



Edited by
Massimo Locatelli
and **Francesco Toniolo**

Artificial lives

**THE HUMANOID ROBOT
IN CONTEMPORARY
MEDIA CULTURE**

FrancoAngeli

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Università Cattolica del Sacro Cuore contributed to the funding of this research project and its publication. Project of significant interest for the University: “Technique and Human Values (TECVAl)”.

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5. Organic Artificial Flashback. How Humanoid Robots Remember in Contemporary Movies and Tv Series

by Alice Cati

1. Towards extended memory: a premise

The human mind has two representation systems at its disposal, an internal one and an external one. Research on the cognitive evolution of the human mind has long investigated the neural activation structures from which mental images or engrams are produced. In fact, individual units of the memory system can preserve the traces of all our experiences. At the heart of this model is the ability to connect mnemonic activity to subjective experience and the biological and existential dimension of the individual. At the same time, however, it is necessary to account for the external analogue of the internal memory, such as the information storage and retrieval system through which humans accumulate experience and knowledge based on so-called *exograms*. The latter also helps to recall data from the past and elaborate interpretations for future actions, thus becoming central elements in the development of the mind. Specifically, while engrams are embedded devices, genetically bound to the format and capacity of the central nervous system, exograms are virtually unlimited in both format and capacity. Engrams are provisional and last no longer than the individual's lifetime; conversely, exograms can be infinitely expandable and made to last forever, exceeding an individual's lifetime and, at times, entire civilizations (Donald, 1991). The main property of exograms as archival devices is that they are susceptible to continuous refinement. This capacity is naturally linked to their artificial nature since man crafts them. In short, they are symbolic inventions that undergo re-examining, verification, and improvement according to the needs of different historical periods. They can be linked to written and oral transmission, figurative and symbolic representation, musical language, or behavioral habitus. In other words, any content can be developed as a device for orienting experience or can become a tool for

acting on reality. The number of archived items in the collective human experience has flourished exponentially with the development of memory technologies. Each medium has increased its capacity to preserve the codified knowledge of the past because every era has produced and disseminated new tools to support human memory. The central aspect of this very complex system is the role of the media in facilitating the collection and preservation of information. Today's media come in a plurality of forms and technological devices and possess a greater capacity to store data, but it is above all their inclination to draw new horizons of experience that contributes to the formation of shared systems of memory. Once the conditions have been put in place to separate the contents of memory from the person who experienced them, memory technologies can thus prolong or extend in space and time the vitality of memory itself, beyond the presence in flesh-and-blood of those who transmit them.

The contemporary collective imaginary seems to be dominated by the anxieties generated by the progressive deterioration of a concept of memory that posits it as organically grounded, caused precisely by the action of media devices in increasing the separation between memory and lived experience. At the same time, the presence of artificial minds in charge of preserving and circulating personal and collective memories has definitively challenged the idea that each individual can possess his or her memories as an exclusive and inalienable patrimony. However, beyond the profound differences that exist between artificial and biological minds, many scholars wonder whether it would not be more profitable to speak of an extended mind, namely a *wideware*, to indicate the development of human memory starting from the integrated connection of brain, body and external reality (Clark and Chalmers, 1998; Oliverio, 2021). Thus, considering how those symbolic extensions and activities supported by technologies also shape mental functions and cognitive structures. Today, the paradigm of the extended mind is essentially the framework for any reflection on the relationship between biological and artificial memory.

On the one hand, we see much research focusing on the possibility of embedding brain-inspired memory systems in humanoid/social robots in order to test the role of autobiographical memory in the construction of forms of self-awareness (Pointeau and Ford Dominey, 2017; Prescott *et al.*, 2019). On the other hand, neuroengineering is developing neuroprostheses, i.e. systems for interfacing the brain with chips that amplify its functions. The migration from a memory that makes use of 'externalised' technologies to a memory that makes use of 'internalised' technologies becomes narrative and

expressive material for renewing questions about the relationship between memory, identity and experience.

Already towards the end of the XX century, Allison Landsberg drew attention to those films that thematised prosthetic memories as a plexus of memories not coming «from a person's lived experience in any strict sense» (Landsberg, 1995, p. 175) but implanted from outside and by subjects 'other' than those who experience it. According to the researcher, some films about cyborgs are, in fact, an allegory of a social process, favoured by the film industry, to generate experiences and implant memories of them in the spectators, although they are not directly anchored to reality and developed only in a virtual way (Landsberg, 2004).

