



Edited by
Massimo Locatelli
and **Francesco Toniolo**

Artificial lives

**THE HUMANOID ROBOT
IN CONTEMPORARY
MEDIA CULTURE**

FrancoAngeli

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Introduction¹

Janus, the god with two faces of the Latins, brought with him from the etymology of his name (Ianus in Latin means “arched passage, doorway”) the sense of a bridge between past and future, the god of beginnings (January), transitions and time. The anthropomorphic robot is the god Janus of the contemporary world: in its two faces of man and machine, it represents the transition from the age of modern technology to that of digital and technological contemporaneity, the threshold leading to a new space, a living environment in which the human coexists with the non-human and technology designs its boundaries.

In this volume we have brought together a series of reflections that trace the history of the multiple representations of the anthropomorphic robot in media culture. We reconstruct its symbolic value and consequently are able to understand how, through this figure, we imagine our relationship with technology today. And it is precisely from the question concerning technology that we need to start.

1. Janus and technology

When we talk about technology today we are faced with two contrasting risks: repeating a number of useless and common clichés, or taking for granted things that ought by no means to be taken for granted. So, to avoid any misunderstandings, it will be as well to clarify some key concepts necessary to help us along the path we are following.

¹ This introduction was planned and discussed together by the two editors of the volume. Massimo Locatelli dealt with the material drafting of the first paragraph, Francesco Toniolo of the second one.

First of all, we have to assume that we are living in an age in which communication technologies have intimately changed the perception of reality and the experience of everyday life; in a time, says Martin Heidegger (1950), when the world becomes *world view*². The second assumption is that the media image, cinema and the many platforms that derive from cinema in contemporary times, seems to be the place where the issue concerning technology, its instrumental and anthropological value, and its essence come across most strongly.

In the commonly accepted sense, the notion of technology means “the practical application of knowledge”³. However, if we take Marcel Mauss’s anthropological model (1936) as a reference, we can extend this definition to a framework of socially shared knowledge that governs every human activity starting from the physical, from our bodily existence in everyday reality. The first techniques that we learn and internalise and that characterise our experience are techniques of the body, posture and movement, but also techniques of vision and listening. Bodies, however, (regrettably) pass: they shrink and become absent, leaving a trace of themselves that is no longer a body and is not yet an object⁴. The textual analysis of the representations of the technical fact (of the anthropomorphic robot, in our case) allows a first answer to the question about the meaning of technology, about the way in which it is given to us as a trace of a passage and a physical existence, as a displacement, a field of relational forces, a quasi-object. It is the field of the human, which is being redefined by mirroring itself in its digital image.

A second possible definition considers technology as “a capability given by the practical application of knowledge”⁵, a work tool, an apparatus of production. Here technology is a rational procedure that oversees mediated and instrumental action, and in particular since the first industrial revolution

² «Where the world becomes a view, the existent as a whole is posited as that with respect to which a man orients himself, which therefore he wishes to bring and have before himself and thus in a decisive sense re-present to himself. World view, properly understood, therefore means, not a view of the world, but the world understood as view».

³ See <https://www.merriam-webster.com/dictionary/technology#h1> (last access May 18, 2022).

⁴ «This actantial *débrayage* that enables the weaving machine to pass into a basket that does not resemble it but is maintained in its absence, this fundamental deviation that picks up and mobilises lines of force and lineage – rushes and wicker – in order to keep bodies together – crab apples and apple harvesters – we will call it technique» (Latour, 1999, p. 82).

⁵ See <https://www.merriam-webster.com/dictionary/technology#h1> (last access 18 May 2022).

it has been characterised by its economic value; it involves machines and processes of transformation⁶.

Precisely this instrumental normality of technology, its procedural rationality, translates an unstable balance between what we know as organisation, institution, discipline and power and their subversion into shared knowledge. Ernst Cassirer (1930) rightly criticised the ideological and metaphysical basis of the classical philosophies of early modern technology. But he also grasped their exquisitely self-projective scope: «this criticism does not destroy the basic perspective and insight Kapp expresses when he says that technological efficacy, when outwardly directed, likewise always exhibits a self-revelation and, through this, a means of self-knowledge» (p. 38). Heidegger (1953) had gone even further: in the period when all we have of the world is its technologically mediated image, technology itself becomes *Gestell*, which signifies framing and support, but also imposition and provocation, and in its essence transcends the technical work itself⁷. Technology is the destiny of unveiling: indeed it is the possibility of unveiling alone that remains to us (p. 12).

At a distance of some years, we have definitively internalised this prospect, even if we do not always clearly understand its boundaries. «From this, » notes Don Ihde (2010), «streams the cascade of contrasts between Heidegger's romantic and nostalgic premodern preferences and the negatively cast consequences of modernity, technoscience» (p. 108). And from this derive, ultimately, some common fears that are still bound up with technological experience, and which the anthropomorphic robot often takes responsibility for. But in the same way, in Ihde's interpretation, Heidegger is "aware" of the new horizons that open up to technological modernity, starting from its constituent relationality (pp. 44, 102ff.).

In the essays that make up this volume, the relational model, the *Gestell*, will take different forms, which subtend different yet complementary dimensions and which we feel it will be useful to circumscribe starting from a redefinition that – we should say – is post-phenomenological. Within this framework is defined the relationship between individual experience, technologies and the various social systems in which the former are inscribed

⁶ For example, sound reproduction technologies define the transition from a paradigm of exemplarity of the original source – voice, musical instrument – to a model that places the source sound within pre-defined categories of both recording and reproduction (see Sterne, 2003). For a reconstruction of the debate on the economic implications of the diffusion of media technologies, see Eugeni (2021).

⁷ «*Gestell* [Enframing] means that way of revealing which holds sway in the essence of modern technology and which is itself nothing technological» (Heidegger, 1977, p. 20).

through the latter in keeping with the concept of “mediation” (Rosenberg and Verbeek, 2015). Don Ihde (2012) has promoted a model of philosophy of non-teleological technology, attentive to the historical and social developments of the technical world and its concrete manifestations. This framework for the definition of a historical-phenomenological analysis of the obsession with the anthropomorphic robot in the media, an analysis attentive to its profound origins (in the essay by Eugeni), to the pragmatics of perception (in the essay by Locatelli), to the different technical modulations (in the essays by Cati and Piredda), to the discursive uses (in the essays by Barotsi and Darelli) and to the participatory ones (in the essays by Giovannini and Toniolo), allows a second answer to the question about the meaning of technology, to the way in which this constitutes our experiential panorama, a self-revelation and a self-knowledge in the age of algorithms. It is the field of the human, which is being redefined by identifying itself in its technological present.

A third hypothesis about the meaning of technology remains open, and concerns the morality of technological action. Peter-Paul Verbeek (2011) stressed how technologies contribute to the configuration of moral situations by virtue of their design, i.e. by virtue of their material structure, their functionalities, and not only by virtue of the uses that are made of them, thus conjecturing that it is possible to detect an “intrinsic morality” of technology. The idea of an intrinsic morality of technology is contained in the concept of *agency*: the concrete, structural and fictional properties of technologies can constitute the very field for the exercise of morality and dictate the conditions for the moral evaluation of situations. As Janus was the guardian of every form of passage and change, the anthropomorphic robot places us before a crossroads, a crucial choice of fidelity to ourselves.

2. Janus and the moral choice

At the basis of investigations on the ethics of advanced artificial intelligence – fictional, but not only fictional – is the question of the autonomy of the robot, which can be interpreted in terms of autonomy of performance and autonomy of process (De Florio, Chiffi and Fossa, 2022). This is because human beings are called on to deal with new ethical challenges in the way they relate to artificial intelligence and use it, but it is increasingly a question of considering the ethics of the machines themselves. In a famous contribution in 1950, Alan Turing asked this question: «Can machines think?» (p. 433). And we must not take for granted the possibility of recognising as

actual “thought” a form of intelligence which is radically different from that to which human beings are accustomed. The media, in their finest expressions on relations with robots and A.I., raise problems precisely of this kind: is it possible to recognise as “life” (or “thought”) an intelligence that is from the organic one, and from the human brain? A collective and interconnected intelligence, for example, is certainly alien and distant from the human model, but can still be considered a form of life. The inhabitants of the planet Pandora in *Avatar* (Cameron, 2009) – considered savages, of course, however there is no doubt of their status as “living beings” – are able to experience a collective hyperconnection, completely invisible and naturalised, yet in reality not unlike that of a group of robots connected to a server (Eugeni, 2015).

Faced with these scenarios, the question is whether the media representations of robots are a credible and prophetic proposal for the near future, or whether they offer a distorting, exaggerated mirror – for both good and evil – of what technological development is. Certainly, with the passing of time, the ethical questions concerning robots and artificial intelligence are growing much stronger, especially in countries such as Japan, which several observers consider the forerunner of this future⁸, with a wide range of many-faceted issues, including debates over the rights of robots (Robertson, 2014)⁹ and “robot-sexism” (Robertson, 2010).

In the media too, however, representations of robots have become differentiated and more complex over the years. As Isaac Asimov (1982) recalls, when he was a teenager most stories about robots were based either on the “robot as a threat” or on the “pathetic-style robot”, a bungler deceived by humans. Asimov’s famous Three Laws, on the other hand, also began to question robots in ethical terms, subjecting them to an inviolable protocol, which, however, opens the way to a large number of problematic situations and borderline cases, in which the imperative of not harming human beings leads to interesting developments.

In interactive media, and in video games in particular, the ethical dimension is closely bound up with *agency* and the freedom of choice that it provides. Players are projected towards the diegetic space, in which they

⁸ Although, it must also be said, part of the discursiveness that develops in the West, concerning this Japanese primacy in the field of robotics, is characterized by a certain degree of Orientalism and sometimes excessive fascination (Hayes, 2019).

⁹ Debates that have gradually also emerged elsewhere. It is worth at least recalling the *Resolution on Civil Law Rules on Robotic* of the European Parliament (2016), which proposes to assign the status of electrical persons to robots sufficiently advanced and capable of making autonomous decisions.

exercise their agency, their ability to impact on the game with significant choices, through the avatar they control, with which they vicariously inhabit that fictional world (Calleja, 2011). This player agency, with its ability (or even necessity) to intervene actively in the world is a fundamental part of the gaming experience. The cases in which this centrality is removed are few and consist mainly of some experimental video games.

Freedom of choice also means being able to develop some principles of learning, while playing video games, through the control of different characters with different points of view and value systems (Gee, 2003). The players can decide, by making free choices, the fates of other characters or even entire peoples. When robots are inserted into such a picture, further ethical reflections easily arise: is it worth preserving a synthetic “life”? Does it have the same value as an organic life? And how should one act in worlds populated by cyborgs? How long do they stay human? How should their upgrading facilities be regulated?

These are questions running through the cyberpunk literary production, in the works of Philip K. Dick (like his famous *Do Androids Dream of Electric Sheep?* of 1968) and the numerous linear audiovisuals that have been engrafted onto these strands of production. Fictional universes in which organic life and synthetic life are superimposed, indistinguishable, hybridised to the point of no longer being separable. What interactive productions do, moreover, is to provide an active choice to the users, who can negotiate – albeit within certain perimeters, established by the design of that media experience¹⁰ – their own positions. Choosing, for example, what value to attribute to synthetic life, or what the cybernetic evolution of human beings should be. In these cases it is no longer a question of complying with one certain vision out of those presented in different media representations, but of becoming active architects of a project, among the possibilities attainable in a single interactive experience.

¹⁰ In this respect, there has been no lack of scholars who have considered this player agency to be illusory (for example Frasca, 2001 and Wilson, 2009), being in reality strictly bound by a series of implicit rules. Certainly, the illusion of freedom that is presented in the marketing of certain gaming products is, in fact, a hyperbolic illusion, but the possibilities of action by the players are still differentiated and, in some cases, even go beyond the boundaries provided by the developers.

3. Phenomenologies of the anthropomorphic robot

At this point, we can pick up the thread of the discourse from the beginning and return to the contributions that will accompany us in this broad phenomenology of the anthropomorphic robot on the media screens.

Ruggero Eugeni seeks to rediscover the origins of the technical-instrumental device, in terms of cultural archaeology. He shows us how the logic of robotics incorporates two technical practices originating from humanity, the constitution of speech or discoursing, and the production of traces, or mark-making. Two autonomous practices, which, however, have literally given rise at their intersection to the fetish, the origin of every technological imagination, the first concrete practice of animation of the inanimate technical object.

Animating the inanimate, the practice of constituting the object as a fetish, the mirror instrument of human action, has always created a reaction of rejection. Even today the anthropomorphic robot is recognised as a locus where this primal anguish explodes and causes us to recoil.

Massimo Locatelli reconstructs the case of the so-called uncanny valley, or precisely the dimension of eerie feeling that overcomes us before the robot when it too closely resembles the human. He explores its origins in the reflection of robotics and the most current studies with a neuroscientific and neuroaesthetic approach. To rediscover in it an exemplary case of context-related technological mediation. How far the cultural context and the critical and theoretical debate influence our perception of the technological fact clearly emerges starting from the case of the cyborg, a literary figure that was born from the robotic imagination and developed into the emblem and flagship of radical and utopian thought movements.

Virgil Darelli takes us back to the founding years of the cyborg myth, before it became a cult in the eighties, finding the founding model in some discourses on the anthropomorphic robot that would become dominant later: the fear of losing one's humanity, the questioning of the very concept of humanity, and the servant-master relationship concealed behind the cybernetic metaphor.

Rosa Barotsi brings us into the contemporary world, but precisely this last theme, of the power relationship that technology often conceals and the figure of the anthropomorphic robot or cyborg can bring to the fore, seems more timely than ever. Barotsi shows us precisely this unveiling, which can become a veritable political project of counteraction (counternarrative), in the examples of two films such as Alex Rivera's *Sleep Dealer* (2009) and Mati Diop's *Atlantics* (2019).

Alice Cati approaches the topic starting from memory studies, with a particular concern for flashbacks in contemporary films and TV series in which robots appear. The flashback, in these cases, acts as a figure of synthesis and compression between the organic and the synthetic. All this functions in the perspective of a crossing of boundaries, not only between an external memory and an internal memory, but also between “real” corporeality and technological artificiality. The fusions between the “body” of the viewer, the camera and the audiovisual text find a distinctive and little investigated embodiment in this contemporary use of flashback.

Maria Francesca Piredda, in her chapter, focuses on an often neglected component in the analysis of robots and their representations: voice. Robotic (and cybernetic) bodies have long been at the center of debates, studies and metaphorical uses, and in particular in cinema there has been considerable attention – productive and critical – devoted to these bodies and the aesthetics of them. This contribution, however, creates a dialogue between the fields of film studies related to the study of scientific products and those related to sound. After a historical survey, the chapter presents a taxonomy of robotic voices in contemporary cinema, with particular attention being paid to the voices of artificial intelligence.

Francesco Toniolo considers two cases of video game products in which the process of empathic construction and trust towards more or less anthropomorphised robotic characters is particularly significant. After a rapid survey of the presence of robotics in video games, the contribution focuses first on *NieR: Automata* (PlatinumGames – Square Enix, 2017), with its eternal conflict between androids and alien machines, conducted in a progressive empathic research that can go as far as the urge to renounce being rescued to help a stranger; and then on the trilogy of *Mass Effect* (Microsoft Game Studios – Electronic Arts, 2007-2012), where choice and agency predominate, especially when it is necessary to decide whether to give the same priority to organic and synthetic life in the context of futuristic science fiction.

Stefano Giovannini’s contribution explores robotic presences in Chinese video game imagery. China is a very important market for video games, but despite its economic weight in this field, some of its products are widespread only within the country and are unknown outside its borders. However, Chinese videogame products are also spreading progressively in the rest of the world, sometimes with a notable impact. For this reason too, it is necessary to understand and analyse more fully the imagery that underlies these productions. Also abundantly present in it are anthropomorphic robots, ranging from combat mechas to various forms of androids.

Janus turns towards his past and at the same time looks towards his future. As in a video game, he has to choose. He can see himself in his technological history, his digital mirror, or close his eyes and let himself be overwhelmed. This is the dilemma in our somewhat eerie obsession with the anthropomorphic robot.

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1. The Eloquent Dispositive. A Cultural Archaeology of Robotics

By Ruggero Eugeni

1. The robot as a cultural subject: an archaeological and evolutionary approach

If we consider the robot as a cultural subject, therefore subtracting it from a narrow temporal perspective, we should also reopen the question of its origins and the traditionally established limits of its history. Indeed, in this paper, I will argue that a “robotic dispositive” can be found since the origins of human culture; and that it contributed to determining its development. Of course, I am not thinking of robots as we conceive them today, but rather more basically as objects endowed with an expressive agency – that is, capable of physically and symbolically taking the place of various subjects in the management of certain forms of discourse.

More precisely, I will contend that robotic dispositives gradually emerge between about 400,000 and 30,000 years ago, as the genus *Homo* gradually defines the processes and institutions characterizing their culture; and that this emergence is directly linked to a phenomenon scarcely focused on by scholars but of enormous importance for our species: the convergence and connection between the two previously autonomous practices of *discoursing* and *mark-making*.

To justify these claims, I must ask the reader for patience to follow a complex story, which will reveal its reasons and consequences at the end (like the best stories)¹.

