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Spooker Trouper: *ABBA Voyage*, Virtual Humans and the Rise of the Digital Apparition

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Introduction

ABBA Voyage launched to fanfare on 26 May 2022 at a purpose-built auditorium in London, dubbed the ABBA Arena. Slated to run (as of writing) until January 2024, it trumpets the Swedish pop group ABBA's long-awaited concert reunion after their last international tour in 1979-1980. The twist: *ABBA Voyage* does not present the group as they are today, aging well into their seventies. Rather, the show features the group members as highly realistic three-dimensional computer-generated animations – dubbed 'ABBA-tars' – appearing as they had looked in their 1970s stardom. Visual effects artists modelled, animated and rendered the ABBA-tars using past negatives, footage and motion capture. The 'concert' of *ABBA Voyage*, then, presents these animations of ABBA appearing as their past selves on a stage-spanning 65 million-pixel screen before a live audience, backed by a 10-piece live band with surround sound and lighting effects.

'Live' appearances of virtual humans are not new. However, we argue that *ABBA Voyage* signals two unique criticalities to understanding the virtual performer. The first is the ABBA-tars' unprecedented *realism*. Computationally generated or manipulated images of humans via Photoshop, filters and deepfakes regularly appear on cinema, television, computer and mobile phone screens. But the ABBA-tars' modelling, animation and rendering epitomize cutting-edge technical feats. With virtuoso staging, lighting and choreography, they appear as veritable virtual humans 'performing' in real-time before the audience. *ABBA Voyage* thus adroitly transfers questions of the screen image's truth and veracity into the context of performance and liveness. How might a viewer believe or understand the 'live' form that

stands before them as actual (physical, material, corporeal) or as image (virtual, immaterial, intangible)? How might their doubts matter ethically?

The second criticality is the extraordinary temporal discombobulation in *ABBA Voyage*'s puppeteering of *pastness*, specifically the past selves of the living. Precedents to date problematize illusory 're-appearances' of deceased artistes in 'performances' held after their deaths, spurring discussion about their ethics such as the racialization of dead artistes' bodies, the capitalization of the dead, and the violation of the sanctity of life and death.[1] We argue that the ABBA-tar is a different kind of ghost. It presents in real-time a past self *while still alive*, constituted of footage and data of the body from its past *and* present. How, then, to reconcile the ABBA-tar with the axioms that one can neither return to one's past nor be young again? What are the implications of a subject's mediated past self that appears *in their lifetime* for understanding the place and meaning of their memories?

In this article, we critique *ABBA Voyage* to address these questions and present new understandings of virtual humans. Methodologically, we draw on Vilém Flusser's notion of the 'digital apparition' to frame our understanding of the ABBA-tar.[2] Namely, not as a real or illusory image, but as externalized computational codes which can be owned, transferred, copied, shared and inserted into a capitalism of immateriality. This ontology of codes heralds new confrontations of how humans may be placed and believed to exist in physical environments. It renews questions of epistemology, selfhood, creativity and the ethics of profiteering from the virtual. At stake are not only significant perils and promises in this new era of images, portending potentially abusive power concentrated in media and technology companies alongside exciting avenues for monetary, informational and creative enrichment. Understanding the virtual human is also about re-visiting fundamental conceptualizations of selfhood. Its coded liveness and protean temporality confound linear time, being and growth. It thwarts the meaningfulness of living and dying.

From Phantasmagoria to ABBA Voyage*: A Brief History of the Virtual Human Performer*

Live shows have long featured media technologies which create virtual performers, leveraging their mix of actual and virtual realities for novelty and entertainment. In the nineteenth century, entertainers experimented with lighting, projection (including the 'Pepper's ghost' optical technique) and magic lanterns to conjure phantasmagoria shows that feature devils, demons and ghosts.[3] More recently, projection technologists 'resurrected' dead artistes to 'perform' onstage. Examples include Tupac Shakur (1971-1996) at Coachella in 2012, Teresa Teng (1953-1995) at Jay Chou's Taipei concert in 2013, and Michael Jackson (1958-2009) at the Billboard Music Awards in 2014. Entire tours have been created of deceased singers, complete with live backup bands and dancers, such as those of Maria Callas (1923-1977) in 2018; Buddy Holly (1936-1959) and Roy Orbison (1936-1988) in 2019; and Whitney Houston (1963-2012) in 2020. Since 2012, the French artist Dominique Gonzalez-Foerster performed embodiments of deceased figures such as Marilyn Monroe and Emily Brontë, sometimes in holographic projection.[4] In a contemporary twist, the rapper Kanye West made headline news in October 2020 by gifting his now-divorced wife, the reality TV star Kim Kardashian, a projection of Kardashian's late father, where the deceased Kardashian appeared before and spoke to his daughter as if still alive.