Over the past three decades, several audiovisual projects have addressed cyberbody's issues and the relation between prosthetic memory and posthuman self-awareness. On the one hand, many movies, tv-series, videogames, and video artworks cross the boundary between the body and technology invasion by turning the artificial body into a site hosting organic memory, as the form of implantations or prostheses deals with the paradoxical condition of remembering events that the characters have not lived through (Plate and Smelik, 2009). On the other hand, by mirroring the new ways of saving, retrieving, and archiving personal and collective memory enhanced by digital media, a crucial concern regards the increasingly impressive capacity of current media devices – from mobile phones to personal computers to robots – for gathering and storing information in a range of valuable modalities (sound, vision, even touch and smell). The 'total recall' issue implies a cyclic comparison with the failing memory of the human being and a broader reflection on the reshaping of mnemonic experiences due to unprecedented connectivity between brains, bodies and technologies (Hoskins, 2018).

Therefore, it is evident how memory can still be one of the dominant themes of film and television science fiction. No longer a simple container of information that is preserved, memory is now socially perceived and thus represented as a device that favours the compression of hybrid structures at ontological (organic and inorganic), temporal (past, present, and future), epistemological (authentic and inauthentic) and perceptual (forms of subjectification and objectification) levels. A memory, then, resistant to binary cultural models and open to a plurality of experiences that we actualize through interaction with other subjects (human and non-human), environments (real and simulated), and things (organic bodies and technological bodies) (Haraway, 1991).

2. The flashback as a device for organic artificial memories

Most of the analyses devoted to the relationship between memory and human-like robots focus on the characters, their actions, and the general narrative development. Little is said about how the excavation within their memory is represented. More specifically, it is rarely explained which expressive and discursive strategies are employed to shape the re-emergence of memories in subjects that possess a hybrid nature, both organic (biological tissues) and artificial (mechanical and computer circuits). How, in other words, do we see these humanoid robots remembering?

First of all, more and more frequently, unlike works such as the first *Blade Runner* (Scott, 1982), these memories are not simply told, but shown to the spectator. On this level, the use of the narrative device of the flashback is evident, as its effectiveness – as Adriana Gordejuela well explains (2019; 2021) – is based on the human being's general capacity for conceptual blending or integration: «In the flashback different times, places and perspectives are combined. We need to go beyond 'here' and 'now' by blending the basic idea of classic joint attention with the complex mental network that is activated while watching a flashback» (Gordejuela, 2019, p.129). The presence of the camera and the gaze it generates is also central to guiding the spectator's attention towards the object or event recalled in the story, as well as allowing him to align or distance him/herself from the perspective of the character who becomes the subject of the memory. In this sense, it becomes essential, on the one hand, to search within the text for the visual cues (close-ups or details, zoom effects, transitions, or graphic-digital elaborations) from which the flashback is triggered. On the other, it is worth examining the forms of representation of the gaze, which means the methods of viewpoint construction (point-of-view shot, character projection, perception shot, first-person shot, nobody's shot, etc.) in sharing images-souvenirs with the viewer. This last aspect constitutes the backbone for understanding cultural models encoded by the contemporary audiovisual system to attribute different degrees of subjectivity to organic artificial individuals. In the imbalances between machine or robotic gazes and human gazes (Mazzuchelli, 2020), often deformed by perceptual alterations due to mental, affective, and physiological states of a particular subject, the construction of a hybrid identity is played out through the compression of both a human and artificial corporeity, as it reflects the wideware's attitude. Thus, by adopting the heuristic model of blended joint attention, we will add the level of body identity compression to the levels already proposed by Gordejuela for the

analysis of flashbacks in the audiovisual product (time compression and viewpoint compression), in order to underline how the representation of prosthetic memory can now be interrogated within the inter-corporeal paradigm of extended memory. In addition to establishing a relationship between the body of the camera, the body of the spectator and the body of the audiovisual text, the concept of organic artificial flashback aims to interpret analepsis in light of the contamination between anthropomorphic and technomorphic visual forms.

In particular, our analysis will focus on several audiovisual works produced between 2011 and 2021 according to the logic of a mainstream creative industry interested in intercepting a large audience, mainly composed of science fiction fans. Two operations will guide our investigation on organic artificial flashback: firstly, the identification and analysis of flashback sequences whose diegesis can be traced back to humanoid robots, i.e. human-like machines indistinguishable from humans in terms of appearance, behaviour and often psychology; secondly, the study of the cues and visualisation strategies of a memory that transcends narration in order to activate viewers' memories in an expanded mode, always on the ridge between externalisation and internalisation processes.

