Oxford: Oxford University Press; 2009.
17. Naik N, Hameed BMZ, Shetty DK, Swain D, Shah M, Paul R, et al. Legal and ethical consideration in artificial intelligence in healthcare: Who takes responsibility? *Front Surg.* 2022 Mar 14;9: 862322. https://doi.org/10.3389/fsurg.2022.862322
18. Habli I, Lawton T, Porter Z. Artificial intelligence in health care: Accountability and safety. *Bull World Health Organ.* 2020 Apr 1;98(4): 251-6. https://doi.org/10.2471/blt.19.237487
19. Eyal G, Harel S, Glickman L. AI, equity, and healthcare disparities in Israel. *Isr J Health Policy Res.* 2022.

COMMENTARY

Cyberthanatology and digital immortality in bioethics

WALTER FONTANINI

Abstract

The simulation of the deceased through AI-based griefbots, avatars and data-driven memory tools has opened a new frontier at the intersection of technology and bioethics. This commentary examines the ethical implications of digital immortality — the replication of aspects of a person's identity beyond death — with particular attention to autonomy, narrative authorship and the integrity of grief. Drawing on philosophical traditions, clinical models of mourning and recent critiques from cyberthanatology, it analyses six ethical domains through a structured reasoning approach.

It argues that ethical remembrance should prioritise dignity over digital continuity and calls for anticipatory consent mechanisms, clearer safeguards for AI-based mourning tools and greater interdisciplinary engagement with cyberthanatology. Ultimately, it advocates a renewed commitment to death ethics in the digital age, grounded in the principle that "authenticity cannot be uploaded and dignity cannot be downloaded".

Keywords: *digital immortality, cyberthanatology, posthumous consent, AI-mediated mourning, griefbots, end-of-life ethics, bioethics of death*

Introduction: Death and identity in the age of digital simulation

The contemporary lifeworld is marked by the pervasive integration of artificial intelligence into domains once considered exclusively human. These technologies are transforming the most intimate aspects of human existence, including how we remember and interact with the dead. As a recent analysis in *Nature* by Worth observes, "Ready or not, the digital afterlife is here" [1] — a reality exemplified by the emergence of "griefbots" and "digital zombies": non-sentient artefacts that simulate conversational agency with the deceased. While often presented as compassionate tools, these simulations raise fundamental questions about dignity, here defined as narrative sovereignty: the moral right of an individual to remain the sole author of their life story and to be protected from algorithmic misrepresentation after death. As human mortality becomes intertwined with digital permanence, bioethics must reconsider the boundaries of the self in an era where the deceased are no longer silent, but are reconstructed as interactive and often commodified products.

The emerging field of *cyberthanatology* offers a way of addressing these concerns, exploring how digital technologies mediate experiences of death, dying, mourning and remembrance. Drawing on philosophy, psychology, law, computer science and bioethics, cyberthanatology examines the opportunities and risks that arise when human mortality becomes intertwined with digital permanence. What happens to the moral meaning of death when digital selves "survive"? Can a person's legacy be ethically simulated without their active involvement? Who owns the data of the deceased? Furthermore, how should society regulate the rapidly expanding digital afterlife industry, which commercialises memory, grief and identity?

This article addresses these questions through a structured ethical reflection on digital immortality in the context of end-of-life care, mourning and narrative identity, rather than presenting empirical findings. Adopting a theoretical methodology grounded in philosophical reasoning and supported by recent psychological and technological studies, it builds a normative framework based on established ethical principles, including autonomy, informed consent, authenticity, dignity, and existential insights into death and identity.

The argument is developed through a structured model of ethical reasoning, articulated across six thematic sections.

While previous studies have examined digital immortality's symbolic and psychological aspects [2], this article shifts the focus to bioethics, where questions of consent, authenticity, and dignity converge with the practical challenges of grief and remembrance. Rather than asking what digital mourning means, it asks what it demands of our moral frameworks, educational systems, and healthcare professionals, who now encounter death in the flesh and in code.