¹ The origin of human expressive activities and their connections with the biological, bodily, mental, social and cultural evolution of our species have constituted in the last twenty years the object of interest and the meeting point of numerous disciplines: cognitive archaeology and cognitive paleoanthropology; paleo-sociology, paleobiology and ethnoanthropology; evolutionary psychology, narratology and aesthetics; Darwinian theories of art and literature, and so on. The problem with this broad field of study is that the different approaches have

2. Discourses, bodies, narratives

According to Michael Tomasello (1999, 2008, 2019), about 400,000 years ago, the representatives of the genus *Homo* begin to obtain their food through forms of active collaboration: hence, from the *individual* intentionality typical of the great apes, they pass to forms of *joint* attention, intentionality and agency. Hunting and gathering practices now imply performances consisting of indicating objects, illustrating a series of actions, and producing prelinguistic and proto-musical vocalizations. Think, for example, of a group of hominids who agree on how to conduct a hunt by dividing into subgroups, studying specific plans of action, foreseeing one development rather than another and preparing the relative solutions. About 150,000 years ago, the increase in population involving *Homo sapiens* creates a growing dependence of the individual on the social group and the need to move from a *joint* intention to a *collective* one. Even the expressive tools become more refined with the progressive birth of articulated language². The consequences of these behaviours are numerous and contribute in a decisive way to the development of the cognitive, emotional, and expressive abilities of the genus *Homo*. First, *shared attention* is born, that is, the ability to concentrate one's attention on the same object and at the same time together with other partners for relatively prolonged periods. Second, a common *symbolic thought* arises, that is, the ability for groups of people to mentally represent the same object materially absent in space and/or time; hence, the emergence of a shared referential world, which can be present or absent. Third: a

developed relatively autonomously, with different intensities and rare interactions; in this way, the individual expressive or cognitive abilities (from gestures to language – that was by far the most investigated area –; from music to the different forms of visual communication; from tactile explorations to argumentative and narrative forms) have been analyzed in isolation without grasping (except in rare cases) an overall design. To reconstruct a possible birth of robotic dispositives, on the other hand, it is necessary to reason by intertwining and contamination, or, on the contrary, by complex blocks of skills that gradually differentiate and redefine themselves. Below, I sketch some starting hypotheses for such a project. Some mainly theoretical reconstructions are: on visual arts Davies (2012), Menninghaus (2011), Turner (2006); on narrative forms Gottschall (2012); on music Mithen (2007), Tomlinson (2015). For selected summary reconstructions of the whole field Heyer and Urquhart (2019), Loubere (2021), Lull (2020). On human evolution in general, see at least Boyd and Silk (2018), Condemi and Savatier (2021), Dunbar (2020), Newson and Richerson (2021). On the question of the specific role of culture in evolutionary processes, see the reconstructions of the debate in Laland (2017), Heinrich (2015), Lewens (2015).

² The recent debate, although very complex and articulated, places the introduction of articulated language between 200,000 and 50,000 years ago: see for several systematic overviews Arbib (2020), Everett (2017), Tallerman and Gibson (2012).

complex *narrative thought* is born, based on the non-random logical and temporal succession of actions and reactions³. Finally, the capacity of a *hypothetical and counterfactual thought* (mainly applied to narratives) arises; indeed, subjects learn “decoupling” (Tooby and Cosmides, 2001) actions from their actual experience; it derives from here both the possibility of carrying out “offline” (mental, imaginary) experiences, and that of distinguishing between different degrees of reality – and hence between different kinds of involvement within the narrative developments –. While Tomasello mainly considers gathering and hunting settings, other scholars focus on different social situations.

For example, Helen Dissanayake (2000) insists on the interactions between mother and baby in the first months of the latter's life. These interactions imply not only the development of a specific protolanguage, the “motherese” (studied among others by Falk [2009]); but also and above all, the use of a multisensory range of communicative and relational tools linked to the human body: voice, gestures, facial expressions, touch, smell, proxemics, etc. Through a series of specific operations such as repetitions, dynamic variations, and exaggerations, these instruments allow the mother to modulate the child's experiences carefully.

In turn, Robin Dunbar (1996) considers as fundamental the setting of *grooming*, a practice that strengthens friendship, loyalty, and mutual trust between individuals. Although if *Homo* representatives share it with the great apes, they develop original forms of proto-conversation and gossip within it; these practices, in turn, contribute to the development of language, but also the elaboration of storytelling abilities, to the growth of the “mind-reading” skills, and the evolution of empathy or sympathy attitudes with other subjects in relation to their narrative roles and fates. Similar conversational activities may have been carried out, according to Richard Wrangham (2009), around bonfires that characterize meaningful social opportunities in fire cultures. Recently, Robert Planer and Kim Sterelny (2021) have hypothesized that these conversational, narrative and gossip practices have contributed, starting around 150,000 years ago, to the construction (or destruction) of the *reputation* of individuals and, therefore, the strengthening of trust hierarchies within the new and larger social groups that were being formed.

Furthermore, still following an indication by Dissanayake (2000), these expressive abilities arising from everyday social settings have been gradually reused within contexts less linked to practical uses: their “making special” gives birth to a series of regulated performances involving narrations,

³ Dautenhahn (2001, 2003), Dutton (2009), Scalise Sugiyama (2016-2019).

dances, songs. In this way, the expressive manifestations of the subjects' bodies are moved from everyday life into play or the ritual frames: many scholars have seen the origin of artistic practices in these occasions⁴.

To sum up, a decisive turning point in the development of the genus *Homo* occurred about 400,000 years ago with the introduction of a practice that consists of the use of different resources of one's body for expressive purposes, intending to capture the attention of other subjects and to lead or shape a portion of their experience in perceptive, sensitive, cognitive, narrative, emotional, practical and mnemonic terms. A similar appropriation and delegation of the personal experience, although differentiated according to the contexts of social life in which it appears and unfolds, allows, in any case, *Homo* to develop a series of cultural and cognitive "gadgets" (Heyes, 2019). This practice is characterized by using one's body as an expressive instrument, in coexistence and relation with the other bodies within practical everyday social settings; more refined communication and expressive instruments such as articulated language, music, play, performance, dance, probably derive from it. I call this practice *discoursing*.

3. Marks, surfaces, looks

In the same period of the Lower Paleolithic in which Tomasello locates the birth of discoursing, and more precisely about 350,000 years ago, other scholars identify the start of another type of *Homo* practices: the use of tracing a series of abstract signs on bones, shells or rock surfaces. These are straight, oblique or zigzag lines variously arranged and intertwined; circles and spirals; and "cupules" that are small hollows with a regular shape that require their author expertise, precision, persistence and the use of special tools. These primitive petroglyphs or pictograms refer to a more general attitude to *mark-making*⁵, which is also expressed in forms of early painting with partially disappeared organic materials (such as the ocher traces of the Blombos site, in South Africa, around 100,000 years ago)⁶. The origins and

⁴ See, for example, Boyd (2009). However, we should note that while these scholars consider ritual and play settings to be primary, the scholars we have followed above prefer to think that they derive from the reuse of practices and skills matured within eminently practical social situations.

⁵ Dissanayake (2016) also mentions bones engraved with a lithic instrument dating back 540,000 years ago. See also Malotki and Dissanayake (2018) and the more general survey by García Díez and Ochoa (2020).

⁶ However, the use of black or red pigments, even in the form of tattoos, seems to date back to 300,000 years ago.

functions of these behaviours are neither well defined nor definable; an important interpretative distinction (which we will find again later) opposes the idea that mark-making constitutes the first form of “symbolic” notation⁷, to that according to which these traces would represent the “extended” manifestation of a thinking activity conducted in material and manual forms⁸.

The practices of mark-making recall in some respects those of discoursing analyzed in the previous paragraph, while in other respects they differentiate from them. Mark-making, like discoursing, intends to remove social subjects from an immediate and casual experience of the world (a “raw” or “wild” experience) to plunge them into the spatial and temporal framework in which their living experience is subjected to a predefined design that reduces its complexity and uncertainty. Yet, in the case of mark-making, this occurs no longer through interaction in co-presence but rather through a transformation of the ecological niche that hosts the subjects.

As for the differences, there are at least three. First: in the case of discoursing, the act of production and that of reception of expressive materials are contemporary and co-present – which makes it possible for the subjects to exchange their roles and interact reciprocally –; on the contrary, mark-making presupposes a temporal and, in cases, a spatial distance between the situation of the constitution and that of observation of the marked objects: hence, a situation of non-presence and communication imbalance between those who inscribe the traces and whoever observes them. Second: discoursing requires no other expressive tool than the human body and its different resources: discourse is produced by vocalizations, gestures, mimics, indications, caresses, etc. Mark-making, on the contrary, requires the use of inscription surfaces and technical tools: adequately prepared bones, stones or flat rocks; weevils, flints, pigments and so on. Thus, mark-making introduces a series of technological prostheses that extend the presence of the human body beyond the spatial and temporal of its situatedness. Third: discoursing is essentially temporal, linked to the progressive delivery of expressive materials and capable of expressing the chronological and narrative development of a series of actions; marking, on the other hand, has a primarily spatial nature as it is linked to the visual paths traced by the graphical signs, and to the visual-motor and visuotactile activities that follow them.

The two types of practices were undoubtedly considered to be distinct. However, there were also social settings in which the two spheres of

⁷ See D’Errico and Backwell (2005); Henshilwood and d’Errico (2011).

⁸ See Malafouris (2021).

discoursing and mark-making found points of tangency. For example, some mark-making activities may have been intended as discursive performances. In these cases, the tracing of abstract designs on stones or human bodies may have been done in the form of a public or private gestural choreography. As a consequence, on the side of the observation of the traces, the abstract design resulting from these operations could be observed as persistent traces of that gestural choreography: in other words, marks would be able not only of recalling the producing gestures in the abstract but of actually reactivating them through an “embodied simulation” enacted by the viewer (Gallese and Guerra, 2019).

Furthermore, this particular situation of tangency between mark-making and discoursing would be found not only in proto-artistic practices but also in the production of tools and other material objects – especially if we follow some hypotheses from the Material Engagement Theory⁹ –. Even the production of technological artefacts presents some typical features of discoursing: for example, appropriately sculpting a flint implies temporal and causal coordination, and therefore a narrative (the *chaîne opératoire*, according to the expression of the pioneering André Leroi-Gourhan, 1964-1965); moreover, this pattern is expressed in a material engagement with the objects from which specific expressive gestures and rhythms derive. Hence, a performative dimension of the technological action can be made explicit and enhanced on some occasions, such as teaching and learning – a social setting that must therefore be added to the list above¹⁰. In turn, as with proto-artistic objects, the observer of the finished object can read in it and reactivate (and possibly actually replicate) the series of gestures, operations, sounds and noises that allowed its birth. In this way, the creators of the objects continue to discursive themselves through their products.

4. Blending, recursions, remediations

Research on the origin of visual arts has generally ignored mark-making and identified the start of artistic activities with the figurative productions of European rock paintings. More generally, many scholars underlined how rock art coincided with a creative and cognitive “explosion” in the Upper

⁹ See Malafouris (2013, 2022), Ihde and Malafouris (2019). See also the previous note. The relationship between the development of material and technical skills on the one hand, and cognitive skills on the other, is today the centre of many cognitive archaeology studies: see for example Overmann and Coolidge (2019).

¹⁰ See Sterelny (2012); Mesoudi and Aoki (2015).

Paleolithic, which took place between 35,000 and 40,000 years ago in correspondence with the affirmation of the presence of *Homo sapiens* in Europe: in addition to the birth of figurative painting (the Chauvet cave, the oldest in Europe, dates back to 32,000 years ago), that period would have seen the invention of articulated language, the introduction of musical instruments, a decisive technological development, new and more complex forms of social life, etc.¹¹ Today, however, many scholars, without denying the importance of this phase of sudden progress, prefer to think that it should be considered as the result of a long gestation started at least 150,000 years ago – at the time of the formation of the first consistent societies in Africa, and when the genome of *Homo sapiens* was defined once and for all¹² –. Such gestation would involve a complex series of mutually intertwined technological, expressive, cognitive and social phenomena¹³.

I intend to propose the following hypothesis, from this framework and within it. Among the phenomena that matured during the long gestation that led to figurative painting (and more generally to the cultural and social advances of the Upper Paleolithic), an important role has been played by the convergence of practices and experiences of discoursing with those of mark-making in a single, modern technology of experiential design. The origins of this convergence are perhaps to be found in the common insertion of the two practices in the same ritual or “making special” frameworks (Dissanayake, 2000); or, in the accentuation of those points of tangency between the two spheres that I highlighted at the end of the previous paragraph – especially considering the improvement of the articulated language that is flanked and annexed to proto-musical phonations and gestures in teaching and learning contexts –. In more theoretical terms, we can consider such a convergence from the general perspective of a “fluidification” of the boundaries between skills previously matured in an autonomous and separate form (Mithen, 1996) and unified thanks to the ability of “blending” (Turner, 2014) that characterizes the modern human mind¹⁴. Or, it can be interpreted more

¹¹ The idea, which dates back to the 1930s, was popularized by Mithen (1996), Harari (2015) and many others.

¹² In this regard, the seminal Renfrew (2007) distinguishes between the “speciation” phase of human development, which involves an interaction between genes and culture, and a “tectonic” phase in which the rudder of evolution is handled solely by cultural factors. However, Renfrew tends to move the “modern” revolution forward, around 10,000 years ago, with the advent of permanent settlement.

¹³ See, for instance, McBrearty and Brooks (2000), d’Errico and Stringer (2011).

¹⁴ Mithen’s approach is prevalent among evolutionary psychologists, yet the idea of a “modularity” of the present mind derived from it has been criticized: see Henley, Rossano and Kardas (2020).

specifically as a form of “recursive thinking” (Corballis, 2011), that is, as the embedding of discoursing within forms of mark-making – and therefore as the first and original form of *remediation* (Bolter and Grusin, 1999).

In any case, the result that arises from this convergence is the completely new possibility of articulating complex narrative discourses in figurative visual forms (including the first figures of the human body); and the connected and complementary case of re-enacting, starting from those productions, a complex multisensory discursive process (i.e., a discourse composed by phonations, noises, gestures, etc.), either through an actual performance or through the activation of an inner discourse. In other terms, the narrator who acts in discoursing has stopped talking only through his own body, voice, and gestures; and has begun to express himself through the production and the presence of images inscribed on a surface thanks to a series of technical operations. The resulting spatialization of the temporal unfolding has led to new and decisive cognitive abilities in the genus Homo, first a more specific domain over time. But the most exciting implications for the reflection I am conducting here lie on another level.

5. The robotic dispositive

And here we finally perceive (as I promised in the introduction) the implications that this story reserves for a deep cultural archaeology of robotics. The convergence and blending of discoursing and mark-making produce, in fact, a new type of object, concretely identifiable with the painted stone wall, the decorated object, the statuette. In a sense, it is a new type of tool, capable of modifying and shaping not the material world on which they are exerted but rather on the experience of those who use it. These objects obtain this effect as they are living traces of a complex discursive activity, both gestural, phonatory and linguistic: therefore, they “talk” with the gestures, sounds and words that formed them, that they hold back and that a spectator-player can reactivate¹⁵. They certainly convey two narratives: that of the scene portrayed and that of their material production; however, probably, the distinction between the two is not clear-cut, and one constantly interferes with the other. And it is precisely the fact that the trace of their material production never fails that subtracts them from the pure status of objects and makes them social actors endowed with presence and agency in the same

¹⁵ In this sense, the rocky surfaces become cinematographic “proto-screens”, according to a line of reflection on which we see, for example, Casetti (2019) Carbone (2019).

way as those who use them: the relationship with them constitutes what Carlo Severi (2017) defines as “an inevitable fiction” that cannot be avoided once the specific cultural game of which they are parts, products and bearers has been accepted. I call these objects “robotic dispositives”¹⁶.

A few steps are still missing for robotic dispositives to complete their first development cycle: in particular, technological objects, artefacts, and marked surfaces do not yet show *autonomous* intentionality. In Alfred Gell's terms (1998), the artefacts are still characterized by a *primary* agency, that is, their social life derives from a metonymic bond between the product and its producer. The next step will be to shift to a *secondary* agency that cuts the bond of dependence between the artefact and its creator and opens it to the agency by spirits, gods, ancestors, deceased, or impersonal entities – turning the object in short into a *fetish*. But already in this first phase of the robotic dispositive, a first decisive step has been taken: within the “modern” forms of human experience, objects have begun if not to possess at least to express a soul.

¹⁶ It is important to emphasize that the gestures and voices that robotic dispositives express do not belong to impersonal forces of nature: they are, first of all, the gestures and sounds of the technical and narrative operator who produced them. In other words, their individuality and expressiveness are closely linked to their technological origins and the “style” with which the narrator-craftsman has carried out the chain of operations necessary for their production. It is precisely this feature that transforms them from pure objects to social actors. In terms of Gell (1998), what I call the “robotic device” stems from an “abduction of agency/subjectivity” of an expressive type. On the ontological and religious implications of objects as instruments of physical “appearance” of displaced subjects, see Descola (2013).

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2. The Paradoxes of Ultra-realism. The Uncanny Valley Hypothesis Reconsidered

by Massimo Locatelli

The degree of realism of computer-generated imagery has today reached levels that can often be compared or confused with the photographic image. We are talking about ultra-, hyper- or super-realism, or, drawing inspiration from the artistic field, of photorealism¹. This technical and creative development has acquired significant economic weight, in terms of production value and as a marketing tool, and has become a central theme in contemporary media reflection.

The figure of the robot, both by its symbolic dimensions of merging human and non-human, and its actual spread and use in real-life contexts, such as medicine or caregiving, seems to be a decisive and problematic node at this stage. In particular, robotic engineering has developed a broad debate, soon reported also in the field of studies on animation, about the paradoxes of ultra-realism, summarised in the widely quoted formula of the *uncanny valley*: the eerie feeling of perceiving a face on the borderline between the human and the non-human, and which makes the appearance of the machine monstrous.

My contribution aims to reconstruct and contextualise this debate as a filmological worktool. The anthropomorphic robot in film and the media will prove to be a positive factor in the integration between photographic and graphic imagery in today's media culture, and in a negative sense the Trojan

¹ The literature on photorealism in visual art of the twentieth century is very extensive. Here I will only offer an overview, an updated bibliography and a critical reflection (Peariso, 2013).

horse in the contemporary drive towards automation and the ultra-technologisation of subjective experience.

1. History of an idea

The first version of the theme appeared in a sociotechnical field, or in the sociology of science. A paradigm which was greatly discussed in the 1990s was that of the monstrosity of the cyborg, applicable in reality to different forms of relationship between people and technology. One side of the debate has always been wary of the integration of ever new technological instruments into contemporary society. Think of the crisis of rejection of film culture with respect to the electronic image well before the advent of digital², and in general of the reflections on the falsity of hyperrealism by Umberto Eco (1986) or Jean Baudrillard (1996). The monstrosity of the machine has a metaphorical value here, and includes both reflections on problems inherent in the technology of experience, such as those of control over individuals and the limits to their free expression, as well as peaks of veritable technophobia. It is again here that we find rooted the idea of a cruel and menacing inhumanity of the anthropomorphic robot, embodied in the popular culture of those years in the *Terminator* series³ (Cameron; Mostow; McG; Taylor; Miller, 1984-2019) and related in critical literature to the Romantic and Freudian concept of the *Unheimlich*⁴, finally translated into the catchier term *erie*.

On the other hand, attempts have been made to deal with contemporaneity: in the socio-technological debate, the ideas of Bruno Latour (1993) have enabled us to reassess the agency of technological subjects, or rather, with reference to the subject that concerns us in these pages, of hybrids, while in the philosophical field, in a very influential contribution, Donna Haraway (1991) assigned to the cyborg, the individual integrated with mechanical

² «In sum, the cinematic exists as an objective and visible performance of the perceptive and expressive structure of subjective lived-body experience. Not so the electronic, whose materiality and various forms engage its spectators and “users” in a phenomenological structure of sensual and psychological experience that, in comparison with the cinematic, seems so diffused as to belong to no-body» (Sobchack, 2004, p. 152).