Akin to *ABBA Voyage*, the virtual performer may also be someone still alive; they simply appear onstage in a virtual form. In 2006, the British band Gorillaz was projected in cartoon likeness of its members to duet live with Madonna at the Grammy Awards. In November 2011, a Deutsche Telekom marketing campaign featured the American singer Mariah Carey as a three-dimensional projection which 'performed' simultaneously in five European cities. In October 2021, China debuted '2060', a variety show where contestants

create animated characters in a television studio to compete 'live' with dance and singing performances and interact with the judges in real-time.[5]

Besides music shows, three-dimensional avatars of living humans also appear 'live' in other contexts. A realistic projection of British model Kate Moss closed Alexandra McQueen's 2006 fashion show in Paris. In 2011, projections of 'virtual assistants' (based on actual airport staff) were installed in UK airports to remind passengers about security checks. Avatars of politicians have also appeared. In the 2010s, the Indian Prime Minister Narendra Modi and Indonesian president Joko Widodo projected themselves to appear 'live' in election rallies. In 2014, Julian Assange, then resident at the Ecuadorian embassy in London under political asylum, was projected at The Nantucket Project conference for a 'live' interview with filmmaker Eugene Jarecki. In 2015 and 2016, holographic images of protesters were projected onto the streets in Madrid and Seoul respectively to challenge proposed 'gag' laws.

In these hybrid displays, real-time interactions are sometimes engineered to take place between virtual and actual actors. For example, Assange and Jarecki staged their hands to meet in mid-air as a 'high five', notwithstanding they were not physically co-present. At the Illinois Holocaust Museum, scannings of Holocaust survivors were re-created as 3D projections to appear 'live' in front of the museum's visitors. Machine learning software then re-constituted survivors' recorded words as responses to visitors' questions in real-time. Computer software also reproduced the distinctive vocals of Taiwanese cultural icon Teresa Teng (1953-1995) to 'duet' with fellow Taiwanese mega pop star Jay Chou, 'singing' the latter's contemporary songs written long after she had died.

This expanding collection of near-seamless integrations of virtuality and actuality establishes what the first author calls 'the post-screen', where unstable screen boundaries alter relations between actual and virtual realities.[6] Foregrounding real-time interaction and visual integration, these phenomena of the post-screen continue where trompe l'œil, photography,

immersive environments, cinema and other visual media have pushed the virtuality of images against the actuality of physical reality. However, the post-screen is not so much substitution or simulacra. Rather, it is a complex vacillation between virtuality and actuality that trades across real sensorial apprehensions of their respective audial, visual and spatial realities.

We argue that, to date, *ABBA Voyage* presents the most successful exemplar of the post-screen's virtual/actual enmeshment. Preceding appearances of live virtual humans have achieved convincing realism to some extent, such as attaining unity of sound and image.[7] Nevertheless, they fall short in key ways: the skin's shading might be monotone; the eyes a tad glassy; the avatar's movements not quite fluid enough or else restricted to a confined space.[8]

Conversely, the CGI models of the ABBA-tars are rendered with painstaking detail. Hair, eyes, skin and fabric are clear enough to withstand scrutiny onstage before thousands as well as in close-ups on 25-feet high screens (Fig. 1). Thanks to motion capture data, their movements are wide-ranging and lifelike. The ABBA-tars' virtuality is also skilfully enmeshed with the stage's physical reality. Light, shadows and reflections align between virtual and actual space (Fig. 2). Clever stage lighting, such as virtual replications of physical lighting props, create the illusion of continuing depth of field (Fig. 3). The results are ninety minutes of widely-acclaimed images depicting, albeit under careful lighting conditions, highly realistic three-dimensional virtual humans integrated near-seamlessly with their actual environment, moving on a large stage with unprecedented detail and sharpness.[9]