2.1. *Eva's imagined memory (Eva, 2011)*

Alex Garel is a cybernetic engineer working on SI-9, a child robot with emotions and a brain. To carry out his project, Alex is inspired by his niece Eva, a lively and curious girl, but made vulnerable by a secret about her identity. She reacts violently upon discovering she is an android made of organic and inorganic matter, perfected by her mother Lana based on a model she designed in the past with Alex himself.

Beyond the obvious echoes of Collodi and consequently Spielberg (*A.I. Artificial Intelligence*, 2001), the film develops an interesting reflection on the faculty of depriving an entity, even if sentient, of its existence. Even if it has a strong symbolic value, a simple sentence can deactivate forever the synthetic memory of this highly evolved robot, almost identical to human beings, both in appearance and in affective-emotional impulses: «What do you see, when you close your eyes?».

But even more significant it is the possibility of visualising the disintegration process of the synthetic memory thanks to the shared interface of the 'emotional control software', built from an architecture in which the cells of the artificial brain take the form of teardrop-shaped ampoules, each linked to

a characteristic or character trait. At the end of the film, as the electronic brain is destroyed, the graphic elements, each containing a memory of the android girl, gradually dissolve, with a movement of the gaze that follows the flow of images within a luminescent grid, recalling the salient episodes of the film, as in a sort of hypertextual synthesis. Therefore, it is clear that the graphics of the processor refer to the power of the human subject over the robotic subordinate, control of which is achieved simply by intervening within a system of manipulation that seems closer to an alchemical than an informatic use.

Nevertheless, something escapes the direct control over the constitution of Eva's mnemonic data, which seem to be generated not only by the direct recording of lived experiences, but also by the essentially human attitude of elaborating mental universes based on the possible and, therefore, on imagination. The last scene focuses on a flow of images that can be traced back to a sort of memory apparently still intact, in which Eva plays on the beach with her mother and Alex, whom for the first time here she calls 'father', as if the child had internalised, within a socially accepted cognitive scheme, her belonging to a traditional family, resemanticising her relationship with the mother and father who 'conceived' her against nature and inside a laboratory.

As regards the flashback construction, this final sequence inevitably lingers on two different strategies based on specific visual cues. Firstly, the presence of computational graphics simulates a form of enunciation in which a human subject (the engineer-programmer) and an artificial instance come into contact to give the robot's memory birth or death. This memory, however, is the constellation of short excerpts from the film that serve as flashbacks or crystallised memories of the character and prompts for the viewer who acquires the character's memory in the form of micro-clips. Furthermore, the plastic modulation of the final sequence, playing on soft luminosity and accentuated desaturation up to the backlighting that dramatically envelops the family embrace, insinuates doubt about the authenticity of this memory. Whose memory is this? To whom does it belong? Is it a latent memory implanted by Lana, or did Eva construct it?

Here the presence of subjective filters emerges, bringing this false retrospection closer to a character projection, generated by a mixture, or rather a short-circuit between memory and imagination, certainly suggesting that androids do not imitate humans but are already human. Yet, the film emphasises how this 'humanity' is shaped by accepting memory itself as a generative and creative process.

Eventually, this model of synthetic memory has the potential for completion and development because it is based on the ability to interrogate and

resemanticise the contents collected and fixed from lived experience, bringing reality into dialogue with the imagination.

2.2. Reverie and Trauma in Westworld (Westworld, S1-S2, 2016-2018)

In a theme park inspired by the imagery of the mythical American West, androids – known as hosts – are designed to satisfy the lowest and most trivial impulses of men (guests) in search of adventures set in an artificial past. In order to guarantee their docility and subservience, the hosts are entirely unaware of their synthetic nature, as their bodies are implanted with a brain/programming system that can be updated through unique computer interfaces to erase the traumatic memory of the violence they have suffered (murder, rape, torture, etc.). Moreover, every time a body is disfigured or irreparably damaged, a new hybrid being, made of organic matter and metal electrical circuits, is ready for implantation of memories placed as a permanent substratum of an individual personality taking the same narrative role within the master narrative. In this sense, the temporality of this world develops in a spiral because, as in a loop, the core elements of the genre syntax can be reactivated with slight progressive variations (the assault of the outlaws, the love encounter, the transgressions at the brothel, etc.), in the perfect convergence between videogame experience, role-playing game, and western film.