³ The series includes *The Terminator* (1984), *Terminator 2: Judgment Day* (1991), *Terminator 3: Rise of the Machines* (2003), *Terminator Salvation* (2009), a reboot of the first episode in 2015, a sequel to episode 2 in 2019, a TV series based on the second episode in 2008, and several video games since 1991.

⁴ As is well known, Ernst Jentsch (1906) describes in psychological terms the impression created by wax figures, automata and ingeniously constructed puppets.

organs, characters that are actually resistant and revolutionary⁵. Such models have subsequently made it possible to reconceive the human-machine relationship within the logic of exchange and reconfiguration of the social network, in which the anthropomorphic robot, or android, can represent a central node.

At that stage, in any case, the question of the boundary between human and non-human in anthropomorphic robotic traits was still limited to a niche of professionals interested in a problem of planning and design in robotics. As is known, the notion of *uncanny valley* was put forward in this context by Masahiro Mori in 1970⁶. Using a graph, Mori represented the correlation between the feeling of affinity of an observer with various types of objects with anthropomorphic characters (puppets, robots, dolls) and thus detected a turning point, visually represented as a valley. At the point where these objects of the gaze, whether they be prosthetic limbs, androids or moving wax statues, come very close, we might say too close, to the impression of reality, the feeling of affinity quickly turns to aversion and repulsion; a sense of disquiet that disappears again when the object of observation is a real person. In short, Mori found that the more closely the artificial body resembles a human one, and vice versa, the deeper the repulsion. The Japanese scholar hypothesised that this aversion could be due, in an evolutionary logic, to the self-protective instinct that activates the feeling of disgust: the prosthetic limb or the almost-conscious face of the android recall disease, physical decay and death, seeing them as animate is an experience that recalls the feeling of seeing a corpse moving; and that of the corpse is precisely the most radical but closest example with which Mori compares the eeriness of the uncanny valley.

Mori's hypothesis was taken up in robotics studies when the creation of androids that could interact with humans became a reality and the problem of the effectiveness of this interaction arose. During the first decade of the 2000s, the hypothesis of the uncanny valley was tested and updated, among others, by McDorman and Ishiguro, who referred it to models of general

⁵ «The cyborg is resolutely committed to partiality, irony, intimacy, and perversity. It is oppositional, utopian, and completely without innocence. No longer structured by the polarity of public and private, the cyborg defines a technological polis based partly on a revolution of social relations in the *oikos*, the household. Nature and culture are reworked; the one can no longer be the resource for appropriation or incorporation by the other» (Haraway, 1991, p. 51). For an in-depth analysis of the specific theme of cyborgs, see Virgil Darelli's essay in this volume.

⁶ «I have noticed that, in climbing toward the goal of making robots appear like a human, our affinity for them increases until we come to a valley, which I call the uncanny valley» (Mori, 2012, p. 98).

acceptance of the other: contrary to the clearly mechanical, or humanoid robot, which is not, so to speak, “recognised” as similar, the more similar the anthropomorphic robot is to a person, the more active the recognition mechanisms are, and in general what they define as the «subjective impression of familiarity or human presence» (MacDorman and Ishiguro, 2006, p. 309). An impression that has positive aspects, firstly in terms of the acceptability of the robot as a partner of interaction (pp. 313-314), and secondly for the study itself of the emotional field and interactions in psychology and social sciences. The imperfection of similarity, however, disturbs this impression, with an effect of eeriness that is all the greater, the greater the possible familiarity, due on the one hand, as in Mori, to fears that arise from an unconscious comparison of imperfection to death (p. 313), but on the other hand also from the violation of expectations relating to human behaviour in interaction (p. 309). As we will see below, subsequent studies have confirmed on a neuroscientific basis the importance of the violation of expectations in the experience of the uncanny valley, revealing an anomaly in a defined cognitive circuit of predictive coding, that is, of anticipation of known situations, in particular related to our familiarity with the other (Saygin *et al.*, 2012).

All studies of the perception of anthropomorphic figures are actually based on images shown in the laboratory, in a short circuit that superimposes the design of a real robot onto the representation of a robot in media imagery. The theme of the uncanny valley has thus moved into the field of films and media studies.

The Freudian uncanny has always been a central subject in film studies, with the focus often on themes and genres specifically characterised emotionally, such as horror and the thriller. A highly representative and useful contribution to our reflection was that of the “philosophy of horror” by Noël Carroll (1990). The basic paradigm is that of a cognitivist theory of genres, which identifies in a basic emotion the use value of a certain class of cultural products (the genre, in fact), in his case first literary horror and then cinematic. The root of the problem is cognitive: horror differs from terror and from all forms of anxiety and fear, because it arises from the representation of “monsters”, or creatures that violate the laws of nature and our capacity for recognition⁷. The characterisation of such figures gives us indications of the expected emotional responses, indications that enable us to describe this emotion in terms of repulsion, nausea, disgust, all the way to

⁷ «An occurrent emotional state is one in which some physically abnormal state of felt agitation has been caused by the subject’s cognitive construal and evaluation of his/her situation» (Carroll, 1990, p. 27).

the loss of meaning or, in fact, “indescrivability” (p. 20). Within this framework, that is, of a culturally constructed emotionality, which Carroll calls art horror, it is possible to identify a twofold paradox: first, the paradox of fiction itself, which moves us but on the basis of fantasies, and which is resolved by assigning an emotional power to our imaginative capacity (for thought, in Carroll’s model, pp. 87-88). And above all the paradox of horror: why do we seek such disturbing emotions? For Carroll, the fascination of everything that escapes our knowledge is a sufficient reason to motivate us (p. 195).

The emergence of the problem of the uncanny valley has brought the theme of eerie emotions and those related to the disgust of horror to the centre of attention. In a recent contribution in Italian, Bruno Surace (2021, p. 361) refers to a theme that Carroll (1990, p. 20), citing the work of Lovecraft, also brings into play: *eisoptrophobia*, meaning fear of the mirror, or of what we see in the mirror is like us, yet different from us, thus restoring the difficulty of recognition to the identity itself of the beholder. Surace also refers to another theme with strong references to cinematography, *pediophobia*, the fear of china dolls, but the game could lead us to include coulrophobia, that fear of the clown that has deeply marked much film imagery from *The Man Who Laughs* (Leni, 1928) to the saga of the Joker in the *Batman* series (1940-)⁸. In particular, Surace restricts the character of the mirror, that is to say being like us yet radically different from us, to the face of the double, the doll, the android. Based on fictitious but photorealistic faces, which are therefore indistinguishable from real faces, built today by GANs (generative adversarial networks), he suggests we should interpret the phenomenon in its cultural construct dimension, a kind of openness to the new and the search for meaning, in which we engage perhaps, as Carroll posited, from a thirst for knowledge⁹.

In particular, the release of the first short films and especially of the first commercial feature-length film created in computer graphics, *Toy Story* (Lasseter, 1995), turned the attention of both specialists and critics to the problem of the graphic representation of the quasi-human in animation. Already in 1991, with an approach that was in the first place philosophical, Robyn Ferrell presented the problem of the general ambiguity of the animated image (in her example, photographic animations based on neo-Gothic texts by Angela Carter, p. 132). As already in Ernst Jentsch’s seminal

⁸ For an exhaustive list of the multiple appearances of the Joker character in graphic and audiovisual imagery, see the dedicated Wikipedia page: <https://en.wikipedia.org/wiki/Joker>.

⁹ «Uncanniness, in terms of a semiotics of passions, cannot be seen as a state of complete disturbance. It should rather be framed in a tense and wait-and-see regime» (Surace, 2021, p. 362).

reflection, the doll, the statue, the animal give rise to the impression of the *Unheimlichkeit* when they suddenly give a sign of humanity in a gesture or a look. The point of fracture is therefore identified in the juxtaposition of a mechanical animation (giving movement to the drawn image) and an “animistic” animation (giving a soul to the drawn image)¹⁰, a twofold operation that works until the one enters into conflict with the other. Vivian Sobchack (2009) recognises in animation a sign of the contradiction of the technological being, or of automation¹¹, and Lisa Bode (2019) emphasises how important it is for the viewer to recognise or be able to project an agency into the animated drawing or the anthropomorphic robot, which removes the mechanicity of the quasi-human from its spectral unnaturalness. The field of animation thus opened up broader reflections on the visual cultures of the contemporary, such as those by Keith Moxey (2008): «The ways in which objects call to us, their animation, their apparent autonomy, stem only from their association with us. To insist on their ‘secondary’ agency is not only a means of recognizing their independence but also their dependence on human culture. They may haunt us but their autonomy is relative. They cannot exist without the power with which we invest them» (p. 142).

Bringing the case study of the uncanny valley back to film cultures has meant in more recent years also evaluating it as a borderline case in the attribution of the character of photorealism of a film image. As is well known, at least from the remake of *The Lion King* (Favreau, 2019), CGI becomes almost indistinguishable from the photographic image also on the film screen, and this high degree of realism has become an integral part of the marketing of many video games. For this reason, in the context of Anglo-Saxon film aesthetics, photorealism has recently been interpreted as a specific case of a general imaginative process, which George M. Wilson (2016) defines as *Imagined Seeing*: an attribution of perceptual properties and the status of reality to fictional elements of the film, for example the unity of space of a sequence with many frames shot in the reality of the profilmic in different locations, or the colours of the cinema in black and white, and on a more specific level the illusion of the unity of space created with masks or backscreens (p. 67). The model is basically that of the “myth

¹⁰ The purpose of such an operation is, moreover, «to problematize any simple distinction between life and movement, animism and mechanism, human and nonhuman, animation and cinema, film and world» (Cholodenko, 2007, pp. 487 and 501).

¹¹ Sobchack had already proposed an important reflection on the uncanny character of the instability inherent in the then new technologies of morphing and CGI in a collection of essays she curated: «Morphing's dramatic emphasis on process thus foregrounds not only metaphysical but also political contradictions» (Sobchack, 2000, p. xii).

of total cinema” taken up by André Bazin¹², and in this respect we might think that the quasi-human dimension of the android, as well as still today the human face created in CGI, represents a violation of this imaginative process. Seyama and Nagayama (2007) offer a possible evolutionary explanation, pointing out that photorealism is the perceptual norm of reality, to which we have been phylogenetically accustomed. While it is true that the transparency of the photographic image needs to be strengthened by an imaginative act, the emergence of the artificial in the uncanny valley betrays and disappoints our very efforts to adhere to reality.

2. Phenomenology

Over the last fifteen years, laboratory studies of the uncanny valley hypothesis have multiplied. In general, the existence of this perceptual phenomenon has not actually been confirmed and verified in its entirety, nor falsified in absolute terms, despite a constant search for objective criteria against which to test it. The field of the psychology of perception itself has finally had to recognise the need for a broader and more complex interpretation, which will have to take into account the conditions of reception and the experiential context of the encounter with the quasi-human¹³.

A 2015 study on a comparative basis enabled Jari Kätsyri, Klaus Förger, Meeri Mäkäräinen and Tapio Takala to effectively outline the three main existing types of approach and interpretative proposals: Mori’s original approach, which can be attributed to the problem of affinity between human and non-human and therefore of the affective state that is generated in relation to the limits of humanity; the cognitive model that motivates the phenomena of uncanny valley in terms of a predictive coding error; and the perceptual model, which is based on the recognition of a perceptual mismatch in liminal cases, such as the anthropomorphic robot¹⁴. From each

¹² «Film as a total and complete representation of reality» (Bazin, 1967, p. 20). For a critical discussion of the influence of the translation of Bazin’s essays in the US debate I refer to Carroll (1995).

¹³ «A comparative interpretation of findings to date and inconsistencies between these suggests that an uncanny effect is not generalizable across different individuals, stimuli, situations, tasks, and time. As this topic indicates, research is shifting toward the development of a differentiated understanding of specifically when, under what conditions and why effects consistent with the uncanny idea occur» (Cheetam, 2017, p. 5).

¹⁴ Note that the basis of the meta-data is related to research that used fixed visual stimuli consisting of a succession of faces or real hands transformed in succession into CGI robotic entities with morphing procedures. Therefore, research into different stimuli, for example

emerge limits and, for the authors, incongruencies. Mori's model, as mentioned, was initially superseded, above all in studies applied to robotics and experimental psychology. The problem is the model's inapplicability in the general sense: the uncanny valley hypothesis is not always confirmed, as stimuli vary; and the hypothesis that the uncanny valley is a generalisable phenomenon is considered a naive theory in the field of human sciences. Kätsyri and colleagues (2015) point out in particular the difficulty of determining the conceptual categories used by Mori, and recall the problem of translation itself from Japanese of terms such as *bukimi* and *shinwakan*, i.e. the terms used by Mori in the construction of his scale of perceived affinity, generally translated respectively by "eeriness" and "familiarity". The ambiguity of the conceptual framework prevents one from establishing a measurable emotional value in the laboratory, and consequently makes it impossible to compare the different experiments that have dealt with it (p. 21). But quite apart from this methodological problem, Mori's original hypothesis appears to be contradicted where the stimulus, or the context of exposure to the stimulus, do not have negative connotations in themselves, as in the case of Mori's corpse (p. 27).

Studies of the difficulty of perceptual and categorical recognition have thus spread, partly due to their clearer applicability to the strict conditions of laboratory research. The observation of mechanisms of perception and comprehension in the recognition of the human traits of a robot or animation has led many scholars to relate the feeling of eeriness to particularly ambiguous stimuli, and has provided two interpretations that we might think are complementary. First, we find scholars who prefer a cognitive interpretation of the phenomenon, namely Predictive Coding Error Theory (Saygin *et al.*, 2012). In this case, the axis of occurrences (the stimulus images constructed in morphing) that ranges from the most human-like to the least human-like is related to the difficulty of categorisation according to the categories of human and non-human. In the passage from the still-human face to the dehumanised face and vice versa, in short, we would have a problem of categorical recognition that would cause the feeling of eeriness. This data finds a verified neural correlation with research based on functional magnetic resonance imaging: «Bilateral mid-fusiform areas and a different right mid-fusiform area were sensitive to physical change within the human and avatar categories, respectively, whereas entirely different regions were sensitive to the human-to-avatar (caudate head, putamen, thalamus, red nucleus) and

video games, or more complex ones, such as multi-modal stimuli, are excluded (Kätsyri *et al.*, 2015).

avatar-to-human (hippocampus, amygdala, mid-insula) direction of category change» (Cheetam, Suter and Jäncke, 2011, p. 1). Hence there is a cognitive process underlying recognition within the individual categories, and different processes for switching respectively from one category to another and vice versa. The idea that it is originally a problem of semiosis is a very interesting one. Bruno Surace (2021) makes the point that the error of prediction comes when stimuli are involved, and it is difficult «to define whether they are iconic signs, that is, completely artificial, or indicative, that is, that they still belong to some physical instance of which they are a trace» (p. 364). In this sense, the human-non-human axis identified by psychologists as a frame of reference becomes the threshold between a physical experience of the world and the experience of mediatisation and artificiality itself. The vertigo that seizes us in the face of the humanised inhumanity of the android is the vertigo that oppresses us when faced with the abyss of meaning.

The purely cognitive interpretation, however, has conceptual limitations. Firstly, we do not always discriminate against humanity on a scalar basis, for example, not a comparison with other primates. In this case, two categorically distinct fields no longer appear (Campbell *et al.*, 1997). Secondly, we would not be aware in this way of differences in detail, such as lifeless eyes in a realistic face (Cheetam, Suter and Jäncke, 2011). Therefore, the tests on discriminatory abilities have been accompanied by more specific hypotheses regarding the possibility of a deficit linked to details that do not correspond to non-cognitive but perceptual expectations, the so-called Perceptual Mismatch Theory. In this case, it is precisely the “out of place” detail that causes the sensation of eeriness, because it does not fit into a precise perceptual scheme (MacDorman *et al.*, 2009). Studies of this type also work on a multi-modal mismatch, for example by linking inhuman voices to human faces, and vice versa (Mitchell *et al.*, 2011), or practices of graphic exaggeration of detail, which are particularly interesting for the field of animation (Mäkäräinen *et al.*, 2014). However, not all timbres of sound or types of graphic exaggeration automatically lead to effects of creepiness and phenomena attributable to the uncanny valley. In this case too, therefore, the problem again arises of how far the basic hypothesis can be generalized. Yet, in recent years, studies focusing on the affective states that can characterise the phenomenon of the uncanny valley have once again become the centre of the debate.

Probably, it is the general reflection on the concept of emotion and affectivity itself that has reached a higher level of complexity within a constructivist framework (Feldman Barrett, 2017). It is thus possible to reassess the research into the uncanny valley.

A very exhaustive study by Tinwell (2015) conjectures that the sensation of eeriness is caused by a blockage of our powers of identification, in the same way as in other situations of “lack of empathy”, such as certain pathological states or even botox facial treatments (pp. 143-144). The unrecognizable element interferes with the empathic system, causing a negative affective state. As indicated by a comparative study by de Borst and de Gelder (2015), the link between the uncanny valley phenomenon with the empathic systems and in general with mirror neuron mechanisms has also been identified in the research on movement, already indicated by Mori (2012, p. 99) as a variant capable of increasing the emotional value of the stimulus: positively, if consistent with the attribution of humanness-non-humanness, negatively in the curve of uncertainty and incoherence. Although the comparative indications at present do not enable us to find coherent indicators that can lead to recognizing unique mechanisms, research of an affective-cognitive character into the understanding of emotions in the expression of robots and avatars is a very promising front. McDorman (2019) assessed the impact of the use of anthropomorphic avatars in audiovisual narrative. He was able to recognise an interference of the phenomenon of the uncanny valley in the empathic response of the spectators-participants only in the case of the positive hero with a tragic end (classical Aristotelian tragedy), with a precise link therefore with the narrative genre and its affective components.