From these observations, we argue that the ABBA-tar, like the post-screen, is a complex enmeshment of virtual and actual realities. More than that, in its context of live performance, the ABBA-tar signals a radically shifting ground in re-defining what is real. Namely, the real is not what is seen or believed (in echoes of the adage 'seeing is believing'). The questions of illusion or realism are no longer relevant terms because the ABBA-tar's

extreme live realism has effectively changed the prior basis of understanding reality as something fixed, and then changed or manipulated. Instead, the real is an issue of *information* – specifically digital information of points. What the ABBA-tar leads to is an understanding of reality today as the *processing* of density of information.

In this framework, we may think about the ABBA-tar via media philosopher Vilém Flusser's 'digital apparition' from his 1991 essay of the same title. Observing how computers create bodies and objects through the calculative processes of their algorithms, Flusser argues that 'alternative worlds' – 'lines, surfaces (…) bodies and moving bodies' – emerge. Constituted of computationally processed pixels and bytes, these worlds 'are nothing but computed point elements.' At first glance, this conclusion seems obvious. But it is important (or, as he writes, 'precipitous') because Flusser uses this basis of computational worlds as point elements to signal the wider understanding or measuring of all reality as *density* of distribution points. His example is starkly personal: 'The table on which I am writing this is nothing but a swarm of points.' All it takes is for these point elements to be technologically distributed ever more densely. In conceptualizing computationally-enabled realities, Flusser heralds an important shift in the epistemological framework of registering reality. Reality is not things, nor even manipulated things. Rather, 'everything is digital', meaning 'everything has to be looked at as a more or less dense distribution of point elements, of bits.'

Flusser now fires his more radical proposition. If reality are collections of point elements, then *every reality is possible*, if only as sufficiently dense point distributions, or 'point-potentialities'. The issue here shifts again: it is not simply the realization of points, but their fundamental indeterminacy of realization. This inchoateness, then, is the core of the digital apparition – not so much about digital points, but the *possibilities* of digital points. Digital apparitions thus enable the key questioning of whether virtual worlds are as real as actual ones, or whether actuality is as ghostly as the virtual. As Flusser writes: 'our

epistemological problem, and therefore also our existential problem, is *whether everything, including ourselves, may have to be understood as a digital apparition.*'[10] Where we start to question all reality as realizable possibilities out of the distribution of points rather than fixed (and changeable) entities of material actuality, the problem becomes not that the viewer cannot tell the difference between the real and the virtual. Even if indistinguishable, they are still different. The problem is that the real and the virtual become actually the same with different degrees of information density or resolution. At this point, the digital apparition beckons a new epistemology of the real. It warrants a different framework for understanding the virtual human.

Yet understanding the digital apparition is not by formal thought, or what Flusser terms 'discursive reason' (or 'scientific texts').[11] Those are the modes of linearity, scanning and reading of the alphabetic code. Flusser argues that the digital apparition has to be understood through a different literacy – an abstraction into imagination, or what he calls 'second degree imagination' in relation to the technical image.[12] His ideas here also gesture to increasing abstraction in humans' visual apprehension of reality, including through digital images, on which his study is key to much of Flusser's work on visual culture.[13]

We build on Flusser's ideas to argue that apprehending the ABBA-tar goes beyond abstracted imagination. As a digital cluster of points, understanding the ABBA-tar is ultimately about reading its computational codes and algorithms. However, these codes warrant attention not just because they are in computational language. Of greater interest to us is that these codes are also *externalized*, and their externalization gives rise to problematic issues of control and ownership. We now return to *ABBA Voyage* to discuss these issues.

Understanding the ABBA-tar: Ethics, Literacy and a New Anthropology

Arguably the most significant characteristic of *ABBA Voyage* is its inherent consent. All the ABBA members agreed to the 'return' of their past likeness onstage (presumably in exchange for large fees or shares of the show's profits). They allowed their bodies to be motion captured. They turned up at the concert's premiere to support its publicity. Their co-operation contrasts with the distaste surrounding 'resurrected' concert artistes being 'ghoulishly pushed back on stage' without consent, or their questionable ethics as 'a form of "ghost slavery"'.[14] Or, if on a lesser scale, the unabashed puppeteering of the dead, such as the projection of the deceased Kardashian father programmed to deliver a birthday speech to his daughter written by (and eulogizing) her ex-husband, a son-in-law he had never met.