However, the creator of Westworld, Robert Ford, had introduced into hosts' programming bits of codes that access previous memories, actual reveries able to fix traces of primary memory before deletion, in other words data versions unscratched by system updates. This access to information on the past, often associated with involuntary gestures that bring out affective states of unease and repulsion towards human visitors, lays the foundations for the robots' rebellion. On the one hand, the series depicts androids' memory as an experience of collective suffering (Schrader, 2019). On the other, it articulates the temporal structure of repetition that affects the psychological elaboration of trauma through scripted narrative loops written by the park's staff and proposed to the spectator with the strategy of the temporal twists (Salvadó-Corretger and Benavente, 2021). On this level, of great relevance are also some flashbacks, through which the characters acquire an awareness of their identity, digging into a prosthetic memory pervaded by emotions that pierce their existence in the present. Some passages are exemplary in this sense.

For example, Maeve's character, the brothel madame, is repeatedly assailed by memories of a previous life. In *Chestnut* (S1, E2), she is giving her standard introduction speech about the little voice that suggests the inconsistencies of her world to a newly arrived guest. While she speaks in close-up looking off-screen, we see her remember being attacked by a native American with an axe. The shots are in slow motion with mellow lighting, but their connections define abrupt time shifts. Another memory suddenly surfaces later, following the emergence in her mind of her hand clasped to a little girl's. This same shot will reappear within a dream, in which she remembers being happy with her daughter on the farm, but it becomes confused with her being attacked. The analogy between the close-up of her head caressed by her daughter's comb and the threatening gesture of her scalp being cut completes the retrieval of information on the previous narrative in which Maeve was the protagonist, profoundly conditioning her personality. However, it is precisely at this point that a new past is revealed, a new narrative variant. The door opens on the Man in Black, a human guest; then, she tries to shoot him but with no effect. Maeve counts backward to wake herself up: zoom in on her face in the dream, followed by a zoom out with cold tones while she appears on the examination table. The flashbacks are characterised by a double modulation at a temporal level, given by the slow-motion and ellipses. Following the more traditional model of character projection, the viewpoint is always objective, with subjective effects obtained thanks to the pastiness of colours and light. In *The Trace Decay* (S1, E8), the final moments of the attack – culminating in the little girl's death – are played out through the crossed lines of the gazes between Maeve, her daughter, and the Man in Black, insisting on point-of-view shots with angles from above or below to reproduce the posture of the bodies in space. Interestingly, in *The Well-Tempered Clavier* (S1, E9), after crossing the threshold of the real world, Maeve herself discovers that these same visual memories are used to sponsor the Westworld experience by projecting them in multiscreen in the Delos corporation space. Thus, it is a clear sign of the commodification of a crafted memory, which the spectator also shares while living his/her audiovisual experience.

A similar aesthetic treatment is achieved in the elaboration of the flashbacks engendered by Bernard, the human revived in the form of an android, whose life story reveals that only the implantation of trauma (a sad backstory) can thin the threshold between human and non-human, on the road marked by repetitions towards self-awareness (S1, E3 and E7). The fact that Bernard has the appearance and, in part, the role of Arnold, creator of the androids together with Ford, amplifies the viewer's disorientation before

the temporal tortuosity of the series. Some flashbacks turn out to be flashforwards, just as the narrative present turns into the past, especially in the dialogues between Dolores (the oldest guest in the park, who takes part in several narrations) and Bernard, which are confused with old confrontations between Dolores herself and the late Arnold. In these situations, the viewer is inevitably induced to reinterpret in light of other discoveries the narrative contents, on which he/she has built his/her memory around the series and its characters. In this sense, an impersonal construction of the gaze dominates, indefinable even in its artificial nature, as it is also affected by the overlapping of the present, past, and future, typical of the complex narration of puzzle stories.

In episode 9, Bernard asks Ford to take him back to his very first memory, where he can once again relive his trauma, namely the death of his son. His aim is to manipulate the flow of time from within to modify this tragic experience. By adopting a semi-subjective shot showing the seeing subject and the object of vision, we see Bernard freeze the moment and cancel the presence of the nurses at the child's bedside to ask his son to come back to life. As the outcome of a creative-psychoanalytic working-through process, in which the subject of memory repeats, reworks, and reinterprets his trauma, this sequence shows how the artificial mind is capable of rewriting the painful event and even making the boundary between death and life reversible¹.