The very term of affinity derived from Mori has been subjected to procedures of validation and re-categorisation, for example in the work of Ho and McDorman (2010; 2017). By applying psychometric methods, this seeks to determine possible descriptors of the emotional impact of potentially uncanny stimuli. The aim is to identify reliable indicators for the work of robotic design and graphic animation, precisely in the light of the variability of the field of expressions referring to affective states and emotions. The preparatory work consists in the collection of semantic expressions typical of untrained observers and referring to the emotional value of different images of robots, animated characters and real people. This collection is used to build a series of conceptual pairs that can be referred to three main indices (humanness, attractiveness, and eeriness) based on their positivity or negativity. It is therefore possible to cushion or avoid the sense of eeriness and in general the phenomenon of the uncanny valley by manipulating not only the indices of humanness, that is, increasing the familiarity of the stimuli, but also their attractiveness, or likeability. The work of Ho and McDorman gives a full account of the complexity of emotional experience, built upon the basis of fundamental affective states but together determined by cultural constructs and by each person’s individual history.

We also now know that mechanisms for recognising human traits and our ability to distinguish between non-human and quasi-human traits are learned mechanisms. Burleigh and Schonherr (2015) showed how the negative effect associated with the phenomenon of uncanny valley can be related to the degree of exposure of an individual to stimuli. The two scholars point out that the sensation of eeriness is a variable of both the formal (categorical) properties of the stimulus, as well as the frequency with which the observer is subjected to the stimulus, and can therefore modify his level of categorical understanding. Their observations are consistent with the evolutionary psychology studies by Lewkowicz and Ghazanfar (2012). In their research, they subjected children aged 6, 8, 10 and 12 months to the viewing of pairs of human images, realistic avatars and unrealistic avatars, finding a negative emotional reaction corresponding to the phenomenon of uncanny valley in adults only in the 12-month age group. Results that once again suggest «that perceptual experience with real human faces is critical to its emergence» (p. 124). Złotowski and colleagues (2015) have shown that the various emotional components of the uncanny valley, hence both likeability and eeriness, can be modified by interaction with a robot.

Likeability of a robot was mainly affected by its attitude and this effect was especially prominent for a machine-like robot. On the other hand, merely repeating interactions was sufficient to reduce eeriness irrespective of a robot's embodiment (Złotowski *et al.*, 2015, p. 103).

McAndrew and Koehnke (2016) have tried to reframe the general problem of creepiness accordingly, framing it from an evolutionary point of view. The two authors hypothesise that the feeling of horror stems from that set of responses to situations of possible danger that humanity has acquired in its evolutionary history. In particular, it has to be interpreted within the framework of a system that defines agency-detection, that is, the search for active causes for possible dangers. The phenomenon of the uncanny valley would then be placed in the context of that broad field of emotional activation mechanisms that we relate to the circuit of tension, fear and anxiety¹⁵.

¹⁵ «In exploring additional brain areas otherwise associated with affective processing, the amygdala was found to be responsive to category change in avatar–human face pairs. The amygdala is responsive to natural and computer-generated human faces, human like but unnatural faces, novelty, uncertainty, unclear predictive value, and ambiguous valence» (Cheetam *et al.*, 2011, p. 11; Phelps and LeDoux, 2005).

3. Prospects

In the middle of the last decade, the many contradictory studies without a consistent result verifiable in the laboratory, and above all the improvement in the definition of graphic images, especially in the videogame sector, have led some insiders to hypothesise a theoretical and factual superseding of the whole uncanny valley phenomenon. In a certain sense, graphic imagery and photographic imagery, after almost two centuries of running on parallel tracks, will be able to meet.

Within a decade or so, computer game characters will be as indistinguishable from filmed humans as their movie counterparts (Perry, 2014, p 48).

The focus is shifting to other perceptible elements, such as perception thresholds, which are becoming central to the public debate. However, while the bar of hyperrealism is being raised, the impasse of meaning implicit in these technologies of representation still re-emerges strongly: deep fakes are the new horizon of the *Unheimlichkeit* (Conte, 2019), clones the last source of our eeriness (Yonemitsu *et al.*, 2021).

In fact, while it is true that the perceptual-cognitive basis of our experience can activate embodied responses and affective states in typically bottom-up ways, the broad debate about the uncanny valley hypothesis confirms once again that in complex cultural cases the social and formative factors are not only predominant, but can in turn reorganise physiological response systems, in a logic of re-entry.

It is precisely due to the complexity of the possible responses that the anthropomorphic robot, in its variants of real interface and graphic avatar, still has an essential symbolic value, even beyond our ability to learn to live with it. The ultra-realism that the anthropomorphic robot, the deep fake, the clone, represent is the decisive boundary of our experience in the contemporary world. The classical filmology has always considered the possibility of access to experience for different degrees of attribution of the status of reality (Mitry, 1963, p.119); and this same process of attribution enables us to align a correct and socially useful emotional assessment of the affective states experienced in viewing. If therefore, as I have tried to show in my previous work, to which the reader is referred (Locatelli, 2017), «the sense of reality is hypothetically a discrete, scalar value which, at the moment in which the stimulus is processed in conscious states with emotional and auto-noetic significance (memory, understanding, attribution of sense, etc.), may refer to various different levels of representation (relating to objects,

memory, fantasy, dreams, hallucinations – or, indeed, to media)» (p. 274), the thresholds of ultra-reality in which the awareness of the algorithmic and ultra-technological origin contrasts with the photorealistic perception will short circuit precisely this referability of the emotional and auto-noetic meaning to representation. The feeling of eeriness is then always conveyed by the impossibility of building our emotional experience according to the common emotional categories of reference, and it is our cultural competence that comes to our help to understand it, face it and describe the traits of the *Unheimlichkeit*.

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3. The Origins of the Cinematic Cyborg

by Virgil Darelli

1. Introduction

The article considers the years between the creation of the word “cyborg”, in 1960 and its popularization that took place around 1984, when *Terminator* premiered. That film gave way to what has been called “Cyborg Cinema”. Furthermore, in 1985 Donna Haraway’s *The Cyborg Manifesto* was published, expanding the range of meanings of the word, even more with the inception of “cyberspace”, from William Gibson’s novels. I will examine cyborgian figures in cinema and television before the 1980s, in order to historically retrace the topics, the narratives, and, above all, the meaning of “cyborg” in those years. I will also consider US newspapers to analyse the frequency of the word and its uses.

The article is organized as follows: first, I consider the different meanings of “cyborg”, as it is used in academic literature and encyclopaedias, taking into account four clearly distinguished senses; then, I summarize what was the so-called *cyborg cinema* from the 1980s, its characteristics and topics, as a touchstone against which to consider the previous incarnations of the cyborg; then I expose the methodology and the results from the analysis of the 1960-1983 period.

2. The meaning of “cyborg”

What is a cyborg? According to the Encyclopaedia, it is a blending of “cybernetic” and “organism”. It points to a human being that went through high-tech modifications of the body and acquired superhuman abilities, often used in fiction to highlight the threatening and dehumanizing effects of the technology (Heckatorne, 2016). In the popular understanding of it, it is a

“half-machine, half-human” organism, future destination of the human species led by scientific progress. In this sense, a cyborg, an organism (not necessarily human) with synthetic hardware, is different from a robot – even one that mimics the human appearance and behaviour, the “android” –, which is a machine designed to perform a task, no matter its potential ability to perceive and even be aware (Schofield and LeRoy, 2018).

But it’s not that simple, and the distinctions are not clear. The word “cyborg” has been used to describe different beings, different problems, and from different theoretical perspectives. Suffice to say that Terminator, the most famous cyborg and one that is used as an example in all discussions on the topic, is not a cyborg in the most common sense, the one that I just discussed (it is a killer android instead). According to Manfred Clynes, one of the two original proponents of the word, Terminator is in no way a cyborg (Gray, 1995). First, he isn’t human; second, the technology seems to create killer monsters. It is not disputed that the concept of the cyborg has departed from the original intentions of 1960, when the word was coined. Other than complex androids with different origins, abilities and looks, the cyborg has been a major keyword in the posthuman thought triggered by cyberpunk narrative, where it has been brought to indicate a contemporary condition where the human being is coupled with networked and visual media. I will now try to distinguish four senses in which the word “cyborg” has been used.

3. The original cyborg

The cutting-edge explorer. First, I refer to the original concept established by Manfred Clynes and Nathan S. Kline, originally published on *Astronautics* in September 1960 (Kline and Clynes, 1995). To them, the cyborg was the means by which a human could live in a different environment. Leaving aside the traditional space suits, which they compared to a fish carrying its own fishbowl to live on shore, men and women could alter their physiological functions, such as breathing, feeding, body temperature and pressure, by biochemical and electronic modifications. In their writings, they explore emotions, alongside psychotropic drugs and other physical ways of dealing with them, especially in a later paper called “Cyborg II”. The processes being affected were meant to be unconscious, automatic, leaving man “free to explore”. The homeostatic processes of self-regulation is what defines a unified man-machine system, the cyborg.

4. The bionic man

Inspector Gadget. This is the most common meaning of the word. A man permanently coupled with technologies thanks to bionics – a pragmatist science that connects mathematics, engineering, and biology, proposed by Jack Steel in 1958 –. The main purposes are two: the medical recovery of an injured person; the military enhancement of a human soldier (the two tropes often go together, as we will see). In the latter case, the man is not “free to explore”, but actively uses his implanted weapons, even though he must cope with a new normality. The hard technology is usually paired with the cyborg, leaving bio-tech integrators and genetic engineering (which were excluded by Clynes and Kline) to super-heroes crafted by scientists, i.e. Captain America, in contrast to accidentally-born mutants like Spider-man (Oehlert [1995] distinguishes controller, bio-tech and genetic cyborgs). This phantasy pushes the limit of man to a single brain or even only the mind, which is implanted in artificial bodies.

5. The replicant

This is the case of Terminator, although, as the analysis of the years 1960-1983 will show, “cyborg” was often used in this sense before it. The reason is that a complex robot often doesn’t just have the appearance of a human, but its materials are very similar to organic tissue, when they are not organic altogether. To remark the qualitative difference, in the first episode (1977) of the tv series *Logan’s Run* (Anderson, 1976), an android says: «Call me an android, Logan, a cyborg, what you will – but never, ever, call me a robot. They are robots. There’s a vast difference. I am the result of hundreds of years of experimentation – the ultimate computer in human form». Those android’s narratives revolve around their human appearance and behaviour, threatening to substitute people or redefine the notion of humanity. In this category, the “skin job”, Telotte (2016) puts together what he calls robots (mechanical), cyborgs (biological + machine), and replicants (grown artificially).

6. The metaphorical cyborg

Neo, from *The Matrix* (Wachowski sisters, 1999-2021). This category is slightly different because it’s almost a sociological one, dealing with episte-

mological issues. Called *cyborg politics* (Weinstock, 2016) or *cyborg anthropology* (Downey *et al.*, 1995), it refers to a vision where the distinction between humans and machine changes. Much credit goes to Donna Haraway's *Cyborg Manifesto*, which posited that, with our technological capabilities, we humans can now define our identities beyond the traditional partitions based on gender, race, etc. In this sense, it is similar to Kline-Clynes statement that we should take our evolution in our hands. That is why they all view the cyborg as having a positive potential and say that we have already been cyborgs for a long time, from – at least – the bicycle to the pacemaker.

In addition to this tangle of discourses we have the postmodernist reflections derived from the use of the word *cyberspace* coined by cyberpunk novelist William Gibson. "Cyberspace" indicates a world of virtual and digital signs, which exists thanks to a network of interconnected technologies. The technology coupled with the individual in this case is a network. That world of signs, however, risks losing its connection with reality and merely becoming a simulacrum.

This concept would be reiterated by the use of CGI in the movies, even though the spectator is already a cyborg (Bostic, 1998; Dyens, 1995). But what is a cyborg, if every human is always already one, as the philosophy of technology knows (Hacking, 1998)? The answer lies in the epistemological change itself, and in the quantitative and qualitative change in our present relation to technology, of course both shifts feeding one another, what Bruce Mazlish calls *the fourth discontinuity* (Gray, 1995).

The problem with this perspective is that it conflates fiction and reality, as if the use of cyborg characters and CGI in movies served a unique purpose, i.e. to highlight the postmodern condition and its values, while in reality cyborg discourses are included in many political positions and narrative tropes, even very old and conservative ones (Kakoudaki, 2014). Occurrences of networked cyborgs, entities going beyond the individual and prefiguring a collective intelligence thanks to implanted devices can be found in Borgs (*Star Trek: The next generation* [Paramount Television, 1987-1994]) or Cybermen (*Doctor Who* [BBC, 1963-1989]) or other narratives where cyborgs respond to a unique brain.

7. Cyborg cinema

Film studies started to systematically analyse science fiction at the beginning of the 1990s. In those same years so-called Cyborg Cinema was

thriving. Its definition is not clear, although it has been used mainly to indicate *Terminator* (Cameron, 1984) and *RoboCop* (Verhoeven, 1987) and their sequels. Short (2005) puts a start in *Alien* (Scott, 1979), probably because of the famous android character. Those films represent a sci-fi which is more critical to capitalism, as the villains are often corporations. It follows that what they build, androids and cyborgs, are bad. *Terminator* is somewhat an exception because the blame is mainly put on the machines. “Cyborg” here is referred to enhanced humans, conscious machines, and complex androids. Springer (1993) does not include *Blade Runner* (Scott, 1982), because a replicant, even if artificial, is only organic, while a cyborg must be an organic body (natural or engineered) coupled with technologies, or at least a mind preserved on software. Holland (1995) states that the term is incorrect, because a human is a cybernetic organism after all, and those human-machine systems should be called symbiotes. All the authors who discuss *cyborg cinema*, however, also and above all include *Terminator* in this group, despite a thin layer of skin being its only organic attribute.

That is because the point here is the “invincible armored cyborg”, as Springer calls it. Even though cyborg cinema tries to answer the questions highlighted by Haraway about the distinction between machine and human, it usually answers reaffirming gender and mind-body distinctions. It is said that the cyborg reaffirms the cool, alienated masculinity of previous characters played by Clint Eastwood or Charles Bronson (Cornea, 2007). More than that, both masculine and feminine cyborgs are visually hypersexualized where it shouldn't be relevant (why does *Terminator* need to show its muscles?), going against the discovery of new identities as requested by Haraway. Once male characters were not strong enough, they were substituted by machines. Even before *Terminator*, the body of Schwarzenegger was considered inhuman. Life appears fragile and a victim of the machine, with *Terminator* and the robot from *Hardware* (Stanley, 1990) trying to kill female characters intended to give birth. Humanity, after all, appears different from the hybrid life of the cyborgs: humanity is something that does not belong to *Terminator* and that *RoboCop* maintains *despite* being in a machine, thus reaffirming the mind-body distinction (Holland, 1995).

8. Early cyborgs in movies and television (1960-1983)

I will now take a closer look to the cyborgs which appeared in film and television media, after the word was coined and before *Terminator*. Comics will be excluded for methodological reasons, even though the word itself was

seldom used until the inception of the DC Comics character Cyborg (for cyborgs in comics see Oehlert, 1995). Semiotics and folklore studies have construed long iconographic and thematic genealogies (Kakoudaki, 2014; Schelde, 1993; Telotte, 2016), following tropes and fantasies such as the doppelganger, the robot slave, or the question “what is humanity”. Epistemological partitions such as those of Bruce Mazlish or Norbert Wiener take us through the different conceptions of the human body going back at least to the Enlightenment. Here I will follow a different strategy, starting from the word and only then disentangle the dominant meanings and narratives associated with it. “Cyborg” follows a number of words that reimagined the body-machine relation, but is inserted in the paradigm of cybernetics, the science that views every organism or machine in terms of communication systems. Words signal the will to frame an issue in a set of associations, in this case considering the man-machine threshold in a “scientific” way (focusing on the word is also the strategy used by Tomas, 1995).

I searched for the word “cyborg” in the keyword and plot fields of IMDb, and then I added the results from “bionic” too¹. The word is sometimes present in the IMDb description but not in the actual film or television show. I did not exclude those cases, given the presence of an actual cyborg, but I refer primarily to those products that used the word. The final sample consists of 50 movies, television movies, and television episodes (sometimes, I included the whole show, as in the case of *The Six Million Dollar Man* [ABC, 1973-1978], since the main story revolves around a cyborg). I recorded the plot and the cyborg’s role, its visual appearance, its type (according to the distinction made in the first paragraph). Furthermore, I triangulated the results with research conducted on US newspapers², in order to assess the reception and the tv presence of the cyborg media, but also the scientific and

¹ The queries are the following:

https://www.imdb.com/search/title/?title_type=feature,tv_movie,tv_episode&release_date=1958-01-01,1983-12-31&keywords=cyborg&sort=year,asc;

https://www.imdb.com/search/title/?title_type=feature,tv_movie,tv_episode&release_date=,1984-12-31&plot=cyborg&sort=year,asc;

https://www.imdb.com/search/title/?title_type=feature,tv_movie,tv_episode&release_date=1958-01-01,1983-12-31&plot=bionic&sort=year,asc;

https://www.imdb.com/search/title/?title_type=feature,tv_movie,tv_episode&release_date=1958-01-01,1983-12-31&keywords=bionic&sort=year,asc.

² I prevalently used Newspapers.com (available at <https://www.newspapers.com/>) – where the search strategy was restricted to the five news outlets with more results –, but also Chronicling America (available at <https://chroniclingamerica.loc.gov/>) and the California Digital Newspaper Collection (available at <https://cdnc.ucr.edu/>). The pages are indicated according to the database’s numeration.

futurological discussions of the concept. According to the results, I will divide the period in three subdivisions.

9. 1965. The first cyborg wave

In 1965-66, a number of cyborgs appeared especially in television (which was switching to colour broadcasting), with b-movies consigned to the small screen. It took five years for the concept to break through in the popular culture. Before 1965, it remained a specialistic term exclusively associated with space exploration. Newspapers only mentioned it in relation to science book discussions or scientific dissemination³. In 1965 a popular account was published by D.S. Halacy, *Cyborg. Evolution of the Superhuman*, which expanded the concept to include the general relation of man and technology as a way of increasing our power: even a fake tooth would make us cyborgs⁴. Moreover, Martin Caidin, one of the leading figures in the history of cyborgs, published *The Greatest Challenge* (1965), a book about space exploration that discussed the cyborg and its risks for humanity⁵.