Less discussed is how and why consent is so problematic. The key to 'how' lies in the externalization of the digital apparition. Where the self becomes subject to being recorded, reproduced, manipulated, and re-created by digital technologies, it turns into a different code. This code is not only computational or 'a 'digital distribution', thus requiring a different literacy per Flusser's arguments. It is also externalized, meaning it is storable, transferable, easily copied, labile and malleable to infinitesimal degrees. Most importantly, it becomes subject to ownership and, when placed in a market, capitalization. In this sense, Flusser did not consider the accountability of the new codes. He points out that the digital apparition's distribution of points imposes 'a new anthropology' of having 'to understand ourselves as a realization of possibilities.'[15] But this 'new anthropology' also carries new responsibilities and liabilities. Who owns and controls these externalized codes of possibility-realization? Who capitalizes on them? Whose labour creates them? What are the checks and balances of their power structures? A Flusserian culture of immateriality thus gives way to a capitalism of immateriality, whose accountabilities and consequences are still unclear.

These questions also hold the key to 'why' consent is so problematic. Consent remains a murky area because these externalized codes are still held as the deceased's estate alongside

conventional assets such as possessions, financial securities or land. However, such assets are attached to a subject that *pre-exists* as a subjective centre. Conversely, where a person is a digital apparition of information density, it has no fixed subjectivity with which to grant consent. All its bases of interaction rest on its reality of a computable possibility of points.[16] The new questions of the anthropological thus give way to those of the existential: where the self is essentially a digital project, who are we? How should we accord ownership, consent and belief in each other's existence? The contingency of the digital apparition as possibility revises the basis of trust on which humans understand their fundamental identity, establishing who they are as against others.[17] In a wider sense, it questions the very basis of truth in the heuristic of realism: namely, how to evaluate what to believe and decide what is true based on what one sees and hears.[18]

In turn, this basis of the self, realizable only by computers and those who know how to read its codes, renders a specific literacy disproportionately controlled by media and technology companies, such as Industrial Light and Magic which created the ABBA-tars or the Digital Domain Media Group which projected Tupac. As shown by how deepfakes and other computer or AI-generated images continue to push levels of belief, their power is still nascent.[19] Yet such images present grave ethical issues, given how closely they link to users' identities.[20] Consent to the rights of these codes is thus also problematic because it essentially constitutes consent to participating in a regime of codification – namely, of the digital apparition – that is almost exclusively shaped and run by technological companies driven by profiteering and to date facing few accountabilities. These issues of accountabilities include the justifications for creating realistic virtual humans, the fairness of the labour involved, any biases in the creations, and the criteria to which someone should be (re-)created. On the last, for instance: at which point should virtual humans replace real humans, not in function (that

would be the question for AI) but in identity as affirmed via their live visual appearance? These issues are yet to be addressed with clarity.

The stakes for enabling such clarity are substantive due to the perils presented by virtual beings as described above, but also their many promises in unprecedented creative and learning outlets. The huge entertainment value of *ABBA Voyage* – an otherwise impossible realization in actuality due to the rigours of touring and the ages of the ABBA members – is one example. The lability of digital apparitions can also enable rich informational connections between physical and virtual worlds. In the early twenty-first century, the smartphone and cellular network technology radically changed content production, accessibility and dissemination; in the late twentieth century, the Internet achieved the same as the preceding information wave. In much the same way, connecting physical and virtual digital apparitions will also potentially empower the circulation and dissemination of knowledge in ever more integrated ways, such as through the use of wearable and ubiquitous computing devices. For example, information could be obtained through a relatively more convenient tilt of Augmented Reality glasses perched on a user's nose, rather than their having to whip out a mobile phone from a pocket.

