where memory associations flow and the choreography is composed by the untouchable and unspeakable. As Margherita Landi and Agnese Lanza wrote:

> Hugging is a gesture that we all know and share from birth. Being in a hug forces us to confront our vulnerabilities, sometimes with the discomfort of proximity, but it can also open a temporal space where we can allow ourselves the luxury of slowing down and finally listening to ourselves. Peaceful Places allows everyone to transform their emotional state into motion, training their empathy and body to hug. Real people, with real emotional bonds, lead the participant's movements by sharing their tenderness, becoming archetypal characters with whom we can all identify. [...] The performance works specifically on the intangible verbally and on the tangible kinaesthetically, on what is unspeakable by words but can be touchable by movement. (2023: 7)

In this work, Virtual Reality is not a container of information, but an environment conceived as a body generated by the *moving-selves,* through the experience of the *e-motion.* This means what changes the cohesion of the bodies in the digital space; what makes the architecture alive is the materialisation of the intangible value the hug brings

to the users as a common gesture. With this in mind, we could refer to choreography as adopting the concept of 'mobile architecture' described by the choreographer and philosopher Erin Manning (2013). She underlined how choreography might be conceived as a set of kinaesthetic events for the ontogenetic architecting of ecologies of the moving (Manning & Massumi 2014). She argued about the ideology, as mentioned earlier, as follows:

> Choreography as mobile architecture is anathema to any kind of setting into place of ideal conditions that transcend event-time, be they those of structure, of object or of individual. Choreography as mobile architecture emerges instead with the diagrammatic force of ideas in the materializing. It has to do with force taking form. All incipient architecting of mobility is already a volumetrics, an intercalating of surfaces and tendencies. As mobile architecture, choreography activates the volumes, turning the surface onto itself, making felt the coming into the appearance of the event's own vertiginous movements, incipient movements that stay with us long after the particular occasion of their coming to expression has unraveled. (Manning 2013: 99–132)

Several studies on digital performance have highlighted both embodying and disembodying processes in the interaction with digital content in live arts (Parker-Starbuck 2011). From past and current investigations in the field, kinaesthetic empathy's crucial role in enlarging/increasing/augmenting audience engagement within virtual reality emerges. Such a process requires an identificatory frame, a map drawing the attention of those participating in the performative event to go through the stages of access/recognition, alignment, and allegiance with its content (Donaldson 2011: 161). In this framework, choreography becomes a strategy to hook up the hug's pure feeling, drawing the spectator step-by-step through such a progressively immersive state. The performance of the gesture triggers a canvas where the users' emotional memory can run networking experiences from the past whilst being present. As a *dispositif* in its whole, the performance activates a suspended spacetime where conceptual metaphors (Lakoff & Johnson 1980) intertwine, giving the users feedback on opposite conditions such as presence and absence, reunion and loss, flow and stillness, etc. Choreographically performed beyond the physical body, such *lived abstractions* (Massumi 2011: 27) drive those immersed to reconsider their feelings, empowering self-awareness. The performance seems to offer the chance to inhabit emotional memory. Even through an augmented kinaesthetic experience, they rediscover inherited forms of eternal value. With this in mind, the question arising from this work is: *What if choreography is a dispositif to re-evaluate and animate the intangible cultural heritage inscribed in the language of movement? Might it be a channel for engaging those immersed in an ecology*

designed to host unpredictable and emergent states and materialise hidden emotions? What if digital choreography allows us to travel in time to discover our future selves?

As mentioned earlier, the project suggests how choreography can be conceived as a channel to experience what is invisible to the eyes but can be touchable with other senses in Virtual Reality. Immersed in a digital space, performing Peaceful Places, we rediscover the intangible cultural heritage embodied by movement, and thus also emotions and values we have in common. Such an event empowers our self-awareness, reconnecting our past with the present and releasing a refreshed attention to our future selves.