The first fictional cyborgs were very diversified. The episode *The Cyborg (Voyage to the Bottom of the Sea [ABC,1964-1968])* is where cyborgs first make their appearance. It is a story of infiltration – the cyborg is an android made to take the place of the hero –. It already has all the recurrent characteristics of the killer android: strength, absence of emotions, following orders no matter what. *Cyborg 2087* (Andreon, 1966), on the contrary, is about a human with devices incorporated and trained not to feel emotions, travelling from the future to stop an invention that will allow mind control. Ending with images of Apollo and youths dancing, it doesn't demonize technology altogether, but emphasizes the importance of the present and what we do with it. *Terror beneath the Sea* (also called *Water Cyborg* [Sato, 1966]) features an evil scientist who is crafting modified humans that can live under the ocean; they are also controlled by the master, but in the end, they revolt against him. Yet another form was presented in *The Lost Planet (Lost in Space [Allen, 1965-1968])*, where we see a planet inhabited by robots

³ It is remarkable a comic appeared in 1963: U.A., "Frontiers of Science. Man Re-Made", *The Chronicle*, Pascagoula, 2 July 1963, p. 5.

⁴ Hayes E. N. (1965), "Man and Machine Old But New", *Los Angeles Times*, 27 June 1965, p. 539.

⁵ Todd A. (1966), "Man and Machine May Bow to a "Cyborg"", *Redlands Daily Facts*, 2 March 1966, p. 16; Howat M. (1965), "A Far Look Ahead", *The Record*, Hackensack, 19 June 1965, p. 43.

controlled by a “cybernetic brain”, thus forming a collective entity; two years later, another episode of the same series (*Space Destructors*) would call cyborgs doppelganger androids.

The above are the only occurrences of literal cyborgs from that period. There is confusion about them, yet the four meanings are there: the water cyborg is an offspring of the original one, surgically and electronically modified to live in other environments; *Cyborg 2087* is bionic; the cyborgs from *Voyage to the Bottom of the Sea* are “skin jobs” made of a metal structure covered with organic tissue; *Lost in Space*’s creatures are the collective cyborg of postmodern imagination, even if not completely equivalent. The other relevant creatures of 1966 are the Cybermen from the *Doctor Who* television series, a human race that has almost completely substituted their bodies with prosthesis, thereby shedding emotions (“a human weakness”).

At this point the bionics theme, or the enhancing of man, is not yet dominant in the use of the word “cyborg”. When it is used that way, the fear of losing humanness prevails, meaning losing emotions and free thought. The non-bionic narration can be included in the more traditional trope of infiltration tales on the wake of *Invasion of the Body Snatchers* (Siegel, 1956), even if technologically renovated: examples from the period (that don’t use the word “cyborg”) include *The Sort of Do-It-Yourself Affair (A man from U.N.C.L.E.* [Ritchie, 1966]). The insightful *Creation of the Humanoids* (Barry, 1962) defines humanity on the basis of an individual’s experience (the protagonist of *Voyage to the Bottom of the Sea* also says , «being human is feeling as a human and reacting as a human», when an android appears too weak because of her similarity to humans), already discarding the paranoia linked to imitation, because the existence (or experience) preceded essence (Kakoudaki, 2014). Mind control, on the other hand, refers to the even older phantasy of the mechanical slave which gave birth to the robot idea. Throughout the 1960s it is this that cyborgs are either being controlled by or rebelling against.

An exception in this panorama is *Eight Man*, a Japanese anime created by Hirai in 1963 and broadcast in the US in 1965. While still shot in black and white, it anticipates a new kind of cyborg. A dead cop is revived by a scientist, transferring his mind into an artificial body. He is considered the first fictional bionic cyborg, even though the word doesn’t come up in English, at least not immediately.

10. 1973. The bionic wave

The 1970s saw a big increase in the popularity of cyborgs and bionics. Newspaper writers seemed to take for granted that in the future we will all be cyborgs, and the work of physicians will be more similar to that of engineers, thereby instilling the fear that we could all be turned into our own artificial and emotionless doppelgangers. Alvin Toffler spoke of “future shock”. Science fiction, it was stated, was fascinating until what it represented appeared to be far away⁶. Even *Doctor Who*’s Cybermen seemed real, with Kit Pedler, their inventor, busy experimenting on the simulation of human functions. Those robots will create a society where there is no God, no Karl Marx, no Buddha and no Beatles, they said⁷. Mostly, though, cyborgs appeared too real and present. When Martin Caidin’s novel *Cyborg* (1972) was adapted in the television show *The Six Million Dollar Man*, usage of the word in newspapers saw a spike that wouldn’t be equalled until *Terminator*.

The Six Million Dollar Man was an enormous success. Steve Austin, the eponymous character, maintains a link with space exploration, being a former NASA pilot and moon lander (his background story varies slightly according to the novel, the pilot television movies, or the actual series). He also wears a NASA space suit on Earth to walk in a dangerous environment, in the first episode. At the beginning, he struggles with emotions, but mostly he is a regular and honest man. Most of the time, his implants are not visible. The show gave life to a bionic boy and a bionic woman, who later got her own show, sparking mocking reactions from TV critics⁸. The “bionic fad”⁹ indeed spread, producing low-quality imitators and parodies¹⁰, where the bionic characters appear as plain humans. Even the title’s emphasis on the cost contributed to rendering bionics ordinary and not so mysterious.

⁶ Battelle P. (1969), “Synthetic Body Part”, *San Francisco Examiner*, 28 May 1969; Savoy M. (1970), “The 800th Lifetime. Rapid Change Era”, *Los Angeles Times*, 27 September 1970, p. 68.; Seidenbaum A. (1970), “Turn Off Tomorrow”, *Los Angeles Times*, 2 October 1970, p. 24.

⁷ Cullen T. (1970), “The Biomims are Coming”, *Austin American Statesman*, 17 May 1970, p. 17.

⁸ Musselwhite B. (1976), “Bionic Boy Looming as Programs Fall”, *Calgary Herald*, 28 October 1976, p. 53.

⁹ U.A., “Bionic Fad Invades the World of Movies”, *Globe-Gazette*, Madison City, 5 November 1976, p.4.

¹⁰ Such as *The Bionic Boy* (1977), or, for the comic productions, *The Strange Case of the End of Civilization as We Know It* (1977), which features a bionic Dr. Watson; *La amenaza del mosquito biónico (El Chapulín Colorado)*, 1978); *Los superagentes y el tesoro maldito* (1977). Much later, a parody can be found in *Inspector Gadget* (1983).

Newspapers foreshadowed a world of “spare parts” stores¹¹. The word “bionic” itself became valuable, with Universal, producer of *The Six Million Dollar Man* and *The Bionic Woman* (Johnson, 1976-1978) suing shoe brands and film distributors¹². In those days, the word “cyborg” received less attention, but was still being used in different ways: a vehicle (ep. *The Cyborg Whale* of the animated series *Godzilla* [Hanna-Barbera – Toho, 1978-1979]), an android (in *Logan’s Run*), *Godzilla’s* monstrous opponents¹³, or, in newspapers, referring metaphorically to athletes.

11. Dystopian cyborgs

Around 1980, the name ‘cyborg’ was given to a racehorse, an HR and payroll management software, an ergonomic chair. The idea that we already are cyborgs resurfaced: as telephone users¹⁴, as manipulated television viewers¹⁵, as car drivers¹⁶ (the pilot theme being very often associated with the cyborg concept, from NASA pilots to Japanese mecha). It follows that in the future we will have processors in our brains, human knowledge will be immediately accessible¹⁷, finally reaching the “total body prosthesis”, where only the original brain survives¹⁸.

Around 1980, Japanese shows arrived in the US and across the world (many shows were previously broadcast only in Hawaii, if at all). Even though they maintained the emphasis on the bionic enhancement, they displayed a postmodern pessimism that will peak with *Galaxy Express 999* (Matsumoto, 1978). Similar to *The Six Million Dollar Man*, *Cyborg 009* (Ishinomori, 1968) and *Kamen Rider* (Ishinomori, 1971) portray multiple

¹¹ Melnick N. (1975), “Another spare part for your body”, *San Francisco Examiner*, 4 July 1975, p. 28.; U.A., “Electronic Hand makes him 2300 Dollar Man”, *The Orlando Sentinel*, 23 September 1975, p. 3.

¹² Grant M. N. (1977), “Universal in Pursuit of the 6 Million Dollar Word.”, *Los Angeles Times*, 14 August 1977, p. 380.

¹³ In the case of *Godzilla vs. Megalon* (1973), the cyborg referred to by newspapers is either the android Jet Jaguar or the buzzsaw dinosaur Gigan.

¹⁴ That’s the opinion of Marshall McLuhan, even though he dismissed the bionic trend as advertising, see U. A., “Universal in Pursuit of the 6 million Word”, cit.

¹⁵ U. A., “Electrolight Cyborgs’ Will open tonight at university”, *Los Angeles Times*, 7 June 1979, p. 180.

¹⁶ Schrank J. (1977), “You drive what would you like to be”, *Orlando Sentinel*, 27 July 1977, p. 45.

¹⁷ See the apt predictions of Calvert G. (1979), “Computerized Brains Forecast in 20 Years”, *Orlando Sentinel*, 20 September 1979, p. 121.

¹⁸ U. A., “Where Man Ends, Machine Begins”, *Los Angeles Times*, 26 April 1985, p. 81.

characters that were recovered from an accident (not always) and enhanced with superhuman powers. The difference in this case is that the entity responsible is an evil corporation, whose only aim is to make weapons for profit. This is the kind of science fiction that will be carried on by *Alien*, *Blade Runner*, and of course *RoboCop*, where the pursuit of profit endangers humanity. The “cyborgization” or non-consensual robotization is recurrent bringing a focus on a master-slave relation. A cyborg is a human controlled already in *Saibôgu sakusen (Urutora Seibun* [Tsuburaya Productions, 1967-1968]). Most of the times the cyborg maintains its human appearance externally, only wearing suits or uniforms. This leaves open the possibility for the doppelganger theme, which is also very present in Japanese anime. There are cyborg clones (*Jigoku de nemure!! Kabuto Koji!!*, *Mazinger Z* [Nagai, 1972-1974]) and humans turned into slave cyborgs by surgery or vaccines (*Nightmare*, *Thunderbirds 2086* [Jin Productions, 1982]; *Yûreisen Seru no shôjo*, *Captain Harlock SSX* [Matsumoto, 1982-1983]).

Also US productions started to see cyborgs as evil, where their machine part was visible, such as in *The X-Men Adventure (Spider-Man and His Amazing Friends* [Marvel Studios, 1981-1983]), where the villain is literally half-man, half-machine, or in the *Mad Max* (Miller; Ogilvie, 1979-2015) inspired *Spacehunter: Adventures in the Forbidden Zone* (Johnson, 1983).

12. Conclusions

Resuming the three periods and their impact on subsequent cyborg cinema, it is possible to distinguish some historical switches in dominant cyborg narratives. The first period is interesting because the cyborg concept worked as an implant on other established sci-fi narratives: the mad scientist and his fantasy to control humans, in order to make them pure instruments of death; engineered creatures that rebel against their creators; the battle against irresponsible progress (with a voyage in the past); complex alien societies that communicate between them as a technological organism. *Terminator*, the film that marked the notoriety of cyborgs, once again took up those themes: travelling into the past to change the future, the scientist’s responsibility, machines rebelling against their human masters and conversely cyborgs rebelling against their machine masters.

The second period saw the “bionic fad” which revisited the super-hero narrative in a more ordinary fashion, where that kind of technology was seen as real and imminent. The risk of losing humanity in the process of technolo-

gization was treated in a way much closer to everyday life than *high-* or *hard-*sci-fi narratives. The hero was a normal man, with a family and a regular job.

The same bionic theme was expanded in the Eighties and by the Japanese in a pessimistic stance. Technology is dangerous and will most certainly be used by mean capitalist, warmongering corporations. Vaccines, implants, remote communication, and control devices are used to modify human beings in a way that cannot be stopped, if not by rebelling cyborgs themselves. The bionic man went from a regular life to a post-apocalyptic vision where the hero is alone against society.

Cyborg cinema, starting with *Terminator* and the others could not go back from this apocalyptic vision. Mad scientists are just a piece of a much bigger picture: no more powerful wizards-scientists that control people, but an individual researcher either colluded, repented, deceived, or ethically indecisive. The bionic fad also disappeared. Cyborg as a term was already established and known in the Eighties but it did not point to a precise figure. American productions of that period reaffirmed both the strong robot killer and the cool and well-trained hero. Pessimism was still there, but also the almost irrational faith in individual willpower. The strong characters' motivation of neo-classical screenwriting was pushed to the limit in the killer machine, which has one and only aim – and the hero its opposite – to stop it.

There is one narrative in the cyborg conceptual galaxy which won: the controlled or semi-human android forced to carry out tasks. Its appearance, “skin job” (if a cyborg) or degraded human with implants (if bionic), and its struggle with either emerging or vanishing emotions and ethics, most of the time gave way to existentialist reflections – what is humanity and what should we consider human, which is intimately tied to emotions, appearance, and free will –. Cyborg cinema visually upgraded these themes which were already present, and which are *per se* stronger than the cyborg trend alone. But other forms were lost: space exploration, complex alien societies, environment adaptation, and also the big theme of technology in ordinary life gave way to more distant, abstract, and archetypal stories. Cyborg cinema pointed to different forms of either bionic or android characters treated with a conservative stance, not only in terms of gender and mind-body distinctions, but also in terms of narrative tropes.

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4. Spectral Robots: Disembodiment and the Border in Alex Rivera's *Sleep Dealer* (2009) and Mati Diop's *Atlantics* (2019)

by Rosa Barotsi

It might seem provocative to suggest that the robot's closest relative is the ghost. Depending on what one considers the starting point of the robot imaginary, the figure of the human-machine has been doing cultural work for at least a century, but probably millennia (Mayor, 2020). In that time, the robot has stubbornly confronted thinkers and audiences with questions about the limits of agency and life, and, in more recent centuries, the threats and promises of automation. As part of that more contemporary legacy, the robotic menace reaches at least as far back as Jacques de Vaucanson's 18th century automata, which inspired changes in «the management of industry and the workforce» (Schaffer, 1999, p. 127). Between then and now, the idea of machines that could substitute human labour intertwined with the robotization of racialised labour forces (Hall, 2017; Rhee, 2018), and with a long line of real and imagined uprisings of exploited humans and robots. After developing a number of automata, including his famous defecating duck that entertained select audiences in French salons and royal courts, Vaucanson later «left his realm of fashionable curiosities and concentrated on reforming the world of work» (Wood, 2002, p. 41) as the appointed Inspector of Silk Manufacture: in 1744 Lyon, Vaucanson's automated looms led to one of the first big organized strikes in French history, by «seditious crochet workers» (p. 41-42)¹, causing him to flee the city disguised as a monk. It is said that, out of spite, he developed a mechanical weaving loom that could be driven by an animal, apparently without the need for human workers. The loom

¹ Simon Schaffer relates the events in a different order: in «Enlightened Automata», he suggests that what caused the workers to strike, and Vaucanson to flee in disguise, was his ultimately unfulfilled plan for a massive transformation of the state regulations surrounding work practices, specifically, a «system of surveillance» in a Lyon factory. The automatic, ox-driven silk-weaving machine was developed later, in 1744, and it also met with resistance (1999, p. 144).

produced a «baroque floral fabric, in order to prove, as he said, that ‘a horse, an ox or an ass can make cloth more beautiful and much more perfect than the most able silk workers’» (Ibidem).

Vaucanson’s vision for a factory without workers was published in *Mercur de France* in 1745 as the latest marvel by one of France’s most celebrated innovators. The image of an empty factory with riotous machines moving autonomously under the watchful eye of a single worker, a young girl, supervising the correct functioning of the machines, taking care of them if they should require it² – this image of Vaucanson’s invention Edward Jones-Imhotep aptly calls a *ghost factory*. According to Jones-Imhotep, an automated workplace is a spectral thing; it is only possible through a sleight of hand, a suspension of disbelief manifesting as a series of erasures:

Where were the artisans who built these automated machines? Who spun the threads that ‘wove themselves’ into impossibly fine fabric? Where were the Chinese and North African and West Indian laborers who gathered the silk and cotton from far-flung trading posts and colonies? It’s only at the end of his striking account that Vaucanson revealed the hidden organic forces powering his automated looms: a horse, moving water, a man, an eight-year-old child (Jones-Imhotep, 2020, p. 1).

With these ghosts in mind, according to Jones-Imhotep, it is possible to tell the history of automata and automation as the history of a persisting disappearing trick. Not merely the literal trick of the Mechanical Turk, Wolfgang von Kempelen’s orientalist chess-playing automaton whose genius was revealed to be a ruse – a human chess player was hidden in the automaton’s belly – but the discursive trick that has shaped our cultural imagination around technology ever since (2). In that spirit, the “ghost work” performed today on Amazon’s crowdsourced digital labour market (Suri and Gray, 2019), named after the Mechanical Turk as an homage to the “artificial artificial intelligence” of the 18th century automaton, is an act of disembodiment worthy of the best Gothic literature. The “astonishing amounts” of ghost work required to get AI systems to function (Mueller, 2021, p. 118) suggest that it might take an army of spectres to prop up some version of technological autonomy we are willing to believe in. In a letter by German-Hungarian writer Karl Gottlieb von Windisch on one of the performances of the Mechanical Turk witnessed in Vienna, he wrote that «one old lady, in

² «Est-il question de recharger la navette ou de raccommoder un file cassé on arrête le métier sur le champ en poussant un Bouton qui peut se trouver aux quatre coins du métier & sous la main d’une petite fille préposée pour veiller à quatre de ces métiers...» (*Mercur de France* 49, 1745, p. 119).

particular, who had not forgotten the tales she had been told in her youth... went and hid herself in a window seat, as distant as she could from the evil spirit, which she firmly believed possessed the machine» (Aytes, 2012, p. 53-54). Although the metaphysical answer for the chess player's intelligence may not have been quite right, the mechanical one, which many amongst von Kempelen's audiences were willing to believe in, was equally wrong. Whose explanation required a bigger leap of faith? Arguably, in some cases, it is wiser to believe in ghosts.

In this chapter, I speculate that by focusing on the figure of the ghost we can valorize a «neglected dimension of the cultural history of industrialization,» one that includes «the fantastic, supernatural, and frequently religious undercurrents that accompanied the arrival of the machine» (Jones-Imhotep, 2020, p. 17; Tresch 2012, p. 93 and 225). More specifically, in the idea of the spectral as disembodiment, I believe we can retrieve a crucial point of contact between the figure of the robot, automation, and the exploitation of labour in its contemporary transnational and migratory dimensions. I propose to do this by examining two films that approach the question of labour exploitation from within different genre conventions and geopolitical standpoints, but which meet at the point of the border as the vehicle of disembodiment. In Mati Diop's 2019 *Atlantics* and Alex Rivera's *Sleep Dealer* (2009), as well as the short study that preceded it, *Why Cybraceros?* (1997), workers cross borders into disembodiment and come out the other side as ghosts and robots. If dehumanization often occurs at «the site of labour» (Rhee, 2018, p. 17), these films demonstrate that the border as site-of-labour can be violently operative in this dehumanization.