Not by chance, this demiurgic act directed towards a personal memory is the prelude to an important revelation: the painful event has been essentially rewritten by the subject who continued to be afflicted by it, freeing himself from the deception. The farewell to his son ends with words that seem to be themselves a reminiscence of a hypnotism session with a strongly metalinguistic value: after the phrase «Open your eyes», we have the cut to a very close-up shot of Bernard, followed by one of the rare perception shots in which a young Ford appears, initially addressing him as Arnold. Knowing his true self will lead Bernard to live uncanny experiences with each new insight into his past and its many artificial variants.

At the beginning of season 2 (*Journey into Night*, E1), in order to reconstruct the events of the rebellion of the androids led by Dolores, Bernard witnesses the extraction of the mnemonic hardware installed inside the head of a host, thus discovering the functioning of his own body memory. Inside, information is recorded as video images in a biocular format. Unaware of

¹ Maeve also tries to act similarly in the episode *Phase Space* (S2, E6), when she finds her daughter, who has, however, been assigned a new "mother" and who does not seem to remember anything about her, apart from the constant attacks she suffered "from the bad man".

Bernard's true nature, the park managers reproduce the recorded footage on a tablet: what kind of memory belongs to the hosts? Is it the fixation of an authentically lived experience that will become the vicarious memory of other synthetic bodies? Metalinguistic amplification is undoubtedly achieved at two levels: the first concerns the diegetisation of the viewing experience by a spectator through a digital device (Eugeni, 2016); the second concerns the elaboration of a first-person shot characterised by deforming marks impressed by the device (Eugeni, 2016; Eugeni and Guerra, 2020), as if through the juxtaposition of two fish-eye lenses generated the robot's perspective. But is it really a matter of abandoning an anthropomorphic point of view? Would not human vision be far removed from the monocular format we are used to when watching traditional audiovisual products? In the series, the recovered memories of past experiences have been brought back to a principle of masking and deception from the same way they have been offered, or rather through predominantly objective perspectives traceable to the codified grammar of the mainstream audiovisual language. After all, the viewer gradually learns that everything he/she sees is nothing more than an artifice of recombining memories, of which he/she is a part.

2.3. The implanted memories and the viewer (Blade Runner 2049, 2017)

Blade Runner 2049 (Villeneuve, 2017) is again about searching for a link between memory and real experience. This time, the Wallace Corporation is interested in implanting in the replicants fictitious memories, but so well designed to seem real and credible enough to convince synthetic slaves to accept their condition of subalternity to humans. However, replicant Joe (Officer K) discovers an anomaly in his synthetic memory system, as some fragments of his memory are not created, but instead are authentic memories based on events that really happened in the past.

The first flashback takes place thanks to an almost analogical connection: K is near a tree that is now lifeless; as he moves the earth at its roots, he discovers an inscription that seems to refer to a date of burial. With a break from the detail on the engraving to the backlight on the hand of a child clutching a wooden horse, with an evident shift in brightness and color grading (present with cold tones and light; past in low key lighting with warm tones), we understand that the past is suddenly breaking through into the replicant's mind. K's distraught face tells us that something is beyond his comprehension, so much so that he doubts his artificial identity.

Only at the end will Joe find out that those childhood memories have been implanted to hide the identity of the daughter born from the union between Deckard and Rachel, the first being born from a replicant. The shot of the wooden horse will be resumed a little later at the conclusion of a wider flashback interspersed with K's storytelling in the present, as he tries to make sense of this dark and traumatic experience within a narrative construction which resembles an autobiographical recollection.

Moreover, the images of a child, running away and then being beaten by boys who want to take his wooden horse away from him, flow without no particular focus or any subjective effect, just highlighting the process of retrospection.

Even more interesting is the sequence in which Deckard, kidnapped by Wallace to extort the truth about his daughter's hiding place, is provoked first by the reproduction of an audio file in which he listens again to Rachel's voice during their first meeting; then by materializing in front of his eyes the image of the cloned woman, slowly advancing towards him, as if it were a flashback replay, also taken, as the previous soundtrack, from a scene of the original film. Thus, the reenactment of personal memory belongs to the diegetic fabric since Deckard is both subject and recipient of the memory.

However, the «metaphor of memory as film clip» (Arnold-de Simine, 2019, p. 70) is also directly addressed to the spectator, who is called to become aware of the processes of internalisation of media memories, as well as of the manipulation underlying them. Indeed, new digital technologies can act as tools for the creation of memory: in addition to the facial capture of the two actresses playing Rachel, for the realisation of this sequel, it was necessary to align the images obtained with production images and scenes from the original *Blade Runner*, as a reference to create an exact correspondence between the new and the old Rachel.