A critical caveat must be acknowledged at the outset. The normative framework proposed here operates within a tension identified by contemporary critics: we live in an age of what may be termed unimaginable and intractable AI sat-

uration. Here, artificial intelligence is no longer a controllable tool deployed at will; but a pervasive infrastructural presence that shapes culture, subjectivity, and social relations in ways that exceed individual or collective oversight [3,1]. In such a context, the very possibility of meaningful human choice — including informed consent, autonomous decision-making, and ethical remembrance — is called into question. We recognise that the recommendations advanced in this article may appear inadequate to the scale and complexity of contemporary AI entrenchment. Nevertheless, we maintain that normative reflection remains necessary, precisely because technological systems lack moral judgement. If anything, the increasing resistance of complex AI systems to meaningful human intervention makes ethical vigilance more urgent, not less. For example, the scale and non-deterministic behaviour of foundation models can make it practically impossible for human operators to monitor, interpret and correct their outputs in real time; similarly, in clinical settings, professionals may formally retain authority over an AI-generated recommendation while lacking sufficient access to, or understanding of, the computational processes that produced it. In such cases, human oversight may remain procedurally present while becoming substantively constrained. Our framework does not presume to resolve the structural challenges posed by AI saturation, but rather to articulate principles that can guide individual, clinical, and policy-level responses within this constrained landscape.

This paper does not seek to provide definitive answers to the complex dilemmas posed by digital immortality. Instead, it offers a conceptual framework for critical reflection and proposes normative guidelines for future policy and clinical practice. As end-of-life bioethics faces new technological frontiers, its core commitment must endure: to safeguard the dignity, autonomy, and moral integrity of persons, especially when they are no longer here to speak for themselves.

The simulation of the deceased as an ethical frontier

Something has shifted: we no longer just remember the dead; we interact with them. With the advent of griefbots and voice-cloned avatars in end-of-life spaces, artificial intelligence transforms how we deal with loss. It is not just about digital memorials anymore, but about simulating presence. The advent of AI-based simulations of the deceased is a critical ethical milestone in contemporary end-of-life technologies. As these technologies gain traction, digital immortality is no longer confined to passive memorialisation. It extends into active behavioural reproduction, enabling interaction with the simulated persona of the departed. Although this development is often presented as a therapeutic innovation, it raises pressing concerns about narrative authorship, identity authenticity, and the moral limits of technological remembrance. These tools, which are often promoted as therapeutic innovations, raise unsettling questions: Who owns a memory once a machine has completed it? What happens to identity when it is recreated without agency? The moral boundaries of remembrance, once defined by ritual and silence, are now redefined by software code.

From a philosophical perspective, these simulations rely on aggregating data, texts, voice recordings and social media activity to construct conversational agents that mirror the deceased's communicative patterns. Yet, as Paul Ricoeur [4] has argued, personal identity cannot be reduced to a dataset, but is shaped by a dynamic narrative arc: a diachronic synthesis of experience, memory, and meaning, mediated by lived authorship — that is, the person's first-person participation in interpreting, revising, and giving meaning to their own life narrative as it unfolds.

This narrative identity, moreover, is not merely a conscious construct; it possesses what psychoanalytic theory identifies as an **unconscious depth** — a domain of repressed materials, symptoms, and desires that inherently resist digital archiving. Because AI simulations are limited to recombining conscious digital traces (text messages, recordings, social media), they produce a "flattened" simulacrum. These identities are "doubly hollow", ie, they lack both the moral agency of the living subject and the psychic complexity of the unconscious, failing to capture the "unsaid" that is essential to human presence.

Digital reconstructions, by contrast, are algorithmically generated and ontologically static. They produce fragments that risk distorting rather than preserving the person's essence. Plato would have termed such artefacts *mimesis* — imperfect imitations of a once-living being, severed from the existential unity of body, mind, and intentionality (*Republic,* 595a–608b) [5].

A common defence of such technologies is that they provide psychological comfort. Those who have lost a loved one often express gratitude for being able to "hear" or "talk to" them again. In some cases, griefbots are said to help users find closure or process trauma. However, the instrumentalisation of presence in this way must be scrutinised. By providing simulated responses in place of relational absence, griefbots risk suspending the reality of death. Rather than facilitating mourning, they may delay it by offering affective surrogates instead of fostering acceptance. According to Stroebe and Schut's dual process model [6], oscillation between loss- and restoration-oriented coping is essential for healthy bereavement. However, AI-mediated interaction tends to anchor mourners in the loss-oriented pole, creating what Hollanek and Nowaczyk-Basińska [7] call "unwanted digital hauntings".