Transmedia Choreography as a Strategy for Establish a *Kinesfield*

The third artwork *Lights! Dance! Freeze!* is an intermedial art installation exploring tangible and intangible heritage from the imaginative culture of movement acquired throughout dance musical films. Based on the interaction between visitors and machines, the artefact invites participants to use their entire body as a query, exploring visual responses as cues to create new cinematic narratives. About the work, the creators Theo Papatheodorou and Jessica Wolpert wrote:

> Using an RGB camera, machine-learning-based skeleton tracking technology, and a custom pose and film indexing system, we track a participant's movements and mirror them in real-time by finding matching poses from well-known musicals. We built a large database of hundreds of thousands of poses by scanning 50 musicals from different eras, from 1936's Wizard of Oz to 2016's La La Land. As the participants move their bodies activating different movie clips from different eras, they build a new custom montage of stories, breaking the linear narrative of the source material and effectively rethinking time. (2023: 7)

In this context, choreography seems to be the appropriate word to mean, specifically, the multiple ways of coding/writing/designing movements by a transmedia strategy. Following Stephan Jürgens's definition, transmedia choreography is 'the application of choreographic principles and techniques across several media' (2014). In addition, I would argue that transmedia choreography may also be considered a strategy for choreographing various technologies employed together to produce an artefact. Consequently, in the project mentioned above, the user's somatic information shapes the dialogue between three media – i.e. motion tracking technology, AI, and video projection – choreographed together in a platform designed for transmitting, translating, and disseminating the imaginative culture of dance heritage throughout a digital installation (Monda 2023).

In planning the transcodification of the movement from the visitor's organic body to its digital form, the creators have paid specific attention to how a computer-generated choreography by Artificial Intelligence could impact the creation of a *kinesfield*[5] (Schiller 2008). The concept of *kinesfield* was developed by Gretchen Elizabeth Schiller in 2003 to explain how, in movement-based interactive installations, the space-relation is established through motion dynamics and interactions that 'traverse the body and its material forms in the unbounded [virtual space]' (Schiller 2003). In *Lights! Dance! Freeze!*, the *kinesfield* is activated by the participants, who dialogically and dynamically engage with the performative environment, playing with feedback running among the *dispositif* and the motion. Such a form of interaction is not rational. The visitor starts to play with the movement by being curious to discover which images will appear on the screen. The game makes him/her kinaesthetically stimulated, surprised, and excited by the visual responses. In this way, the installation demonstrated the audience's modality of interaction, creating a specific assessment of the video game player's experience.

As a visitor, I was astonished that all the movies the AI proposed to me were films I had grown up with. *Flashdance* (1983), *Dirty Dancing* (1987), *Grease* (1978), *Saturday Night Fever* (1977), etc. I used to acknowledge my passion for the movement through these filmic conceptualisations of dance in society and in affective relationships, and I learned how dance could be a statement of woman's emancipation from colonial rules.

My response made me suppose that the installation invites the visitors to choreo-mediate the kinetic space with their physical thinking. It means that by adopting moving images from the screen-dance pop culture, the *dispositif* opens a window, drawing attention to certain artifacts' effects on our capacity to read and appreciate the movement language. Participants surf through dance movies while Artificial Intelligence performs movement pattern recognition and, in so doing, re-directs the screen design, projecting a puzzle that seems to be composed of the body conceptualisations embodied in those films. In these terms, choreography applied as the installation's transmedial strategy enabled an innovative condition for empowering the visitor's participation. Specifically, the same choreographic strategy is applied to different media. Firstly, the body's visitor activates the *dispositif* by motions. Secondly, his/her performance activates the media, generating several kinaesthetic expressions of the same movement. Finally, those expressions – coded by motion tracking technology; embellished by AI; and designed by combining moving images on the screen – are counterpointed in the environment; a demonstration of an intermedial choreography on intangible cultural heritage.

Conclusion

DRHA Annual Conference 2023 pointed out how several artists and scholars are engaged in re-evaluating invisible legacies, marginal repertoires, and, more generally, the kinaesthetic dimensions of cultural heritage by studying strategies of anarchiving and re-enacting memories embodied in boundary objects (Leach 2013). At the Università di Torino, the project CHANGES funded by the PNRR programme, uses a similar approach. There a team of scholars is studying liveness and the application of Artificial Intelligence to discover solutions through which to make the intangible cultural heritage readable and accessible to a broader audience.

In this respect, the research on choreography appears crucial for understanding how to explore, manifest, and enhance such tacit knowledge. In the post-digital era, choreography expanded its sphere of action to plan the environments of artwork exhibitions, installation, performances in virtual, extended, and mixed realities. Such a tendency drove the development of hybrid practices where choreography melted into digital scenography and visual arts. For the investigations in the fields of architecture and multimedia design, the creation of haptic performative events seems to be paramount, as well as the conceptions of objects based on movement language translation. This development appears crucial for two reasons:

- Firstly, it concerns how digitisation affects performance content. It underlines the interest in performing intangible cultural heritage embodied in bodies, objects, and events. There is growing attention toward processes of anarchiving the archaeology (Foucault 1969) of humanised and artificial *dispositif* and the application of transmedial strategies to afford the re-enactment of their tacit knowledge.