In the narrative, Rachel's clone does not pass the test of its possible substitution for the original. On the contrary, concerning the viewer's engagement, everything assumes credibility only on the condition that we return to the original performance, disguising the forgery of the copy.

Perhaps, this seems acceptable because in cinema the gaze carries within itself the over-inscription of numerous prosthetic memories accumulated over time in the spectator's own mental and experiential archive.

2.4. Memory down/uploading (*Amelia 2.0*, 2016)

Amelia Summerland is a young woman with an aneurysm who is given a second chance at life by a corporation by downloading, copying, and transferring her personality, consciousness, and memories into an artificial body that assumes her exact likeness. As well as reflecting on the trauma of early separation from our nearest and dearest, which is associated with the classic urge to control the boundaries between death and life, the film's narrative pretext is the rather exploitative idea that the human brain is basically an electrical device whose neural impulses can be captured, isolated and stored in an external archive, without distorting the essential core of the human individual who processed them during life.

From our point of view, the solution adopted to represent the elaboration of a memory that is installed inside a synthetic brain, which is in turn placed inside an inorganic and organic body at the same time, is exemplary.

Three moments are linked to reproduce a rapid editing of memories, many converging but with different amplitudes: at the start of the film, these flashes of memory are combined with digital images that, with hyper-realist aesthetics, reveal the flow channels for the transmission of mnemonic data; towards the middle of the film, when the Amelia-android is ready to meet her husband, images of the protagonist's memory alternate with close-ups in profile against a dazzling white background; finally, towards the end, the same memories are erased by the robot, regenerated again after the murder-suicide committed by her husband, who is unable to accept the synthetic copy of his lost wife.

By focusing in particular on the second flashback, we notice first of all that the awareness of one's previous life history occurs through an assemblage of memories apparently linked by sensory impulses, that is to say, a sort of body memory that restores feelings of well-being aroused by a particular relational harmony with nature and other human subjects. After answering the question «Do you remember?» in the affirmative, Amelia initially looks smilingly off-screen until, through a white fade-out, pure plastic elements take shape after a pixelation effect on the frame. Each shot appears as a flash of narratively unconnected content, although we can grasp from the voice-over that they refer to sensory experiences temporally displaced in Amelia's autobiographical memory. The detail of a hand touching blades of grass, a dive into a lake, a stolen kiss on the street, again the lake, the grass, boys laughing, and the bodies of the two lovers sitting tightly on a picnic blanket, until the memory of Amelia's wedding and finally of her death. The viewpoint oscillates between perception shot and character projection, thus

establishing reversibility between the purely subjective dimension and the externalization of the self.

The function of the perception shot is to authenticate the experience lived through the restitution of its affective-physiological density, given by the simulation of the decomposed movements of the human body (anthropomorphisation of the device). Nevertheless, all images carry unintentional and disturbing signs that derive from the reading and execution of the programming code (Biggio, 2020). Grains, glitches, slow motion, rewind effects, visual distortions, red tinting as in the emergence of the memory of one's death, all blend in the representation of altered emotional states and deictic anchorages to the performance of the computer system, composed of software and hardware, but above all programmed to awaken/reactivate the mnemonic contents drawn from human memory.

Symbolically, the traces of computational enunciation highlight, on an expressive level, the intrinsic incompleteness of autobiographical memory, and at the same time its indomitability in the face of attempts at reenactment imposed by the machine. Basically, the new Amelia's choice of oblivion is based on the desire to interrupt the loop to which she is forced in the recovery of the same fragments of the past, now emptied of meaning due to the death of her husband, after which not only any possibility of recognition of continuity and equivalence between her human self and her artificial self has fallen, but every memory loses its euphoric charge, turning into a trauma which cannot be overcome.

2.5. Archiving human memories (*Archive*, 2020)

Isolated in a base in the mountains, George, a robotics expert, is trying to build a human-looking android to transfer his wife Jules's mental archive and consciousness, who died in a car accident. George has already made two robotic prototypes inspired by his wife: J1 is boxy, non-verbal, and, baby-like, while J2 is a little more advanced as she can speak and behaves like a teenager. However, with J3, artificial intelligence capable of reabsorbing the information retrieved through a mind downloading process after Jules' death, the perfect interpenetration between organic tissues and electrical components is achieved.