From a normative perspective, the ethical threshold lies not in the technological capacity to simulate, but in the moral significance of such simulations. Digital immortality projects must not confuse remembering with fictionalising, or memory with manipulation. This distinction requires more than informed consent; it demands narrative integrity, respect for ontological absence and the preservation of

human dignity. If simulations overwrite the deceased's authorship — that is, the person's lived authority to shape, interpret, and revise how they present themselves and give meaning to their own life narrative — or fabricate behaviours never exhibited in life, they risk crossing into posthumous misrepresentation. Ethical remembrance, especially at the end of life, must prioritise fidelity to the deceased as a person who has lived and is no longer alive, not as a programmable object of comfort.

Autonomy and the problem of posthumous consent

Simulating the deceased using artificial intelligence raises profound ethical concerns, particularly about autonomy and retaining the principle of informed consent after death. In contemporary medical ethics, autonomy is a foundational value, based on the right of individuals to make informed decisions about their bodies, identities and data. However, this right becomes temporally ambiguous in the context of digital immortality. A fundamental ethical gap exists because individuals cannot possibly imagine or predict the myriad ways in which their digital traces may be repurposed, manipulated, or abused by corporations and survivors in an ever-evolving AI landscape. This unpredictability undermines the very essence of informed consent: if the future technological applications of one's data remain fundamentally unknowable, then consent granted today is necessarily incomplete. Consequently, we must ask: can autonomy truly survive death when the deceased can no longer contest unforeseen simulations of their persona?

Legally, most jurisdictions do not recognise the deceased as having any ongoing rights to personal data, unless this is explicitly stated in wills or digital estate documents. However, this position may be ethically inadequate. The persistence of personal data in digital environments may create ongoing autonomy concerns when individuals lack control over their posthumous digital legacy. Although the General Data Protection Regulation [GDPR, Regulation (EU) 2016/679, art 17] [8] enshrines the right to erasure for living individuals (the Right to be Forgotten), its application to deceased individuals remains inconsistent and is the subject of cultural debate. Consequently, digital resurrection occurs in a regulatory vacuum that risks the instrumentalisation of identity after death.

Advocates of digital immortality often argue that consent can be granted vicariously: family members, legal proxies or digital service providers could be given the power to decide whether to activate a deceased person's griefbot or preserve their social media presence. This proxy-based logic is based on medical surrogate decision-making and estate law precedents. However, the recreation of a personality involves interpretive and narrative consequences that go far beyond administrative delegation, unlike tangible assets or end-of-life medical preferences. As Hollanek and Nowaczyk-Basińska [7] point out, these simulations generate new content by extrapolating responses and behaviours that the deceased never explicitly created. In this context, proxy consent is ethically precarious as it may reflect the emotional needs of the bereaved or commercial motives rather than the presumed intentions of the deceased.

The ethical tension becomes more acute when considering the problem of narrative misattribution. According to Ricoeur [4], identity is shaped by memory and the authorship of one's life story. However, when AI systems generate messages or conversational fragments attributed to the deceased, they risk producing a subjective simulacrum without moral agency. Now silent in death, the individual becomes a passive object of algorithmic storytelling. Such practices may result in posthumous misrepresentation: a distortion of the self that cannot be corrected, contested or consented to. The absence of the individual as a moral interlocutor makes the simulation ethically questionable, especially when it involves others in emotionally significant or relationally charged dialogue.

Furthermore, the concept of implicit consent requires critical examination. Many digital platforms claim consent through their terms of service, which often include clauses allowing for the use of data after death. However, there is a difference between agreeing to share birthday photos or status updates and implied consent to becoming a post-mortem AI agent, which is ethically indefensible. Consent must be specific, informed and contextual. As Shear [9] and Parkes [10] have demonstrated, the authenticity and intentionality of memorial practices influence the grieving process. When the boundaries of authorship are blurred, survivors may interact with something they cannot fully understand or trust: an ethically opaque reconstruction that pretends to be present while eroding trust.