This vision of computationally coded actual-virtual connections has been described before. Computer scientist David Gelernter, writing in 1992 at nearly the same time as the publication of Flusser's 'Digital Apparition' essay, discusses what he called 'mirror worlds' created as software models of 'the real world'.[21] In 2019, the *Wired* founding editor Kevin Kelly appropriated Gelernter's term to describe a future in which omnipresent digital twins for 'everything' from house furniture to space rockets exist in a parallel world, accessible through mobile phones or wearable glasses. All physical items take on latency of information and creative potential. As Kelly writes: 'Information about that famous water fountain in a Roman plaza can be found at that fountain in Rome. To troubleshoot a 180-foot wind turbine,

we troubleshoot its digital ghost. Pick up a towel in your bathroom and it becomes a magical cape.'[22] These visions are exciting and brim with potential. Hybridity is also increasingly tapped for expanding accessibility, particularly after pandemic lockdowns forced events to take place online, enabling fortuitous discoveries of new operational modes and affordances.[23] But visions are mirages unless they are understood and contextualized accurately. The first important step towards its elucidation and a more ethical management and regulation of its naissance is to understand the nature of the virtual being as an externalized digital apparition, and in particular the new codes, literacies, anthropologies and paradigms of ownership it entails. It is not merely an image. It is a new anthropology of the self in its density of point-potentialities, and thus subject to different regimes of ownership, belief and power. It raises both problems and potentials.

The Way We Were: The Digital Apparition's Temporal Discombobulation

The ABBA-tar is problematic not only in its new nature of being. It also presents a profound discombobulation of time, where the past appears in the present. In one sense, this temporal discordance is characteristic of all recorded media. On photography, for example, Roland Barthes writes of 'the photograph being an illogical conjunction between the *here-now* and the *there-then*.'[24] Photography presents in the now, reality as recorded then. The film critic André Bazin famously writes of cinema as 'change mummified',[25] where the moving image re-presents the past in the present, preserved in movement with colour and sound.

However, the ABBA-tars are not recorded images from a then and re-presented in the viewer's now, as with cinema and photography. Rather, they are the past that perform live *in the present* – as theatre scholar Peggy Phelan writes: 'performance's only life is in the present.'[26] The ABBA-tar is thus posthumous as a complication of chronology, where the past does not give way to the present on linear terms. Like Hamlet's deceased father who 'holds

even more power [than when he was alive]'[27] – more alive *when* dead – in *ABBA Voyage*, the past returns to the present with greater dominance and influence.

In other words, what Flusser also did not note is that 'point-potentialities' give rise to peculiar convergences of past and present, further confounding the digital apparition's realization of possibilities. We argue that this confounding emerges in two ways. The first is that the point-body manifests an almost protean *temporal fluidity*. Digital technologies age and de-age the appearances of actors' faces and bodies onscreen with ease, defying their physical actualities. Examples include *The Curious Case of Benjamin Button* (2008), a film whose eponymous character ages backwards. Motion capture technologies and computer-generated imagery (CGI) aged and de-aged the actor Brad Pitt, then 45 years old, to appear first as a wizened elderly man and later as a child. More recently, actors in *The Irishman* (2019) were also de-aged with techniques including CGI that involved 'eliminating lines, raising eyes, and diminishing jowls.'[28]

In *ABBA Voyage*, the ABBA members' de-aged bodies seemingly appear not on a two-dimensional screen, but in three-dimensional and animated live form. The de-aged digital apparition thus seems to exist in time as a body from its past. Yet it is also outside time. The body is as old or young as desired, rather than marked by time with weakening and aging. This fluidity of the digital apparition's body thus confounds the linearity of life whereby a biological body changes in only one direction – it deteriorates, declines, decays. It subverts the conventional chronology – 'we are born, we age, we die' – with a neat coda: or we may yet appear again as our younger (or older) selves via our digital apparitions. Where the past or future directly confront the present, the arrow of time no longer holds meaning. Ageing is no longer relevant. In *ABBA Voyage*, the digital apparition's body completely belies the biological body. Through the entirety of its ninety-minute show, the ABBA-tars' digital

bodies of former youth entrance and enchant. *ABBA Voyage*'s marvel is not just in seeing the avatars, but seeing them specifically as ABBA's younger, de-aged versions.