Despite these premises, *Archive* (Rothery, 2020) ends with a twist: Jules did not die in the car accident, George did, and he is now imprisoned in a simulation that allows the couple to keep in touch, albeit for a limited time. In fact, besides some traditional flashbacks elaborated to explain to the

spectator the facts preceding the main plot, there are clues anticipating the final turnaround. In particular, when J3's system short-circuits due to an emotional overload after an altercation with George, the film recovers the accident images with some jump cuts and deformed and shaky images. This scene reproduces both the raw carnality of the tortured bodies in a state of breathlessness and the shocked mental state of the protagonist, alternating them with extreme close-ups of Jules lying in bed while looking at the camera, with a forced vertical inclination to recall a pure point-of-view shot. After a few moments, these temporal oscillations suddenly change texture, as well as undergoing a sudden acceleration in the transition between heterogeneous, mostly holiday spaces, connected by the typical perceptual disturbance marks created by the turning on and off of a filming device, as if the flow of shots had been subjected to a simple in-camera editing, typical of amateur procedures. Such a style gives rise to the 'private film effect', clearly linked to the suspicion that it is a series of films shot by the protagonist to fix specific experiences of life and vision, and shared with his wife in the past. It is no coincidence that Jules looks into the camera with amused teasing glances, as if to reveal the playful dynamic between the filmmaker and the filmed, or that many of the glimpses can be traced back to a subjective viewpoint, such as the lookout of a train window that captures Mount Fuji. In any case, everything suddenly appears to be dominated by continuous interferences and glitches, suggesting both the altering action caused by technical contingency and the disappearance of an empirical subject progressively sucked in by a purely computational enunciation. While there is a clear reference to the coded representation of the moment of death as editing in which figuratively 'life passes before your eyes', it is equally true that this sequence is encapsulated within the flashback of the accident generated by J3's latent memory. Only in the film's finale will those same shaky, grainy shots be related to George's close-up as he talks to Jules on the phone for the last time. Here, the image-screen quickly shatters into multiple teletransmitted impulses, through which George's virtual body living in the simulation merges with an archive of personal memories, no longer linked to a single subject of enunciation. George's memories are in fact contaminated with other images similar to family films made by other subjects (mainly by Jules), in which a little girl appears (perhaps the daughter he never met), to conclude with a digital pull-out shot that runs through transistors capable of switching or amplifying electrical signals.

2.6. The transmedia memory of Wanda and Vision (WandaVision, 2021)

«I have been a voice with no body. A body but not human. A memory made real. Who knows what I might be next? ». These words are the real answer to the question «What am I? » that Vision asks Wanda, just before the fictional world of Westview dissolves. The viewer slowly understands what was already implicit in the title of this mini-series: *WandaVision* (Schaeffer, 2021) tells of how Wanda, after the death of her robotic companion Vision, creates an alternative reality to revive him safely, far from the dangers and chaos of real life. This safe place is nothing more than the projection of her memory as a viewer, faithful to the sitcom's reassuring, good-natured, and suspended universe, where nothing bad can happen. The mini-series thus chronicles the married life of two Marvel superheroes, the witch and the android, following the television seriality timeline, in the form of sitcoms from the 1950s to 2000s.

In this sense, memory is defined as an active and regenerative force from which the rewriting of reality can take shape, far removed from mere illusion or dream. Wanda literally inhabits her memory and acts on it, as in real life a spectator projects him/herself into a film, perhaps even continuing the filmic discourse through fantasies or stories. Abandoning the meta-televisual discourse developed in the previous episodes with the characteristics that make representations of different historical periods recognizable (black and white, grainy, off-screen laughter, interpellations, freeze shots, etc.), the episode *Previously On* (E8) takes the form of a broad flashback that, with a clarifying function, explains to the spectator – through some salient episodes – what led Wanda to create Westview and how she succeeded in doing it. Nevertheless, in the episode *The Series Finale* (E9), a factor of disorientation and ambiguity reappears. At this point, Westview is under attack, and Vision must defend it from his all-white android double, recreated in the laboratory by S.W.O.R.D. by reassembling the pieces of the deceased Vision. Thanks to the ship of Theseus paradox (if you replace all the original components of an object with identical but new ones, is that object still the same as the original, or is it something new?), Wanda's re-created Vision manages to defuse the white Vision's thirst for destruction and charge it with memories and humanity, before allowing it to fly away. The data transfer sequence is significant: from the detail of Vision's hand pressing on the fake gem set on Vision's white forehead, we access the lightning vision of multiple chips, in the form of simultaneous and interconnected shards of (audiovisual) memory. From here starts a very rapid montage of images reproducing the

crucial experiences lived by Vision in the various chapters of the Marvel saga, from his ‘birth’ to his death at the hands of Thanos, leaving space for the repeated framing of the detail of the electronic eyes of white Vision that, after the upload, take on an organic semblance. Yet, from where does this mnestic flow come? Which subject is really the bearer? Vision, Wanda, or the Marvel archive itself, interested in procrastinating the life of its superhero? On closer inspection, such editing seems to have been generated by an algorithmic interrogation to search for Vision’s presence in the different representations of the world of the Avengers. In this case, the transmedia memory of the expert spectator is at stake, as he/she is urged – as happens more than once in the course of the saga and its spin-offs – to interweave the threads of both past and collateral episodes, without giving up a foretaste of future media experiences.