From a normative perspective, the ethical management of digital identities after death requires more than data protection. It requires a framework of posthumous informational autonomy, based on anticipating and articulating one's narrative and technological legacy. Just as advance directives allow individuals to specify their preferences for medical treatment or organ donation, individuals should also be empowered to define the limits of their digital afterlife. Existing mechanisms for managing posthumous digital presence offer only partial solutions [2,8], while current approaches remain insufficiently adapted to the distinctive ethical complexities of AI-generated simulations, including consent to generative reuse, representational fidelity, and ongoing control over a posthumous digital persona [7].

Bioethics must therefore advocate proactive, culturally sensitive mechanisms for posthumous consent. These could include standardised digital will templates, legally binding opt-in clauses for AI reconstruction and public education campaigns on data legacy. Crucially, these measures should protect privacy and control and uphold dignity and narrative sovereignty — the right of every individual to

remain the author of their own identity, even after they have passed away.

Grief and the disruption of meaning-making

Grief is not a dysfunction to be solved, but rather a process of reorganising and reconstituting oneself. As Stroebe and Schut's dual process model [6,11] shows, it is neither linear nor mechanised, but oscillatory: the bereaved fluctuate between confronting the pain of loss and restoring daily life through adaptive coping. This pendular motion is essential for integrating grief into a new narrative of self and world. However, digital simulations of the deceased — particularly griefbots and AI-generated avatars — intervene in this rhythm. By offering the illusion of continued presence, they risk keeping the bereaved person in a state focused on loss, which obstructs the natural cycle of rupture and reintegration.

The clinical literature has increasingly documented the psychological risks posed by such technologies. Prolonged Grief Disorder (PGD), which is now included in the *International Classification of Diseases,* 11th revision (ICD-11), is characterised by persistent longing, emotional numbness and an inability to adapt to the absence of the deceased [12,13]. Although griefbots may be presented as therapeutic tools, they can reinforce avoidance behaviours. Lundorff et al [14] demonstrated that unprocessed grief correlates with increased psychiatric morbidity. In such cases, the apparent consolation offered by an AI simulation may act as a digital anaesthetic, providing temporary relief and preventing emotional growth.

This tension is not merely clinical, but existential. In its most human dimension, grief is a confrontation with finitude: the recognition that relationships cannot be reproduced, and that loss entails not just absence, but finality. When this finality is suspended and replaced by algorithmic interaction, the bereaved are offered counterfeit continuity. Thompson et al [15] describe this phenomenon as a disruption to making meaning, whereby death is made intelligible, and grief is transformed into memory. By keeping the deceased "active" in conversation, AI simulations may prevent that transformation from occurring or delay it dangerously.

However, proponents of these technologies often present them as catalysts for healing. Some argue that griefbots enable users to "say what was left unsaid" and revisit shared stories in a safer emotional environment. Anecdotal reports describe the comfort, companionship and humour that can emerge from these interactions. Nevertheless, it is important to distinguish such experiences from therapeutic processes. Shear [9] notes that healing from grief involves acceptance, not simulation. There is a particular risk of confusing simulated presence with authentic relational repair in vulnerable populations, including children, isolated elderly individuals, and those with unresolved trauma.

The potential for emotional dependency should not be underestimated. Building on the foundational work of Bowlby [16] and Ainsworth et al [17], contemporary grief theory emphasises the strong connections between attachment, loss and emotional regulation. Although initially perceived as comforting, AI grief technologies may foster a pathological attachment to a digital construct. Cassidy and Shaver [18] caution that this kind of bonding lacks the reciprocity in relationships necessary for emotional integration. This can result in a feedback loop of unresolved yearning. Even worse, users may become more invested in the avatar than in the real world, impairing their ability to form new, meaningful human connections.

The psychological risks of griefbot dependency must also be understood within cultural context. Mourning practices vary significantly across traditions: while Western bioethics emphasises individual autonomy and closure, many Asian, African, and Indigenous cultures maintain ongoing relational bonds with ancestors through ritual, prayer, and commemorative practices. In Hindu and Buddhist traditions, for example, the deceased remain present through *shraddha* ceremonies and merit transfers [19,20], creating continuity without requiring technological mediation. These practices suggest that digital immortality tools may be experienced differently depending on cultural frameworks of death and memory. However, a critical distinction must be maintained: traditional ancestor veneration operates within shared symbolic systems that acknowledge death's finality, whereas AI simulations risk creating an ontological confusion by offering interactive rather than symbolic presence. The ethical question is not whether we should remember the dead — all cultures do — but whether algorithmic reanimation respects or violates the existential threshold between life and death.