- Secondly, it concerns the evolution of the performance container, or what Claire Bishop argued to be a migration (2018: 22–42). I explained such a phenomenon in the following terms: 'As long as the human presence migrated from the organic bodies to the virtual personifications (objects/avatars), the choreographic thinking migrated from the (dancing) physical body to multimodal choreographic objects' (Monda 2020: 316). Such a progression highlights how the stage design, and its material composition – the skin and texture of the performance space – are developing by making central digital technologies' synaesthetic capacities to generate a virtual environment to be strongly perceived by an immersive and sensorial physical experience.

The approach seems to display the harmonic cross-pollination of the movements performed by the different agents involved in the event, such as performers, avatars, spectators, users, visitors, immersants, digital tools, and Artificial Intelligence.

In this framework, movement language is the source and the matrix for designing kinaesthetic architectures. Sometimes, the process draws up sculptural meta-representation of the polyphony coming from the bodies and the objects involved in the play. At other times, the upcoming conceptual and multi-semantic artefact allows the audience to share by kinaesthetic empathy, a pure feeling based some archetypical information inscribed in the movement language. Often, kinaesthetic expressions are displayed together in the digital event by a transmedial approach constructed on choreographic procedures. In all the approaches mentioned above – such as liquid architectures, mobile architecture, and *kinesfield* – choreography acts as a creative strategy to generate a *dispositif* able to provide the users with systems of navigation in digital performance. It means choreography becomes a channel to integrate the user's presence with the digital environment and other entities involved in it, such as other bodies or objects, as well as emotions or memories, in time and space. Choreographic procedures become complex and multi-coloured to display the combination of multiple kinaesthetic expressions and the success of the embodied simulation. In these terms, digital architectures open up innovative conditions for human communication and exchanging our intangible cultural heritage beyond our own culture and diversely. In the post-digital era, choreography orchestrates such interactivity, elaborating recursive algorithms in geometric constructions of kinetic events.

Finally, I think there is no need to re-evaluate the term choreography to enable its application in digital performance. Due to its conception, choreography will always be used to describe the phenomena related to movement and its expression in human beings' evolution. Following the master choreographer William Forsythe, I would like to conclude the article with these words:

> In my experience – and as Magritte suggests in his reflection on the relation between object and language – the introduction of substitute terms into this field consistently reveals facets of choreographic inquiry that were not previously evident. This has been key to the evolution and perception of choreographic procedures, and to prohibit or constrain this process of terminological migration across fields of art practice artificially delineates a frontier that serves no cause. (2019: 48)

Notes

[1] Term coined by Maaike Bleeker (2017) to describe a phenomenon acknowledged as the choreographic thinking process of digitisation (Monda 2016).

[2] With the term *dispositif*, I refer to the concept of 'apparatus' introduced by the French philosopher Micheal Foucault, under Gilles Deleuze's interpretation. With *dispositif*, Deleuze meant a creative technology able to allow the negotiation between the past and the future of the human being's living experience. In these terms, his approach deeply inspired the critical discourse about the archive and the research on innovative forms of expression based on multimedia interaction (Deleuze 2007).

[3] Recently, Timmy De Leat pointed out how the term 'anarchive' has been applied occasionally in the critical discourse on the archive to foster new ways of exploring the archival logic in the contemporary performing arts field (2019: 177–190). For example, the media scholar Wolfgang Ernst is recognized as one of the first who proposed the term to reflect on the impact digitization had on the archiving practice. However, the proposed article takes into consideration the concept of anarchiving developed in the context of the Sense Lab (Murphie 2016).

[4] By training the body-mind through a movement technique, a performer embodies choreographic principles re-configuring his/her capacity of action. In these terms, choreography is an artificial structure a creator can move/transit through. It should be meant as a technological creative tool to support the performer's self-expression by the movement language. (Monda 2016, 24–94).

[5] Commonly known, one principle of Rudolf von Laban's methodology of movement was the *kinesphere*, the spherical space around the body delineated by easily extended limbs. According to Laban, the *kinesphere* is in a fixed relationship with the body and travels with it. Schiller questioned such a theory, trying to understand what happens when in a digital installation the body movement, and consequently the *kinesphere*, is traveling through and performed by digital technologies. For this reason, she developed the concept of *kinesfield*, with which she explored the dynamic dimension established in interactive installation on the counterpoint between organic and computer-generated movement.

Competing Interests

The author has no competing interests to declare.

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