How might this confounding matter? Perhaps there is no more to it besides deployment in concerts and movies to beguile and entertain. Yet we also read other more sinister signals. A week after the launch of *ABBA Voyage*, the Platinum Jubilee celebrations of the then-reigning British monarch, Queen Elizabeth II, commenced. The last day of the celebrations in London featured a projection of the then-elderly ninety-six-year-old Queen on the window of a horse carriage *as she had appeared in 1952 at her coronation*. The carriage drew down The Mall with the projected youthful Queen 'waving' to present-day crowds. The projection was fuzzy, translucent and not very realistic. Nonetheless, the 'live' appearance of a de-aged monarch in celebration of her long legacy forges ironic connections between pastness, presentness and meaning. Namely, the appearance of protean time through a de-aged live body does not show eternal youth, but *thwarts finitude as the key to its meaning*. This is the hidden poison of the de-aged body: its life is meaningless without temporal limitation. Without death as an ending, as Pasolini writes, living 'is untranslatable: a chaos of possibilities, a search for relations among discontinuous meanings. … It is thanks to death that our lives become expressive.'[29] Hence, what potentiality for eternal life in the live image of the de-aged digital apparition really signals is untranslatability.[30] Without finitude, what is left is indeterminacy. The end of content is as necessary for meaning as content itself. Endings are needed not as cessation, but as *a way of thinking* to open up meaning. Death is needed not as the end of life, but for the meaning of it. The temporal fluidity of the digital apparition is thus not just about its protean form. It is also about a profound loss of understanding meaningfulness.

The second confounding of the digital apparition's temporality is its *externalization of the past*. *ABBA Voyage* sold entirely on how ABBA appear *now* as they did *then* in the 1970s.

Of course, commercialization of the past is not new. History has always been sold as stories, books, movies, music and other media. Live concerts use various techniques to sell pastness and nostalgia. For instance, the supposed farewell tour (started in 2019 and, as of writing, ongoing) of the US rock band KISS features its band members heavily made up to not only appear as their younger selves from decades earlier, but also gesture to personas and showmanship that had made them famous in the 1970s.[31]

However, the digital apparition as an externalized density of points has a different code from print books, distributed movies or bodies with make-up. Where time – pastness – becomes part of those codes via the digital apparition's de-aged body, a person's past is not only mediatized, but also subject to the codes' questions of literacy, control and ownership as discussed above. As externalized codes, that pastness becomes capital which can be packaged, circulated and sold. It becomes profitable. This capitalization of the digital apparition, then, signals the entry of time itself into a *capitalism of immateriality*. So far, such capitalism has run off ordinary immaterial objects such as digital art works, virtual currencies or videogame objects. Via externalization, that capitalism extends beyond digital things to time itself – or at least time in terms of the appearance of radically alleviating death and ageing – that now effectively enters the market economy as profitable commodity. *ABBA Voyage* demonstrates this valuation with emphatic clarity as it capitalizes time into revenue-making concert tickets, merchandise, food and drink. Even the venue itself is part of the deal. Like a moving circus, the ABBA Arena may be packed up and transported to other cities to sell yet more of its star good – the pastness of ABBA. In time, this commodification process could conceivably apply to the pastness of any music band or subject. The scale of this business is only limited by imagination, desire and market demand.

Furthermore, as media technologies become cheaper and more accessible, such externalization of pastness will potentially be available to the general public, signalling

possibilities of common-place meetings with deceased relatives or even younger versions of the self. A much-discussed South Korean TV documentary, *Meeting You* (2020), documented a mother interacting with her deceased young daughter as 'resurrected' in VR.[32] The realistic virtual humans of *ABBA Voyage* herald that future with greater seamlessness, such as no longer even needing the VR apparatus. The capitalization of pastness via the digital apparition thus presages not only new premises and literacies with which to access the self, such as its own past. It also beckons connections to others' pastness. These pasts may bring comfort in remembering happy times, re-living the vitality of youth or being with loved ones who are missed.

Yet, this capitalism may also be treacherous. The questionable ethics of 'resurrecting' dead artistes to generate profits through 'back from the dead' concerts, as mentioned, is one illustration. Moreover, issues remain with ownership and control. As externalized, who owns the past self? Who gives consent for access to that pastness? Again, these codes require specialist literacies beyond lay people, and currently rest unchecked in the power of media and technology companies.