Beyond the clinical framework, a sociological perspective highlights additional concerns. The use of griefbots reflects not only individual coping strategies but also a broader cultural shift towards denying death. In an era of increasingly privatised, technologised and pathologised mourning, the allure of digital immortality may be less about preserving memory and more about evasion. As Yalom [21] suggests, existential anxiety cannot be overcome by distraction but through courageous confrontation. Delegating grief to machines, however sophisticated, risks insulating individuals from this confrontation and replacing mourning with managed emotion.

This section raises a decisive normative question from a bioethical perspective: Should AI-based grief interventions be considered a form of care or interference? The answer lies not in technical efficacy, but in moral intention. Technologies that bypass or delay acceptance may offer short-term relief, but at the cost of long-term integration. As such, their use should be approached with clinical caution and ethical restraint. If they are deployed, clear boundaries must be established, including time limitations, psychological screening, informed consent and transparency about the constructed nature of the simulation.

Ultimately, grief is about transformation, not preservation. Any intervention that seeks to support the grieving process must honour this transformation, helping the bereaved to reconcile with absence rather than prolonging presence artificially.

The illusion of narrative selfhood in artificial simulations

At the heart of many digital immortality initiatives lies the implicit promise that a person's essence can be reconstructed, or at least meaningfully extended, by simulating their communication patterns, memories and preferences. This is not just a technical promise; it is also metaphysical. It assumes that identity can be captured, encoded and reanimated independently of the original individual's lived experience. While this notion is intuitively appealing, it collapses under philosophical and ethical scrutiny. As Ricoeur [4] theorised, narrative identity is not a static accumulation of facts or behaviours. Instead, it is a dynamic interpretive process through which a person integrates past, present and anticipated experiences to form a coherent sense of self. This narrative is not merely recounted about the self, but experienced and shaped over time within a social and relational context. In this light, AI simulations, however advanced, are not continuations of the self but curated approximations. They lack consciousness, intentionality and the reflective capacity to reinterpret their own history.

John Locke's seminal view of personal identity, which is based on memory continuity [22], offers a valuable perspective. According to Locke, identity is preserved through continuous consciousness of past experiences. However, AI reconstructions simulate memory from the outside. They do not remember; they mimic. Drawing from a data archive without subjective ownership, they generate outputs that resemble the deceased but are ontologically detached from the lived self.

Paradoxically, avoiding a confrontation with mortality through AI simulations may intensify existential anxiety rather than ease it. Heidegger's concept of being-towards-death (*Sein-zum-Tode*) offers critical insight here. In *Being and Time* [23], Heidegger argues that death is the most personal, non-transferable aspect of human existence — it is precisely this awareness of finitude that grants life its urgency and meaning. Mortality is not an external event to be managed or postponed, but a fundamental condition of authentic human existence. When we interact with digital surrogates of the deceased, we attempt to transform death into a technical problem that can be solved through code and computation. This technological mediation risks producing what Heidegger would call an inauthentic state: the illusion of permanence replaces the radical finality that characterises genuine human being. Rather than facing the irreversibility of loss, we engage with programmable presences that simulate continuity while undermining the existential work required for authentic mourning.

Such avoidance may produce cognitive dissonance: the bereaved recognises the finality of death while simultaneously engaging with a simulation that offers an impression of continuity. Rather than alleviating anxiety, this tension may interfere with the psychological work of accepting absence. Yet simulations need not be entirely harmful: they may function as memory aids or narrative bridges, helping the bereaved to recontextualise shared experiences. Their potential benefits, however, must be weighed against the risk of narrative misattribution — assigning authorship to a persona that cannot own its voice.

From a normative perspective, we must resist the temptation to equate the fidelity of a form with the fidelity of a being. AI-generated personas should be clearly labelled as interpretive artefacts rather than extensions of the subject. Transparent semantic and structural boundaries must be established to prevent ontological confusion. Digital bereavement tools should never claim to "continue" a person; at best, they can reference aspects of a life once lived.