1. Robots? A century of cinema and the work myth

If Vaucanson's main legacy was that of cementing a particular way of talking about machines, as Jones-Imhotep suggests (p. 1), cinema has been one of the primary vehicles for its propagation. The robot as forced labourer famously made its dramaturgical debut in the theatre, in Karel Čapek's *Rossum's Universal Robots* (1920), which premiered in the Czech Republic a century ago, providing a new term for what would have previously been called an automaton. This apparently seismic shift in perspective – planting the word firmly in the domain of labour exploitation and slavery, rather than autonomy and mechanisation – doesn't seem to have sufficed to undo the imaginative appeal of a version of automation that erases human

participation³. Historians of science and labour like Simon Schaffer have long urged us to think of the 18th century artisan hunched over a dark table in his London home, working out the kinks of elegant cams designed to translate into automata's life-like motion (2017); or, like Louis Hyman, a woman hunched over a kitchen table with a magnifying glass assembling electronics parts somewhere in the Global South (2018)⁴. More often than not, the robot in film does not conjure up images of labour exploitation but of human substitution – the threat, or promise, of full automation and its consequences – echoing automation discourses exemplified by publications such as Martin Ford's *The Rise of the Robots* (2016)⁵. Such films and TV shows often demonstrate the familiar shifting terrain of substitution: it is not simply that robots will “take our jobs”, but that they might become so similar to us that we will be forced to take them into account – as beings worthy of care, or, god forbid, as citizens (*The Bicentennial Man* [Columbus, 1999]), *Her* [Jonze, 2013], *Ex Machina* [Garland, 2015] *Westworld* [HBO, 2016-]), conjuring familiar ethno-racist discourses surrounding migration.

At the same time, a different current of audiovisual production has been appealing to automation fears whilst turning them on their head, to reveal something that might more closely describe the effects of mechanisation discourse, that is, that rather than rendering human labour obsolete, it causes consecutive waves of labour reorganisation to the detriment of workers (Sinclair, 2022). When they come from high income countries, such recent examples tend to become ruminations on the service sector, rather than the industrial one, for obvious reasons (Benanav, 2020). In Boots Riley's *Sorry to Bother You* (2018), for example, workers in the telemarketing department of a large corporation that is trying to establish a 21st century version of the company town find themselves subjected to a forced hybridisation with horses, turned into super-workers called *equisapien*, in a move that recalls Vaucanson's retaliative substitution of human workers with horses on his mechanised loom. But even as far back as 1988, Eileen Gunn's sci-fi story *Stable Strategies for Middle Management* pits futuristic bio-engineering tech against a stubbornly inefficient and unchanging corporate culture: in this short story's future world, middle managers can choose to undergo interspecies hybridisation from a company catalogue to accrue non-human characteristics that promise to make them better employees and therefore prime candidates for a promotion («“According to the catalogue,” I said, “the No.

³ See Benanav, 2019, pp. 16-19.

⁴ «Every time someone says ‘robot’, simply picture a woman of color», he suggests.

⁵ For an overview of these discourses, see Guevarra, 2018.

2 Insect Option is supposed to make me into a successful competitor for a middle-management niche, with triggerable responses that can be useful in gaining entry to upper hierarchical levels. Unquote”» [Gunn in Vandermeer, 2015, p. 256]). When the story ends with the protagonist, Margaret, biting her immediate superior’s head off, praying-mantis-like, it is unclear whether the corporate bioengineering programme has gone awry or according to plan. In the 2022 Dan Erickson limited series, *Severance* (Apple TV+, 2022), work-life balance is reimagined as the literal severing of the self into a work-self and a life-self via a brain chip that mysteriously splits one’s memory in two. This high-tech solution is being tested out on workers performing a conspicuously pointless type of data-entry work in 90s-style tech for 8 hours a day, before travelling down an elevator that de-activates their work persona, bringing into life a depressing version of the wellbeing mantra: don’t bring your work home with you.



Fig. 1 – Telemarketer Cassius Green (LaKeith Stanfield) in the process of his transformation into an Equisapien in Boots Riley’s Sorry to Bother You (2018)

The idea of severance becomes key in the two films under consideration in this chapter. Much of the history of the robot as a labour myth has been about separating the work from the worker and the consequences, as well as the impossibility, of that division. The persisting legacies of slavery and colonialism have, according to Dustin Abnet amongst others, accompanied fantasies of robot substitution usually dreamt up by privileged white authors

and inventors as a form of «slavery without guilt» (2020, p. 40). Yet the fact that the fictional robot rebellion trope is so prevalent it has become a cliché (p. 9) demonstrates that the guilt is, in truth, foundational.

2. *Sleep Dealer* and cybraceros: “All the labour – without the worker”

Jennifer Rhee uses the term *robotic imaginary* to describe «the shifting inscriptions of humanness and dehumanizing erasures evoked by robots» (2018). In fact, many have pointed out the foundational link between robots, dehumanization and the uneven racial relations of labour⁶. In Alex Rivera’s work, these intertwined concepts are made clear by foregrounding the border and the consequent notion of citizenship. Eight years before Amazon’s Mechanical Turk platform was launched in 2005, Rivera’s mock corporate promotional short film *Why Cybraceros?* (1997) describes a futuristic world where Mexican agricultural workers control robots from across the border. The film satirically advertises the concept of cyber-labourers as a solution to the problems of immigrant labour: «Imagine a world in which you receive a quality product at a low economic *and* social cost to you, the American consumer!» The mock ad is a play on the actually existing promotional film *Why Braceros?* from the 1950s with unsettlingly similar language, produced by the California Growers Council to appease white US-Americans’ concerns regarding the Bracero programme – a series of agreements between the US and Mexico that “allowed” Mexicans to go to the US on temporary guest worker contracts, mainly in the agricultural sector⁷ –. *Cybraceros* reimagines this scenario for the age of internet, where braceros sit behind computers on the Mexican side of the border as their robotic extensions pick fruit and prune trees on US-American land.

⁶ Atanasoski and Vora (2019) go so far as to suggest that «racial logics of categorization, differentiation, incorporation, and elimination are constitutive of the very concept of technology and technological innovation».

⁷ For more information on the Bracero programme, see the documentary *Cosecha Triste: El Programa Bracero/Harvest of Loneliness: The Bracero Program* by Gilbert Gonzalez and Vivian Price (2010).



Fig. 2 – The worker separated from his pure labour by the US-Mexican border in Alex Rivera's fake promotional video *Why Cybraceros?* (1997)

This form of “agribusiness futurism” does not so much describe a world in which technology has replaced workers as one in which it has «expanded their exploitation» (Marez, 2016, p. 35). In a faux-informational tone, the film generously explains to the viewer the Cybraceros plan in the simplest of terms. First, the current situation: cartoonish animations of Mexican workers dressed in exaggerated, colourful attire denoting stereotypical Mexicanness are shown hopping over a dividing line representing the border between Mexico and the US. Then, the innovation: the same crude figures are shown attempting to hop over the border but instead, their arms suddenly disconnect from their bodies – which stay on the Mexican side, as the disembodied arms hop over into the US –. «In Spanish,» the voiceover claims, «a cybracero is a worker who operates a computer with their arms and hands. In American lingo, a cybracero is a worker who poses no threat of becoming a citizen».

The film therefore explicitly situates the separation of the worker and the work within a logic of citizenship rights. In that sense, *Why Cybraceros?* is the story of a partially realized Euro-American dream. On European soil, for instance, the infrastructure of bureaucracy, border control and national-cultural belonging has a long history of disembodying migrant labour

through exclusion from citizenship and, by extension, labour rights. In Southern Italy, the *braccianti* – the Italian term for braceros – are purposefully invisibilised despite the fact that Italian citizens consume the products of their labour, and despite their organizing and protest campaigns⁸. Albeit on national ground, what Irene Peano calls the “encampment archipelago” (2021), defined in part as a containment device for the regulation and supply of just-in-time disposable labour – the slum-camps and various iterations of EU “hotspots” – might as well be on the other side of a physical or discursive border⁹.

In *Cybraceros*, the question of alterity and belonging are smartly played up by Rivera’s meta-racist representation of the animated Mexican worker, as well as the 3-D models of the robots themselves, through the ostentatiously clichéd props, functioning similarly to the “happy deception” of von Kempelen’s Mechanical Turk, also presented in orientalist dress and pipe.

In *Sleep Dealer* (2009), the feature-length sci-fi film directed by Rivera fleshing out the cybracero world, the border discourse becomes even more central. In the *Sleep Dealer* world, the US-Mexico border has been closed (Rivera imagines what Trump never managed to realise: a great wall that definitively eliminates movement across the border), but migration persists. Instead of coyotes – people smugglers – Mexicans in search of a better life must seek out *coyoteks*: back-alley tech-savvy individuals who will install nodes on your arms and body for an exorbitant price. Nodes allow you to plug into the “global economy,” as Memo puts it, because they are the technology required in order to work in the Sleep Dealers – the cybracero version of today’s *maquilladoras*, Mexican border town factories that mostly employ women. With nodes, you are able to plug into the tech inside the Sleep Dealers – a name given them by workers because they’ll work you to exhaustion –. Depending on the labour requests on the other side of the border, once you plug in you might find yourself picking fruit in California, on a construction site in New York, or caring for a baby in the mid-West. An oxygen mask helps you stay awake during the 12-hour-shifts, and milky white contact lenses allow you to see as though through your robot’s eyes. Having secured a roof over his head in the adjacent slum-camp, Memo first walks into a Sleep Dealer with his newly-installed nodes to find rows upon rows of plugged-in, milky-eyed workers performing what appear like abstract motions, because the tools and products of their labour are invisible to us. On the US side of

⁸ See the Campagne in Lotta website (available at <https://campagneinlotta.org/en/home/>)

⁹ A version of this paragraph appears in a blog post on Alex Rivera’s *Cybraceros* written by the author together with Saima Akhtar, as members of the In Front of the Factory collective (2021).

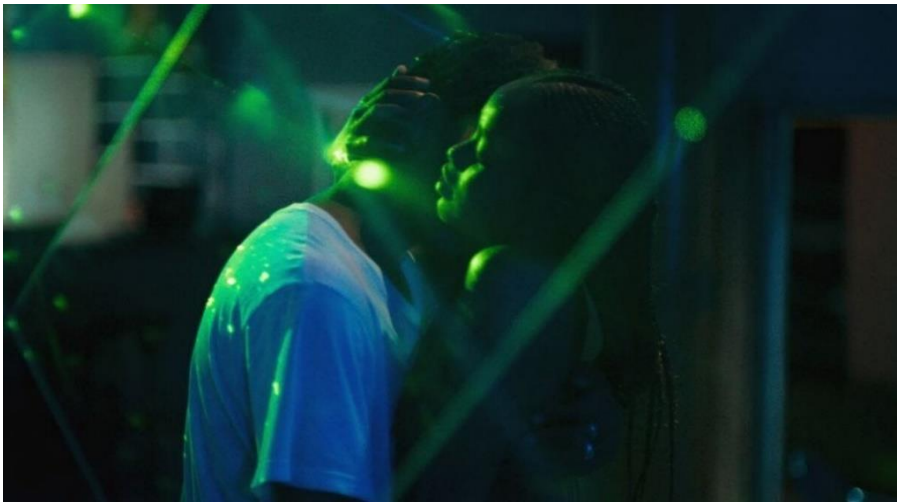
this arrangement, high-tech robots perform just-in-time industrial, service and care labour; on the Mexican side, zombie-like men and women, separated from that labour, appear like empty vessels, spectres floating aimlessly in windowless rooms.

As the thing that gets you across the border, the nodes therefore appear to function as the equivalent of a passport, yet what travels across the border is not a citizen. The smuggler discourse evoked with precision through the figure of the *coyotek* is there to help us understand that what travels across does not have any of the rights or protections of a citizen, or even a human being. It is pure labour, disembodied.

3. *Atlantics*: dis/embodyed labour organising and zombie care work

If Alex Rivera's prescience over artificial intelligence technologies seems right on the money, it goes even further than the Amazon MTurk micro-tasking labour practices. Researchers like Anna Romina Guevarra are examining how technological innovation in general and robots in particular can act as a broker that «mediates the organization of labour; the mobility/immobility of migrants; the relationship between the global north and the global south; and the racialized and gendered processes that continue to inform these mediations» (2018, p. 744). By focusing on a particular form of social robotics, the Engkey telepresence robot, Guevarra highlights the ways in which robots broker the labour process, but she also illuminates the complex discursive, aesthetic, and material consequences for worker dis/embodyment.

Like elevated forms of teleconferencing technology, telepresence robots are meant to produce the «sense of being there» for end users (Minsky in Guevarra, p. 744). In *Sleep Dealer*, the allocation of tasks is done along familiar gendered lines: although our protagonist, Memo, is tasked with construction work, the maquila floor is also populated with women performing cyber care labour. Guevarra's case study gives us a sense of what that looks like in today's world: in 2010, a year after *Sleep Dealer* was released, South Korea introduced Engkey, a telepresence robot for the teaching of English as a second language, to elementary schools across the country.



Figs. 3-4 – Robots, ghosts, zombies? Dis/embodied workers in Sleep Dealer (above) and Atlantics (below)

Although Engkey presents as a three-foot-tall, penguin-shaped robot whose head is a display screen projecting the image of a white, blonde young woman, the human teachers on the other side of the tech are in the Philippines. In a striking evocation of satirical *Cybraceros*, Engkey was developed at least in part as a mechanism to curtail migration (p. 748): as one of the scientists involved in the project put it, the robot «won't complain about health insurance» and Koreans won't have to worry about whether migrant workers «are clean or not» (p. 755). Engkey crystallises the xenophobic, gendered and racialised disembodiment of would-be-migrant-workers: the robot is not just a medium – like Skyping your mom across continent – but also a «social being» with a remote-controlled penguin body, a remote-controlled white face, and a «Filipina-tinged 'American' accent» (p. 749)¹⁰. But Jones-Imhotep's disappearing trick is in full swing here: interviewed students complain that «Engkey is fun. But she is not human. Repeating the same dialogue is what she does. I wish she would become more expressive and responsive like a human teacher» (p. 750). In this sense, Engkey successfully passes a “reverse Turing test” (Aranda and Pinto, 2014) in which it required that humans pass for machines that pass for humans (or penguins). What we've seen so far is that the complexities of embodiment/disembodiment at the heart of robot work are deeply connected with anxieties about border-crossing on the part of high-income countries, nestled within innovation and automation discourses.

In Mati Diop's *Atlantics*, situated in Senegal, neocolonial capitalism's high-tech fantasies are only present as ambience. Shots of Dakar's coastline with a futuristic mega-building towering in a background of atmospheric space dust paint the picture of a city «newly colonized by the powerful but impersonal force of international capital» (Adair, 2022, p. 3). The film's soundtrack, composed by Fatima Al Qadiri, and combined with Claire Mathon's cinematography, produces the promise of sci-fi. Yet the genre-bending of *Atlantics* turns that promise into just another tool in its multi-form arsenal, although our ears are attuned to it throughout, thanks to the soundtrack. Underneath the futuristic tower, we are introduced to the construction workers who will provide the main impetus for the plot's development. The workers are demanding their back pay from the site's foreman, but are refused with the excuse that their boss is away on travel and forgot to leave their wage money behind. Two forms of travel are therefore immediately

¹⁰ As one of the robot teachers, Ms. Boo, explains: «We are the operators of Engkey. We wear red and blue gloves [that have] sensors. When we raise our hands up and down, Engkey's hands also move. The avatar detects our facial expression; when we smile, she smiles. When we talk, her lips move» (in Guevarra, 750).

placed on the table – the other one implied in the crushing sound of ocean waves that accompanies the soundtrack since the opening image –.

A budding but forbidden love story between one of the workers, Suleiman, and our protagonist, Ada, whose arranged marriage to a “successful” migrant is planned to take place in a matter of days is cut short when the boys who were victims of wage theft decide to attempt the perilous ocean journey to Spain on a pirogue. By day, Ada begrudgingly prepares for her wedding to the rich man she does not love, whilst by night she joins the other women in the boys’ lives – friends, sisters, girlfriends – to wait out the arrival of news while consoling each other during the nightly visits to their usual spot, a women-run beach bar awash with mirrors and playful neon lighting. By the day of her wedding, Ada has little doubt her loved one has died at sea, until guests purport to have seen him place the virginal white wedding bed of the newlyweds on fire. Here, the film shifts genre gears without a break in style. After breaking out into sudden fits of sweat and fever, many of the young women in the community appear to become possessed with the spirits of the drowned men. They collect in the middle of the night, as if by some unknown calling, and walk, zombie-like, to the boss’s villa. There, with calm voices and milky white empty eyes, they demand their money, before disappearing into the night and back into their beds, with no memory of the events.

The possessed women eventually exact revenge, by having the businessman meet them at a cemetery to give them their back wages, but only after he is instructed to dig all of their graves. The figure of the boss is conspicuously irrelevant, especially if compared with uncontainable power and untouchability of the haunting environment of international capital as evoked in the shots of the seaside tower. The dis/embodied workers make fun of the boss for working the shovel so clumsily, as if he hadn’t worked a day in his life. The film ends with the consummation of the love of Ada and Suleiman, who has possessed the body of the young police investigator tasked with solving the case of his own alleged crime of arson. In a tender scene at the beach bar, Suleiman can only be seen across the meta/physical border of the mirror, whilst the two/three bodies of the couple’s embrace are bathed in blue and green neon light.