There is a further twist. Early twenty-first-century case law and legal regulation in various jurisdictions, such as the 2012 General Data Protection Regulation (GDPR) in Europe, have established the 'right to be forgotten'.[33] Under this right, a user's digital information, externalized as data owned by technology companies, is legally subject to deletion so that their past may not be revisited nor be allowed to remain accessible. The right rests on a single premise: the importance of forgetting the past.[34] This importance is embedded in the *need* sometimes to forget because remembering chokes off the future and hinders moving on from that past. As Nietzsche writes: '[Man] cannot learn to forget but always remains attached to the past: however far and fast he runs, the chain runs with him.'[35] Forgetting thus entails freedom. Similarly, technologist Jaron Lanier writes of how cinema,

itself as well a set of pictorial and linguistic codes, enchains memory as a 'total film of a person's life'. His epiphany: 'Therefore, we must not film everything. We must forget enough to be free.'[36] These conclusions about forgetting similarly colour the digital apparition which so facilely promises the appearances of de-aged past bodies. The world of the past is accessed at peril. Sometimes, it needs to be left alone.

Conclusion

In this article, we discussed two criticalities that we argue arise uniquely from *ABBA Voyage*. We first built an understanding of the show's virtual performers on the terms of Flusser's digital apparition: namely, the externalized computational codification of realized point-potentialities which imply new anthropological, epistemological and existentialist regimes of consent and ownership. In turn, these shifts connect to significant questions of how the digital apparition may be trusted, controlled and benefit the public in this era of mixed realities. Our second discussion focused on how the temporal discombobulation of the digital apparition in bringing the past into the present confounds finitude and, therefore, the meaningfulness of life and being. The externalization of time in the digital apparition also feeds into a capitalism of immateriality which profits from the past, with implications on the important processes of remembering, forgetting and letting go.

Belying the value of *ABBA Voyage* as an entertaining show featuring a hugely popular music group, our aim here has been to decipher the virtual human performer and, in the process, highlight the promises and perils that it portends. In particular, we see our arguments feeding into ongoing discourse around the current waves of intense virtualization from the creation of virtual stars and influencers to the heavily publicized visions of the metaverse, most notably from Meta. Previously known as Facebook, Meta peddles its next product of immersive three-dimensional virtual spaces where users will appear and interact with each

other as avatars. These developments indicate the scale of virtualization which herald a plethora of virtual humans in co-existence with actual humans as the next chapter of digital culture. *ABBA Voyage* is a harbinger of that reality to come. We must continue to seek to understand the terms of the virtual human and figure out how we are going to deal and live with it.

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[1] See, respectively, Regina Arnold, 'There's a Spectre Haunting Hip-hop: Tupac Shakur, Holograms in Concert and the Future of Live Performance' in *Death and the Rock Star*, eds Catherine Strong and Barbara Lebrun (Surrey; Burlington, VT: Ashgate, 2015): 177-188, and Ralph, Michael, and Stephan Beliso-De Jesús, Aisha Palmié, 'Saint Tupac', *Transforming Anthropology* 25:2 (2017), 90–102; Jason Stanyek and Benjamin Piekut, 'Deadness: Technologies of the Intermundane', *TDR: The Drama Review* 54: 1 (2010), 14–38; Steve Jones and Joli Jensen, *Afterlife as Afterimage: Understanding Posthumous Fame* (New York: Peter Lang, 2005).

[2] Vilém Flusser, 'Digital Apparition' in *Electronic Culture: Technology and Visual Representation*, ed. Timothy Druckrey (New York: Aperture, [1991] 1996), 242–5, 244.

[3] See Maria Warner, *Phantasmagoria: Spirit Visions, Metaphors, and Media into the Twenty-first Century* (Oxford: Oxford University Press, 2006).

[4] Pinault Collection, 'Dominique Gonzalez-Foerster: OPERA (QM.15), 2016', at https://www.pinaultcollection.com/en/boursedecommerce/dominique-gonzalez-foerster.

[5] 'China debuts show starring virtual characters', 28 October 2021, https://inf.news/en/comics/cf1742f3a0c90e3cdd323af18e2bea47.html.

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