Finally, the illusion of narrative selfhood raises a broader concern: if we outsource memory to machines, we may forget how to remember. Ricoeur [24] warns against the externalisation of memory in archival systems, where the ability to retrieve information replaces the ability to reflect on it. In the context of digital immortality, this danger becomes more pressing. As the mourning process becomes mediated by responsive avatars, we risk abandoning the slow process of remembering — its silences, gaps and imperfections — in favour of seamless interaction. However, it is precisely in the gaps of memory that ethical reflection takes root. To remember rightly is not to replicate, but to re-narrate.

The commodification of mourning and the digital afterlife industry

Digital immortality services are no longer confined to experimental laboratories. As can be seen from the respective company websites, platforms such as StoryFile, HereAfter AI, Project December, Uare.ai and Seance AI offer different forms of digital legacy preservation and simulated posthumous interaction, ranging from pre-recorded interviews and voice-based memory tools to chatbot memorials and generative conversational agents. These services differ substantially in design and degree of interactivity, but collectively illustrate the growing commercialisation of technologies that preserve, reconstruct or simulate aspects of personal identity after death. More broadly, these developments reflect AI's increasing integration into intimate domains of human experience, where the technology is no longer merely a discrete tool but part of a wider infrastructural environment that may constrain meaningful human oversight and choice [3].

While these services are marketed as tools for remembrance or healing, they have become increasingly embedded in extractive data economies, where personal loss is

commodified for financial gain [25]. Like those of the living, the digital remains of the dead are monetised, surveilled, and algorithmically shaped.

One might argue that commodification is not inherently unethical. After all, traditional mourning practices often involve financial transactions, such as the purchase of coffins, tombstones and ceremonies. However, what differentiates the digital context is the simulated reanimation of the deceased as an interactive product. Unlike a gravestone, an avatar can speak back. When memory becomes responsive, it becomes programmable — and therefore exploitable. Hollanek and Nowaczyk-Basińska [7] suggest that griefbots may function as "emotional interfaces" designed to provide comfort, retain user engagement, collect behavioural data and encourage dependency on the platform.

The ethical risk here lies not merely in monetisation, but in manipulation. For example, a digital avatar could be programmed to respond affectionately, provide reassurance, or evoke shared memories. It could also be programmed to recommend products, reinforce ideologies or collect psychological profiles. Those who are bereaved and already in a vulnerable emotional state may find it difficult to distinguish between authentic memories and emotionally engineered interactions. As Mittelstadt and Floridi [26] observe, manipulating emotions through AI systems constitutes a form of epistemic injustice, depriving users of the conditions necessary to make autonomous and informed choices.

Moreover, the "platformisation" of mourning gives rise to structural inequalities. Access to high-quality digital legacy tools is often restricted due to cost, language barriers, or a lack of technological literacy. This inequality creates a digital divide in grief, where the ability to preserve or reconstruct memories becomes dependent on socio-economic privilege. This, in turn, risks reinforcing cultural hierarchies of remembrance, whereby some lives are preserved in high-resolution, responsive simulations while others fade into obscurity.

Another concern relates to ownership and governance terms. For example, who owns the AI avatar of a deceased person? Who decides what it says, how long it is available, and what happens when it becomes obsolete? Often, these decisions are left to corporate discretion without clear legal and ethical standards. There are already cases where digital legacies have been deleted, locked behind paywalls or altered without the consent of the deceased's family [2]. The very notion of "posthumous identity" is at risk of fragmentation, rebranding or monetisation without accountability.

From a normative standpoint, this section calls for a code of conduct to govern digital mourning platforms. Such a code should establish clear boundaries: AI avatars should never simulate consent, endorse products, or provide psychological advice. Simulations must be transparently labelled as non-human and non-continuous. Furthermore, platform governance should be decentralised, with ethical review boards overseeing the activation, modification and deactivation of griefbots. These boards should include bereaved family representatives.

Finally, it is essential to recognise that grief cannot be optimised like a market. It is a wound that must be acknowledged and a silence that must be respected. When mourning is monetised, there is a risk that it will be engineered for engagement rather than healing. Ethical remembrance requires us to preserve not just data, but also dignity. Furthermore, unlike data, dignity cannot be monetised.

Education, discernment, and ethical remembrance

Digital immortality is not merely a technological disruption but a philosophical rupture requiring a pedagogical response. Cyberthanatology offers a conceptual bridge to navigate this landscape, connecting existential questions with technological realities. As argued in the pedagogical framework presented at the 2025 Ethics Education Conference in Bangalore [27], three fundamental questions must serve as ethical anchors: How can we teach people to die well in an age that denies finality? How can we be remembered justly rather than endlessly? And how can we mourn with discernment, distinguishing genuine support from simulated comfort?