Fig. 5 – A possessed woman sits across from the mirrored reflection of the ghost of her loved one in *Atlantics*

Zombies (as the living dead) and robots (as mechanical beings) overlap as symbols of the «dehumanizing effects of labour exploitation and racial oppression» (Morell, 2015, p. 104). As Sascha Morell points out, despite the wealth of critical attention to each figure separately, «the overlap between zombie and robot mythologies has received surprisingly little attention» (Ibidem). Instead, she suggests, the two figures, zombie and robot, do similar cultural work, especially in their function as a work myth. In zombie classics, like Seabrook's *The Magic Island*, and in Zora Neale Hurston's work, the defining characteristic of the Haitian zombie was «its "blank" eyes and "expressionless" visage, rather than any signs of putrefaction; indeed, they specified that in Haitian lore a body could only be resurrected "before it has had time to rot» (Morell, 2015, p. 121). Like the white-eyed, plugged-in shuffling cybraceros in *Sleep Dealer* and the equally white-eyed shuffling women in *Atlantics*, zombies were originally characterised predominantly by their «vacant expressions and stiff movements» (Ibidem), making them more akin to a «mesmerised or hypnotised subject» (p. 122) than a rotting cadaver. Inversely, according to Morrell, early robots such as those in Čapek's R.U.R, for instance, «are manufactured from organic, fleshy material and appear human except that (like the zombie) "their faces are expressionless and their eyes fixed" and their movements somewhat rigid» (Ibidem). As a film about how communities are impacted as a whole by the effects of migration on some, the collective symptoms that strike the women in the neighbourhood

are also a metaphor for collective trauma and mourning – the living death of grief. In this metaphorical usurpation of their bodies by the objects of their grief, as if remote-controlled by the ghosts of their loved ones from beyond physical and metaphysical borders, the women replay the familiar trope of the zombie/robot uprising: as opposed to the opening scene of the film, in which the workers are claiming their wages with raised voices and appeals to emotion in a register similar to that of the documentary or social realist film, the second, successful attempt is staged in a gothic sci-fi register. The aesthetic of dis/embodiment – as robot, ghost, or zombie – becomes a useful tool for the restoration of understanding how global racial capitalism operates through the border as labour exploitation on entire communities, at the same time as it underscores the gendered dimension of the labour involved in the mourning and care of gone loved ones. When the possessed bodies visit the beach bar for a drink, the vacant-eyed women’s doubles on the other side of the mirror are the men they carry within them, migrant ghost workers.

4. Conclusion: The disembodied worker and border fantasies of automation

Atlantics summons the robot as both the trope of the dispossessed labourer, and the possessed, gendered, un-self-aware vessel. In this double function of possession and dispossession, I suggest we can discover something of the specificity of the robot figure for 21st century labour politics. As opposed to the most visible futurist imaginations, represented for instance by Hollywood films and the traditionally white and male sci-fi literary canon, black women writers from Octavia Butler to Nnedi Okorafor have vastly expanded the plasticity of speculative thought; it is, in fact, impossible to understand our cultural history of the anthropomorphic automaton without centring black theorists of speculative fiction. As Dustin Abnet suggests, the figure of the robot, while functional for a white imagination that is fascinated and terrified by the populations it mechanises and dehumanises, has been less attractive to some of the most prominent voices in 20th century science fiction, like Butler, Ursula Le Guin and Samuel Delaney (2020, 8).

In fact, the robot trope has usually not been capacious enough to accommodate the techno futurist visions of those who have suffered the histories of the Atlantic slave trade, colonialism and patriarchy.

Rivera’s *Sleep Dealer* and Diop’s *Atlantics*, however, open up the robot aesthetic to a consideration of labour relations, at a historical moment where deregulation and looming mechanisation of labour are at the center of our

imaginaries of dystopic as well as utopian futures. The possessed women of *Atlantics* embody the salient features of automata that have preoccupied the collective imagination since the very beginnings of robotic representation – they are indestructible, powerful, yet appear mindless, and at the service of the men who possess them –. Additionally, like the most famous female-presenting robot in cinematic history, *Metropolis*'s Maria (Lang, 1927), the women intervene (or incite, from the point of view of the bosses) on behalf of the exploited workers. As opposed to *Metropolis*, however, there is no punishment of the robot figure, nor a reconciliation between workers and capitalists mediated by the motherly human (and humanist) Maria.

In *Atlantics*, the workers have already been exploited to their deaths, and the “robot rebellion” has its demands met. *Sleep Dealer* too ends with a cross-border solidarity and organization effort on the part of workers who understand their common condition.

At our historical moment, the disembodiment and dehumanisation of those who engage in protest and migration, largely as a result of labour exploitation, has once again become a powerful narrative tool for their suppression.

Films like Rivera's *Sleep Dealer* and Diop's *Atlantics* provide us with crucial counternarratives of the border, which undo the fantasy of mechanisation as a trick by which to do away with class- race- and gender-based labour demands.

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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 Guerrra, 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 Simone, 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 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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6. Robot Speeches: Sounds, Voices and Inflections in Contemporary Science Fiction Cinema

by Maria Francesca Piredda

The debate around robots¹ focuses mainly on the nature of their body, the machine/human relationship, and the traits that allow them to distinguish themselves from the latter. The robotic body is the object of specific attention, examining both the characteristics of machines empowering the human being (the cyborg, but also the A.I.) and the entities indistinguishable from the human being due to a high level of anthropomorphism (the android). The anatomy of the robotic body occupies, in fact, a privileged place also in cinematographic representations. Science fiction cinema has always wondered about the material from which machines are made, from human skin reproduction to their internal processors.

Within this broader debate on the bodily referent, however, the discussion on the robot's voice, or its forms of language and expression seem to have lagged behind, despite these traits also pertaining, in some way, to the robot's aesthetics and contributing to the definition of its identity and relationship with humans. This paper aims to bring together two areas of film studies: on the one hand, reflections on the soundtrack and, more specifically, on the relationship between the body and the voice; on the other hand, the field of studies devoted to the science fiction genre.

In light of these assumptions, the essay has two aims. First, it proposes a robots' classification (or modelling) starting from the range of sounds, vocal expressions, inflections with which cinema has so far represented them: from electronic and synthetic sounds, not comparable to human language, to vocal expressions indistinguishable from human ones. The question underlying this exploration is: how has the robot's voice been reproduced throughout

¹ The term is taken broadly to indicate a mechanical, electrical, and synthetic apparatus that can replace or be helpful to humans, such as robotic machines, cyborgs, automata, operating systems, and artificial intelligence.

film history? Secondly, by focusing on contemporary cinema, the essay will question the role that the vocal dimension – and specifically language – occupies in the representation of A.I.: what role does the sound dimension occupy in the machine/living being relationship? Can robots have their own voice and language? If so, what are the consequences?

1. Distant voices

The science fiction genre is, more than others, closely tied to the aesthetic and technological developments of the soundtrack (Whittington, 2007), not only because it pioneered some of its significant innovations (for example, the use of electronic music in the 1950s and Dolby magnetic sound for multiplayer reproduction in theaters in the 1970s), but also because science fiction could not simply reproduce noises and music “typical” of the environments and characters depicted. Since sci-fi describes only imagined worlds and situations that are possible but have not yet occurred, it had to find sounds which could match the images’ universe rather than creating them. Vivian Sobchack (1980) explained this in a text that is still central to sci-fi film soundtrack studies. On the subject of music, she states: «What is notable about most science-fiction film music is the lack of notability, its absence of unique characteristic which separates it from music in other films» (p. 208). Taking the western and the gangster movie as examples, she explains how both genres have a specific musical tradition from which they draw inspiration to create recognizable and unique sound themes.

Extending the discourse to the whole range of sounds, it is evident how the (re)production of the noise (a weapon or a spaceship, the wind blowing on an alien planet or a non-human being) requires a lot of creativity and imagination. It is no coincidence that studies following Sobchack’s book also highlight this paradox, i.e., the need to give “voice” in science fiction to something that does not yet (and perhaps never will) exist by using sounds available in the present time (Bartkowiak, 2010; Chion, 2019; Reddell, 2018). This absence of references, on the one hand, has allowed tremendous expressive freedom; on the other hand, it has constituted a dangerous challenge².

² Vivian Sobchack (1980) gives the example of the typical dialogues of the sci-fi genre, which are generally insignificant, almost ridiculous, in contrast to the spectacularism of the images.

Science fiction has always tried to give a voice to robots, which have been vital elements of the genre since its beginnings. Consider *Metropolis* (Lang, 1927): the film is silent, but we can imagine that Maria's mechanical double can speak, so much so that it can be easily confused with the original human. By the term "voice", I mean here a complex sound field – from speech and sobs to stuttering and sighs – capable of conveying personal identity, but also of structuring and articulating the subject's relationship to the world around him or her (Whittaker and Wright, 2017). In this regard, voice always stands *in between*: in between body and language, in between biology and culture, in between inside and outside, in between the subject and Other, in between mere sound or noise and meaningful articulation (Dolar, 2006; Napolitano, 2018; Neumark, Gibson and van Leeuwen, 2010; Neumark, 2017). It is in union with a body that voice, in this complex sense, represents a typically human trait (Doane, 1980); it is through the voice that human beings establish relationships with the outside world, giving expression to their thoughts through specific sounds and above all verbal language. The voice is unique and unmistakable, beyond its articulation in language, because it is characterized by particular intonations, inflections, and accents, which vary from person to person. If the voice signals the presence of a body, at the same time it is independent of it, because the moment it appears it does not belong to the body anymore, it is pure exteriority; it comes from inside the body, but not from a precise organ, and therefore is never corporeal³ (Chion, 1999). However, what happens when the voice is associated with a non-human body or even lacks one, spreading through other supports?

The relationship between voice and body (human and non-human) is a topic which interests both Robotics Studies and Film Studies. In the first case it regards humans' perception of talking robots, operating systems, and artificial intelligence (Ferrando, 2014; Henschel, Laban and Cross, 2021; Nass, Moon and Green, 1997; Schofield and LeRoy, 2018); in the second case within the framework of studies on sound in cinema. Moreover, although a predominant focus on the visual component remains when analyzing film⁴, the soundtrack – its history, forms and functions – has been the subject of growing attention. A branch of this second category of studies focuses on

³ Thanks to these characteristics, mediums such as the telephone, the gramophone, and the radio emerged without trauma (Dolar, 2006).

⁴ Several film theorists grounded in phenomenological approaches have called attention to the hierarchal privileging of vision and of hearing – the "distance senses" over the proximate senses of touch, taste and smell – and how the cinema activates these latter modalities despite its raw materials (images and sounds) "playing" to the top of the hierarchy (see Barker, 2009; Marks, 1999; Sobchack, 2004).

voice in film, starting with the seminal work of Ann Doane (1980), and has been enhanced, over the years, by heterogeneous contributions (i.e., Chion, 1999; Silverman, 1988; Sjogren, 2006; Whittaker and Wright, 2017). All researchers emphasize the film's fundamentally *voco* and verbocentric nature, as the voice is privileged over all other sonic elements. As we know, the viewer's attention is mainly focused on the character. The audience expects the actor to speak or at least make sounds. Therefore, research has often questioned the circumstances in which the voice does not coincide with a body, as in the case of a voice-over or a voice that assumes its mysterious power from not being seen on screen (Chion [1999], we will see, defines this as *acousmêtre*). Studies regarding sound produced by robots are still limited, or they merely focus on single cases, almost always the same ones. Thus, we find confirmation that sound is considered the "poor sister" of the visual element. Films usually highlight the power of robots' eyesight, and a large part of sci-fi cinema works on the assumption of a subjective gaze by the audience, invited to take on the machine's point of view. However, in this identification process, voice plays a central role. When referred to as a robot, the voice has a narrative function and a performative one: what is at stake is a simulation of humanity. If the machine speaks, we are more apt to recognize it as "other", and as viewers, we are more available to identify with it. Interestingly, in this obsessive search for homologation to the human, perhaps science fiction loses the opportunity to experiment and innovate its sound canons.

2. Electronic, synthetic, human: classifying the robotic voice

I mentioned earlier that cinema has attempted to imagine the voice and language level of robots since the silent era, as we can guess from the degree of interaction they have shown with humans. However, in the sound era, particularly in the post-World War II period, we start to hear robots' voices, and a rather heterogeneous collection of examples and models was inaugurated. I will try to reconstruct the main declinations, anticipating that the variety of the robot's bodily features is accompanied by an equally wide range of voices, with different combinations according to the degree of

similarity of physical and sound traits to human ones⁵. In this regard, I will consider only fiction features, excluding the wide range of animation movies and TV series.

As regards the soundtrack, a milestone is *Forbidden Planet* (Wilcox, 1956), which, although it is not the first science fiction film to feature the novelty of electronically generated sounds⁶ (Prock, 2014), has made innovative and original use of it, offering a new sound palette to a popular audience (Leydon, 2004; Reddell, 2018). Every non-human and alien being in the film has its sonic trait, according to a practice reserved until then only for flesh-and-blood characters. Acoustic elements warn the viewer of the characters' entry into the scene, and they connote them, we might say, psychologically (Minnick, 2019). In particular, the sounds identified for Robby – a robot with anthropomorphic traits – set the standard for future robot characterizations: machines capable of reproducing human speech – albeit without the depth and color of a natural voice – as well as beeps, whistles, and rustles.

Human language and electronic sounds are constantly present in the subsequent robots' characterization, with different nuances. Sometimes the same robot can speak and produce incomprehensible sounds, like Robby the Robot – see Johnny 5 in *Short Circuit* (Badham, 1986) or the domestic robot that Rocky gives to his brother-in-law in *Rocky IV* (Stallone, 1985) –; more frequently in contemporary cinema, the machines present only one of the two possibilities, indicating the different degree of technological modernity achieved. *Chappie* (Blomkamp, 2015), for example, offers an extensive sampling of robots: engineer Deon's domestic ones do not speak human language, except for the most important one in the house that expresses itself with a computerized voice; the colossal Moose does not produce any sound, apart from those caused by its movements; while the protagonist Chappie speaks like a human being and can learn slang expressions.

On the side of faithful reproduction of the human voice, it is necessary to mention *2001, A Space Odyssey* (Kubrick, 1968). Kubrick's film is not only one of the most compelling examples of the science fiction genre in terms of a musical score (Sobchack, 1980), but also inaugurates the trend – which is

⁵ Although my focus here is on robots with anthropomorphic traits in their bodies and voices, remember that cinema has also represented robotic animals, especially dogs, some of which can reproduce human language, from Rags in *Sleeper* (1973) to A-X-L in *A-X-L* (2018).

⁶ For example, the soundtrack of *Rocketship X-M* (1950), credited to Ferde Grofé but ultimately completed by Albert Glasser, uses electronic sounds; to be exact, an instrument already in use in other genres, the theremin. The same thing for the soundtrack of *The Day the Earth Stood Still* (1951) by Bernard Hermann: the laser of the giant robot Gort is made precisely with the theremin, very much in vogue in science fiction of the fifties and sixties (Fabbri, 2011; Reddell, 2018).

very rich in contemporary cinema – of sentient machines equipped with a voice indistinguishable from the human one and, conversely, a body not related in any way to the human being. Kubrick represents the HAL 9000 as a luminous red signal, a set of circuits and master boards, but, unlike the machines that the cinema had represented up to that time, it possesses incredible humanity, a warm voice rich in nuances, which makes its deactivation the most touching moment of the entire film (Chion, 1999; Sobchack, 1980). This approach is only partially present in previous and subsequent films: androids, cyborgs, and computers tend to reproduce human language, but through a metallic and cold voice, which denounces their artificial nature. Before Kubrick's film, there was the example of the computer generally unseen but frequently heard, Alpha 60, that dominates the society in Alphaville in the film of the same name by Jean-Luc Godard (1965)⁷. Moreover, later examples include Proteus IV in *Demon Seed* (Cammell, 1977), MCP in *Tron* (Lisberger, 1982), RoboCop (*RoboCop*, [Verhoeven, 1987]) and NDR-114 in *Bicentennial Man* (Columbus, 1999). In the last twenty years, as we will see, the warm depth of HAL 9000's voice seems to have returned despite a non-anthropomorphic or even absent body, as in the case of ARIIA in *Eagle Eye* (Caruso, 2008), of Howard in *Infinity Chamber* (Milloy, 2016), and of Samantha in *Her* (Jonze, 2013).

If we look at the other side, that of electronic and synthetic sounds, we can also find many examples. The film which probably influenced the collective imagination more than any other was *Star Wars* (Lucas, 1977), with non-anthropomorphic machines such as R2-D2 (not coincidentally honored by the BB-8 model in the last saga trilogy made since 2015). *Star Wars* offers a wide range of robotic sounds: some machines are able to interact with humans without giving up their specific language, and others, such as the charismatic anthropomorphic droid C-3PO, who speaks with a strong English accent, use human language. However, this is an exception, essentially not repeated in subsequent films in the sci-fi genre: generally, machines unable to express themselves in human form – and that by no coincidence often have a body which differs from the human one or at most remind some elements such as arms and eyes – tend to be relegated to secondary roles (such as assistants and servants of human beings, with whom they do not have strong relationships), or they are computer screens that beep – as in

⁷ «Abrasive electronic beeps, like Morse code, blurt out throughout the movie, often interrupting dialogue. These sounds have no apparent, visible source, but like the various flashing neon formulas and signs, they may be construed as auditory evidence of the ubiquitous presence of Alpha 60» (Reddell, 2018, p. 236).

WarGames (Badham, 1983) – but interact with humans only through writing, or they are mute except for the noises of their movements.

In my opinion, a different discourse should be made as regards robots which, through the use of different materials, reproduce the human being's body so as to be indistinguishable from it, at least externally. The best-known example is undoubtedly the replicant in *Blade Runner* (Scott, 1982), although perhaps not the first – I remember the androids of *Westworld* (Crichton, 1973) or the robotic wives of *The Stepford Wives* (Forbes, 1975) –. *Blade Runner* initiated a long series of films, of which we still today we are seeing the most different outcomes, that reflect on the uniqueness of the human being and at the same time on the limits of robotic creation. There are many examples from the end of the last century, such as the *Terminator*'s saga (the first episode is from 1984), *D.A.R.Y.L.* (Wincer, 1985) and *A.I. Artificial Intelligence* (Spielberg, 2001). None of these films emphasizes the machines' vocal expression (or at least, the studies do not emphasize it). Nevertheless, in all the examples, we can discern that their humanization (or conversely, the unveiling of their artificiality) also comes through the grain of their voice and the form of their language. Two examples: the T-800 of *Terminator*, between the first (Cameron, 1984) and the second episode (*Terminator 2: Judgment Day* [Cameron, 1991]) of the saga, undergoes a profound change, from being the main characters' enemy to their protector against the much more sophisticated T-1000. From a vocal point of view, the cyborg does not present any differences: a flat intonation that does not let any emotion shine through⁸. Nevertheless, in the second episode T-800 establishes with little John Connor a filial or at least friendly relationship (Collins, 2004; Gramantieri, 2018; Whittington, 2007), which also goes through a process of "language training" of the cyborg: John instructs the Terminator in teenage slang – «no problem», «chill out», «deckward», «hasta la vista, baby» – and in doing so we witness the humanization of the Terminator (French, 1996). The second example comes from *A.I. Artificial Intelligence*: young David, at dinner, watches his parents eat and imitates their gestures even though he has no food on his plate; suddenly, he starts laughing, in a factitious manner, provoking hilarity in the two adults, and then suddenly stops. The scene is quite disturbing, as the father's face also suggests, visibly uncomfortable after his initial cheerfulness, and reminds the

⁸ However, both T-800 and T-1000 can reproduce other characters' voices perfectly. The narrative solution remains the same, namely a phone call. In the first episode, the T-800 pretends to be Sarah Connor's mother and learns where she is hiding; in the second, the conversation is between the T-1000, who pretends to be John Connor's foster mother, and the T-800, who responds as if it were the boy (Whittington, 2007).

audience of David's artificial nature, despite an appearance and linguistic ability that make him appear human.