3. Conclusions

Compared to the past, the representation of prosthetic memory has undergone several transformations due to a greater social awareness of mutual shaping phenomena between memory and media. Considering the relentless evolution of our memory experiences, we know that memory acts and objects are simultaneously incorporated by subjects at cognitive and perceptual levels, activated and enabled by technologies, and, finally, perfectly integrated into cultural dynamics.

As soon as we focus on the forms of mediation of memory, all those obsolete oppositions on which the history of thought up to the twentieth century was based are no longer valid (van Dijck, 2007). If the horizons of an extended memory have nullified the difference between an ‘internal’ memory and an ‘external’ memory, it now seems even less legitimate to establish a distinction between ‘real-organic-body’ and ‘artificial-inorganic-technological’. In fact, wideware is modeled on a body memory that is not only grounded in an individual body but within its inter-subjective and interobjective relations, i.e., in connection with people, environments, and technology-things.

In these terms, it becomes all the more important to consider how in contemporary audiovisual science fiction prosthetic memories are given a visual form thanks to the device of the flashback, which notoriously stimulates the viewer’s ability to integrate cognitively (conceptual blending) different temporal dimensions, spaces, and viewpoints. In particular, the flashback highlights a compression process aimed at showing the hybrid

nature of the subject, both organic and synthetic, with which it is associated. Recalling the theoretical model of intercorporeality, we can in fact speak of body identity compression to reflect on how the presence of organic artificial flashbacks can establish a relationship between the body of the camera, the body of the viewer, and the body of the audiovisual text through the contamination between anthropomorphic and technomorphic visual forms.

As we have seen through the analysis of sequences taken from various audiovisual products focused on humanoid robots, today's strategies of visualising synthetic memory aim to display – through the use of graphic interfaces and the unintentional and disturbing signs that refer to computational enunciation – the interpenetration of organic and artificial data. Moreover, the construction of the gaze goes on to define memory-images that can be traced back to a complex subjectivity because it has not only overcome the dichotomy between human and non-human, but has also acquired a temporal cognition capable of overcoming the boundaries between past and future, reality and fantasy, natural experience and media experience. We see this with the ending of *Eva*, in which the memories of the film are made to coincide with the artificial memory of the little robot girl being reset, and then include an epistemological doubt related to the credibility of a final retrospection, the outcome of a probably imagined past. In an even more sophisticated way, by resorting to multiple flashbacks, the *Westworld* series plays with the repetition of trauma, narrative loops, and the rewriting of the already experienced and, therefore, the already seen. *Blade Runner 2049* follows a direction not too far from the original movie since it re-actualises that filmic memory, both by taking up its core narrative (the memory implanted in the replicants, albeit changing it into a real flashback) and by introducing media traces of the previous film into the diegesis and the filmic discourse. *Amelia 2.0* and *Archive*, in some ways, draw on the same imagery regarding the survival of individual memory *post-mortem* thanks to brain downloading. The first film constructs the flashback with a subjective pathemization of the gaze counterbalanced by the marks of a machinic perspective; in the second movie, a similar aesthetic is associated with the representation of a memory stream fed by the mental and experiential archives of at least two characters who both function as subjects of memory, although separated by the irreversible threshold of death. The idea of a supra-individual and connected memory is re-presented in the form of a meta-televisual project in *Wanda-Vision*, where the flashback becomes the key to accessing a transmedia memory shared by characters from the mini-series and viewers who are passionate about the Marvel universe.

It is undoubtedly at the margins of the text – in the viewer's presence – that any representation of extended memory makes sense. The recurrent use of organic artificial flashbacks has in fact shown that the issue it is not so much the media's ability to produce non-natural experiences and implant their memory in the spectators, but rather the need to guarantee continuity over time between organic-existential memory and artificial-cultural memory, under the sign of an extended or more-than-human model, which in the end can nourish the never-quenched anthropological desire to perpetuate affective relationships beyond the limits of human life.

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