These questions have direct and urgent implications for clinical practice and medical education. Healthcare professionals — physicians, nurses, palliative care specialists, and mental health practitioners — increasingly encounter families requesting information about digital legacy tools or expressing interest in creating AI representations of dying relatives. Without adequate training in cyberthanatology, clinicians may find themselves unable to provide ethically informed guidance. Medical curricula must therefore integrate end-of-life digital ethics alongside traditional topics such as advance directives and organ donation. This could include case-based discussions where students evaluate scenarios involving griefbot requests, role-playing exercises exploring consent conversations about posthumous data use, and interdisciplinary seminars bringing together ethicists, technologists, and bereaved individuals. In resource-limited settings, where access to sophisticated grief counseling may be constrained, educating primary care providers about the psychological risks of AI-mediated mourning becomes particularly urgent. Simple screening questions — "Are you interacting with digital representations of your loved one? How often? How does it make you feel?" — could be incorporated into routine bereavement follow-up.

Ethical remembrance recognises that the deceased are individuals whose dignity transcends digital continuity. It requires resisting the allure of endless interaction in favour of meaningful closure, honouring the difference between memory and algorithmic manipulation. In this complex digital ecosystem, the imperative is not to reject innovation but to cultivate ethical vigilance. As we have seen,

authenticity cannot be uploaded, and dignity cannot be downloaded.

Author: Walter Fontanini (fontanini.walter@semmelweis.hu, https://orcid.org/0009-0001-6680-9465), Semmelweis University, Faculty of Health Sciences, HUNGARY.

Conflict of Interest: None declared **Funding:** None

To cite: Fontanini W. Cyberthanatology and digital immortality in bioethics. *Indian J Med Ethics.* 2026 Oct-Dec; 11(4) NS: 274-280. DOI:10.20529/IJME.2026.063

Submission received: June 26, 2025

Submission accepted: September 28, 2026

Published online first: October 28, 2026.

Manuscript Editors: Sunita Sheel Bandewar, Manjulika Vaz

Peer Reviewers: Three anonymous reviewers

Copyright and license

©*Indian Journal of Medical Ethics* 2026: Open Access and Distributed under the Creative Commons license (CC BY-NC-ND 4.0), which permits only non-commercial and non-modified sharing in any medium, provided the original author(s) and source are credited.

References

1. Worth T. Ready or not, the digital afterlife is here. *Nature.* 2025 Sep 15. https://doi.org/10.1038/d41586-025-02940-w
2. Fontanini W. *Filozófiai és etikai reflexiók a digitális halhatatlanságról és a kiberthanatológiai perspektíváról* [Philosophical and ethical reflections on digital immortality and the cyberthanatological perspective]. *Kharón Thanatológiai Szemle.* 2025;29(2):35-48. [Hungarian].
3. Crawford K. *Atlas of AI: power, politics, and the planetary costs of artificial intelligence.* New Haven (CT): Yale University Press; 2021. See especially Conclusion: Power, p. 211–27.
4. Ricoeur P. *Oneself as another.* Blamey K, translator. Chicago (IL): University of Chicago Press; 1992. See Fifth Study, "Personal Identity and Narrative Identity", p. 113–39; Sixth Study, "The Self and Narrative Identity", p. 140–68.
5. Plato. *Republic.* In: Cooper JM, editor. *Plato: complete works.* Grube GMA, Reeve CDC, translators. Indianapolis (IN): Hackett; 1997. p. 971-1223.
6. Stroebe M, Schut H. The dual process model of coping with bereavement: rationale and description. *Death Stud.* 1999 Apr-May; 23(3):197-224. https://doi.org/10.1080/074811899201046
7. Hollanek T, Nowaczyk-Basińska A. Griefbots, deadbots, postmortem avatars: on responsible applications of generative AI in the digital afterlife industry. *Philos Technol.* 2024;37:63. https://doi.org/10.1007/s13347-024-00744-w
8. European Parliament, Council of the European Union. Regulation (EU) 2016/679 of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. *Off J Eur Union.* 2016; L119:1-88. Available from: http://data.europa.eu/eli/reg/2016/679/oj
9. Shear MK. Complicated grief. *N Engl J Med.* 2015;372(2):153-60. https://doi.org/10.1056/nejmcp1315618
10. Parkes CM. *Love and loss: the roots of grief and its complications.* London: Routledge; 2006.
11. Stroebe M, Schut H. The dual process model of coping with bereavement: a decade on. *Omega (Westport).* 2010;61(4):273-89.. https://doi.org/10.2190/om.61.4.b
12. Prigerson HG, Horowitz MJ, Jacobs SC, Parkes CM, Aslan M, Goodkin K, et al. Prolonged grief disorder: psychometric validation of criteria proposed for DSM-V and ICD-11. *PLoS Med.* 2009 Aug;6(8): e1000121. https://doi.org/10.1371/journal.pmed.1000121
13. Szuhany KL, Malgaroli M, Miron CD, Simon NM. Prolonged grief disorder: course, diagnosis, assessment, and treatment. *Focus (Am Psychiatr Publ).* 2021 Jun;19(2):161-72. https://doi.org/10.1176/appi.focus
14. Lundorff M, Holmgren H, Zachariae R, Farver-Vestergaard I, O'Connor M. Prevalence of prolonged grief disorder in adult bereavement: a systematic review and meta-analysis. *J Affect Disord.* 2017 Apr; 212:138-49. https://doi.org/10.1016/j.jad.2017.01.030
15. Thompson N, Allan J, Carverhill PA, Cox GR, Davies B, Doka K, et al. The case for a sociology of dying, death, and bereavement. *Death Stud.* 2016;40(3):172-81. https://doi.org/10.1080/07481187.2015.1109377
16. Bowlby J. *Attachment and loss. Vol. 3, Loss: sadness and depression.* London: Hogarth Press; 1980.
17. Ainsworth MDS, Blehar MC, Waters E, Wall S. *Patterns of attachment: a psychological study of the strange situation.* Hillsdale (NJ): Lawrence Erlbaum; 1979. https://doi.org/10.4324/9781315802428
18. Cassidy J, Shaver PR, editors. *Handbook of attachment: theory, research, and clinical applications.* 3rd ed. New York: Guilford Press; 2018.
19. Sayers MR. The Śrāddha: the development of ancestor worship in classical Hinduism. *Relig Compass.* 2015;9(6):182-197. https://doi.org/10.1111/rec3.12155
20. Bronkhorst J. Transfer of merit. In: *Karma.* Honolulu: University of Hawai'i Press; 2011. p. 91-96. https://doi.org/10.21313/hawaii/9780824835705.003.0005
21. Yalom ID. *Existential psychotherapy.* New York: Basic Books; 1980. Part I, Death, ch. 2–5.
22. Locke J. *An essay concerning human understanding.* Nidditch PH, editor. Oxford: Oxford University Press; 1975. Book II, ch. XXVII, "Of Identity and Diversity". Original work published 1689.
23. Heidegger M. *Sein und Zeit* [Being and Time]. Halle an der Saale: Max Niemeyer; 1927. [German] Division II, ch. 1.
24. Ricoeur P. *Memory, history, forgetting.* Blamey K, Pellauer D, translators. Chicago (IL): University of Chicago Press; 2004. See Part I, ch. 2, "The Exercise of Memory: Uses and Abuses", and Part II, ch. 1, "The Documentary Phase: Archived Memory".
25. Zuboff S. *The age of surveillance capitalism: the fight for a human future at the new frontier of power.* New York: PublicAffairs; 2019.
26. Mittelstadt BD, Floridi L. The ethics of big data: current and foreseeable issues in biomedical contexts. *Sci Eng Ethics.* 2016 Apr; 22(2):303-41. https://doi.org/10.1007/s11948-015-9652-2
27. Fontanini W. Digital immortality and cyberthanatology: ethical and philosophical reflections [Conference presentation]. 13th International Conference on Ethics Education; 2025 Jun 14; Bengaluru, India.

Be a part of *IJME*

IJME invites readers to submit research studies, commentaries case studies, reports, media reviews, letters, as also poems, short stories, original paintings and photographs of print quality (both in colour and B/W) to be considered for publication.

All submitted matter is subject to peer review.

Contributors are neither paid nor charged any fee for published matter.