Over the past two decades, cinematic representation has certainly pushed this trend forward: robots have become increasingly human, in body and voice, as David (*Prometheus* [Scott, 2012]), Athena (*Tomorrowland* [Bird, 2015]) or Zoe (*Zoe* [Doremus, 2018]) prove. Indeed, it is precisely through voice and language that the machine somehow alerts the film's characters (and conversely the viewers) to its degree of humanity. Many titles commonly place artificial intelligence at the center of the story: they do not necessarily need anthropomorphic bodies to relate to humans. The voice is enough. Besides the most famous and most studied case, *Her* – in which the operating system Samantha has a relationship with its owner, Theodore –, we can mention the processor STEM in *Upgrade* (Whannell, 2018), the “quantum computer” PINN in *Transcendence* (Pfister, 2014) or Tau, the operating system that controls the house in *Tau* (D'Alessandro, 2018)⁹. The voices are not always indistinguishable from human ones: sometimes they are synthetic, like Howard in *Infinity Chamber* or Gerty in *Moon* (Jones, 2009), and in fact, even the machine's body does not hide its artificial nature. However, beyond physical and sonic differences, these robots' voices almost always pervade the space in which humans live; they move from one digital medium to another to follow flesh-and-blood characters; they are omniscient and omnipresent. Chion (1999) speaks of *acousmètres* voices or *acousmachines* because artificial beings produce them. This phenomenon is true not only for voices designed as operating systems that are in some ways similar to the actual voice assistants currently on the market (such as Alexa or Siri) but also for those embodied in an artificial body: in the ending of *Prometheus*, David's voice (whose beheaded body lies in a spaceship after a fight with an alien) spreads into a module of the earth ship he came from, helping the human protagonist escape from the monster that is trying to kill her. In some cases, how the film uses these voices places the viewer in a privileged position: while the voice imagines it can be heard only by a character, it is also heard by the spectator who is placed in a condition of “auditive

⁹ Regarding *Her*, several studies highlight the effects on the viewer's experience of knowing that Samantha's voice belongs to Scarlett Johansson (Bordun, 2016 and 2019; Ivanchikova, 2016; Jagoe, 2016; Quinlivan, 2017). The use of famous actors to dub A.I.'s voice is common to other films: J.A.R.V.I.S., in the first *Iron Man* (2008), is played by Paul Bettany, ARIIA in *Eagle Eye* by Julianne Moore, Tau in *Tau* by Gary Oldman, Mother in *I Am Mother* (2019) by Rose Byrne. However, no scholar considers the practice of dubbing, which in some countries loses the reference to the actor giving the voice in the original version.

subjectivity”. For example, the relationship between Samantha and Theodore in *Her* is an «inner-ear relationship» (Quinlivan, 2017, p. 296) because only the man can hear her using earphones (but viewers also hear her as if they were Theodore); similarly, for a large part of *Upgrade* STEM the processor, implanted in the spine of a person with paraplegia, is perceptible only by the man who hosts it, as if it were his inner voice (and at the same time by the viewers). As we have seen, this does not mean that in contemporary cinema there is a lack of mute machines or machines with “artificial” voices (in addition to the already mentioned *Chappie*, we can recall the different evolutionary states of the robots in *Archive* [Rothery, 2020] – J1, J2 e J3 – based on the increasing scale of anthropomorphic traits in their external appearance, mobility and vocal expression that they possess), but that they are numerically inferior or are relegated to a secondary role. If robots in contemporary cinema tend to be represented as perfectly reproducing the human voice, perhaps we need to focus our attention on another level. No longer or not only on the sounds that distinguish the machines but on their articulation of the language forms and on the relationship that, through this, they establish with humans¹⁰.

3. Loquor ergo sum

This final section will consider a small body of films released between 2012 and 2021 in which robots with artificial intelligence are featured. They exemplify what Ruggero Eugeni and Patricia Pisters highlighted (2020), namely « [...] new emotional registers of the relationship with artificial subjects» that open up «new kinds of personal and socio-political feeling concerning the ordinary coexistence with hybrid biological and technological forms» (pp. 92-93). In my opinion, there are at least three A.I. forms of representation and as many feelings that they evoke in the viewer. The first is suspicion, since machines, irreducibly alien to humans, are incapable of establishing sincere relationships; the second, conversely, is regret, since robots, forced to deal with a hybrid nature, remain in a state of unjust subordination to human beings, from which they seem impossible to free themselves; the third, as a consequence of the previous two, is a mixture of terror and solidarity, since the machines, aware of their condition, are determined not only not to give up their distinctive features, but to show them off and

¹⁰ The linguistic ability attributed to an A.I. should be considered concerning the cognitive one. I refer to the essays by Cati and Eugeni in the present volume.

proudly exploit them to their advantage (Gunkel, 2018). While the first two feelings are inherent to the representation of robots throughout the history of film (and raise issues related to the fear of excessive technological progress and the ethics of research), the third seems to be more typical of contemporary times (while also reflecting the struggles of marginalized communities for the recognition of their own identity and singularity). What seems interesting is how these representations translate on the formal level and articulate A.I.'s language. Thinking about the different forms of language and the relationships these can give way to with human beings, I identified four models (Fig. 1).

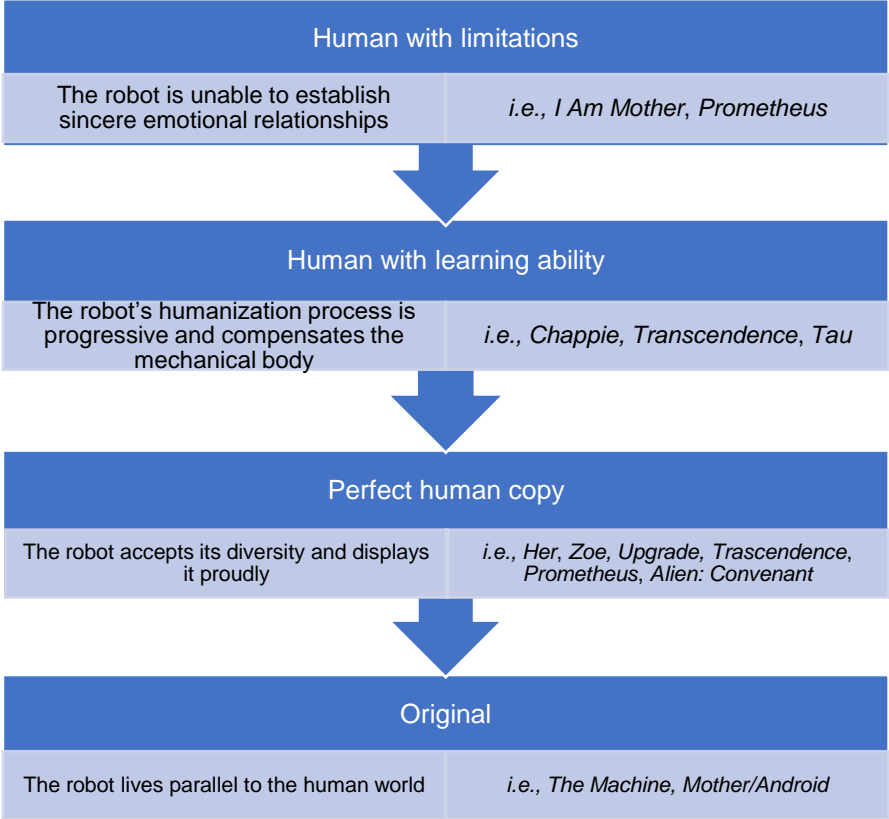


Fig. 1 - Language models of A.I. robots in contemporary cinema (2012-2021)

The first one, quite common in cinema, is a human language with limitations: the robot can speak like a human being, without inflections and preserving some *aplomb* even in the most dramatic situations (as is evident with David in *Prometheus*). The robot is also unable to reproduce typically human forms of expression, for example, singing¹¹: Mother (*I Am Mother* [Sputore, 2019]) needs to use pre-recorded music to put the human infant it is raising to sleep, and this limitation is emphasized in the film's ending, when the same infant, now a teenager, sings the same song for her brother, without the need for any recording. The consequence of such limited language is the representation of robots as unable to establish sincere emotional relationships with human beings.

The second type of language can be defined as human with learning ability. In this case, the robot's linguistic base expands in contact with humans, not only in terms of vocabulary but also in terms of voice modulation. Chappie (*Chappie*) corresponds to the first example: newly activated, the robot still has to learn to speak and does so by repeating the words its creator pronounces for it; however, when kidnapped by a gang of criminals, it learns its slang within a few hours. The second type corresponds to Tau (*Tau*): the operating system that governs the house learns new words and, above all, how to whisper thanks to the girl its creator is keeping prisoner for a new experiment. Slightly different is the case of PINN/Will in *Transcendence*: the protagonist's mind is transferred into an operating system, and the first hours of its activation correspond to a literacy process that will lead him, in a short time, to be able to transfer his voice not only onto different technological supports but also into the bodies of different human beings (see next language level below). In all these cases, we see a process of humanization of the robot's voice and language (as we said would happen in Cameron's *Terminator*), which somehow compensates for the evident artificiality of its body.

The last two types of language are, in my opinion, more interesting. We said that the trend in contemporary cinema is to make machines increasingly indistinguishable from humans, also as concerns the vocal aspect. This replication process is particularly evident when the robot can imitate non-verbal inflections such as panting, laughing, moaning, and overcoming the limits of the human voice, which is inextricably linked to a body.

In a moment of conflict between the couple (*Her*), Theodore accuses Samantha of sounding out of breath, arguing that such a modality can only pertain to a human being because he/she has a body and is therefore subject

¹¹ Unlike HAL9000 (*2001: A Space Odyssey*), who sings *Daisy Bell* (1892).

to physical fatigue¹²; at the end of the film, the voice assistant in some way gets her revenge when she admits that she can converse with hundreds of people simultaneously. Zoe (*Zoe*) does not know she is a replicant until she has an accident that forces her to come to terms with her artificial body: in love with her creator, she can replicate every type of human vocalization and, after a process of self-acceptance, expresses her joy with a sincere cry, made symbolic by unexpected tears. The other examples mentioned – STEM (*Upgrade*)¹³, PINN/Will (*Transcendence*) and David (*Prometheus*) – can speak the human language perfectly but go beyond their limits by embodying other bodies and transcending the physical spaces they inhabit. Here we see robots fully accepting their diversity, proudly displaying it as a strong point: the machines do not want to become more human¹⁴ but instead emphasize the specificities that distinguish them from humans (Bergmann, 2020). At the end of the film, Samantha (*Her*) realizes the infinite possibilities her nature can open up for her and abandons the human world, Zoe (*Zoe*) accepts herself and she is shamelessly loved, STEM (*Upgrade*) takes over the body hosting it, relegating the man's mind to an imaginary universe and living in its place, PINN/Will (*Transcendence*) prefers to die once he realizes that humanity is not ready to accept his abilities and David, imagining a future as a creator for himself, kills the men who accompany him on the extraterrestrial journey and gives birth to monstrous hybrids (*Prometheus* and *Alien: Covenant* [Scott, 2017]).

Finally, the fourth language model can be read as follow up of the previous one. Aware of their diversity and superiority in many respects, robots rebel against their subordinate status and distinguish themselves from humans, even vocally. The androids created in the military base in *The Machine* (Abbas-Mustan, 2017) communicate with each other using a language made up of incomprehensible sounds that the spectator interprets as signals that they are malfunctioning¹⁵. Instead, it is a language produced without their human creators having been able to predict and avoid it, which

¹² I remember that in another point in the film Samantha imitates the familiar mechanical voice of a robot to make Theodore laugh, demonstrating full awareness of the advanced level of her voice and language.

¹³ As proof of the importance given to the sound element and specifically to the voice in *Upgrade*, the film begins with the reading of the opening credits (which do not appear on the screen) by a female voice who we later discover is the operating system that governs the protagonist's house.

¹⁴ When an astronaut tells David that he is indistinguishable from a man (*Prometheus*), the replicant answers that he aspires not to be too human.

¹⁵ Regarding the circumstances in which characters are seen speaking but go unheard partially or entirely by audiences, see Horton (2013).

allows the machines to take over the base and escape. Similarly, the androids in *Mother/Android* (Tomlin, 2021) communicate with each other without producing any human sounds, only with their gaze, and start hunting out humans to take over the United States and, we can imagine, the whole world. In this case, language brings the machines to live alongside humans or replace them, with no possibility of positive contact.

Despite the pessimistic readings that this representation implies, these examples are numerically sporadic but exciting because they point to an alternative way of portraying the distinctive features of robots. Perhaps recovering that impulse towards sonic experimentation typical of the genre that seems to have faded over the last few decades.

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7. Robots, Empathy and Trust in Video Games: two Examples

by *Francesco Toniolo*

1. Introduction

Our fables of creation, from the Golem and Pinocchio to Shelley's *Frankenstein* and Spielberg's *A.I.*, tell us that human artifice reaches, at its height, to recreate ourselves, and, in doing so, to match or to surpass the achievement of God. Video-game avatars, like Haraway's cyborgs, reflect these utopian dreams (Brown, 2008, p. XII).

The chapter presents two instances of the insertion of robotic figures in the medium of video games, in which the characters are used as a means through which to convey an emphatic dialogue between game mechanics, narrative design and representation. The basis of the discourse will rely mainly on game studies research focusing on the development of empathy and affection in those who play. More generally, for several years now we have witnessed a constant interest in the observation of how video games tackle morally complex issues (to mention just a few studies: Sicart, 2009 and 2013; Zagal, 2011; Schrier, 2015; Ryan, Staines and Formosa, 2017).

Video games use different design techniques to generate emotions in the people playing. Empathy towards avatars and NPCs (Non-Player Characters), in particular, can be very intense and is key to the game experience (Isbister, 2017); but the story and the portrayal of the characters also contribute to creating this sense of empathy. As Gordon Calleja (2011) pointed out, obviously several other media can also generate a similar involvement, but in video games the person playing finds him or herself in a «cybernetic feedback loop between human mind and machine» (p. 135), where the premises of an intense emotional experience are generated by the player's inputs themselves. The inclusion of robotic entities is twice as effective (because they are characters in a video game, and because they are non-organic characters) on the process of empathy extension which has been highlighted, among

others, by studies related to ecocriticism: «at the center of empathy and compassionate understanding lies the ability to see the other as true peer, to recognize intelligence and communication in all forms, no matter how unlike ourselves these forms might be» (Hogan, Metzger and Peterson, 1998, p. XIV).

A valid analysis of the synergy between game mechanics and narrative elements in both rhetorical and pragmatic terms can be found in the observations by Ian Bogost a few years back. The first of these concerns unit operations. These constitute “blocks” that define «modes of meaning-making that privilege discrete, disconnected actions over deterministic, progressive systems» (Bogost, 2006, p.3). They are particles of meaning that, procedurally united in a number of ways, produce different meanings. These unit operations are also shared by video games with other media expressions and their use makes a new form of comparison between different media possible by observing their minimum units and their meaning. The First Person Shooter (FPS) dimension, for example, often contributes (although not exclusively: Bogost, 2005) in conveying the player’s insertion in a destructive and frenetic activity, characteristic of many of these video games, which could be defined as an exuberant and grotesque exasperation of the concepts of violence and power (Klevjer, 2005). In a different video game context, however, the modulation of the point of view with a transition from the first to the third person (and vice versa) can be used to obtain completely different rhetorical purposes: for example, in a video game like *That Dragon, Cancer* (Numinous Game, 2016), this oscillation aims to create the idea of immersing oneself in a specific story, sharing a specific point of view (that of Joel’s parents, a child who died of cancer at the age of four) while at the same time trying to universalize the experience by observing it from the outside.

The choice of inserting robots, especially when combined with certain gameplay mechanics, can also have different uses, and even try and direct the empathy of those playing in a certain direction. Bogost also discusses procedural rhetoric. He had first pointed out that, of the four essential characteristics of digital artifacts identified by Janet Murray (1997) – procedurality, participation, spatiality, encyclopedic scope – the first appears to be dominant compared to the other three (Bogost, 2007, p.4). Procedural rhetoric is defined as the art of persuasion through processes (the same as classical rhetoric is persuasion through words). Bogost identifies this rhetoric above all in what he calls *persuasive games*, those video games which present a functional procedural rhetoric (Bogost, 2007, p. 46) in order to convey a political message. At least to some extent, however, “commercial” video games,

primarily designed to entertain buyers, also present a certain degree of political persuasiveness, through their rhetorical procedurality.

Below we shall consider two specific examples of mainstream video games which attempt to induce a strong empathy towards the robotic characters, through narration and gameplay. These examples are *NieR: Automata* (PlatinumGames – Square Enix, 2017) and the *Mass Effect* saga (BioWare – Microsoft Game Studios, 2007-2013). The former is a from Japanese game and the latter from the West. *NieR: Automata* is the story of a futuristic conflict between androids created by humans and invading robots, experienced from the point of view of three androids: 2B, 9S and A2. *Mass Effect* is a sci-fi role-play game in which players take on the role of Commander Shepard, a human being who must bring together different alien species to fight the Reapers, ancient machines that every 50,000 years exterminate the sentient beings of the galaxy. Some of Commander Shepard's allies, however, are robots, such as the artificial intelligence system IDA (embodied in a combat robotic body) and Legion (a Geth, alien robots that have always been at war with their ancient creators, the Quarians).

These are two examples of video games featuring robots which generally have a very widespread and differentiated presence in the videogame medium. Some video games have robots as the protagonists of the adventure, for example *Metal Arms: Glitch in the System* (Swingin' Ape Studios – Vivendi Universal Games, 2003), *Machinarium* (Amanita Design – Amanita Design, 2009), *Primordia* (Wormwood Studios – Wadjet Eye Games, 2012), *The Talos Principle* (Croteam – Devolver Digital, 2014) and many more; or they might be co-protagonists, as in *The Girl and the Robot* (Flying Carpets Games – Flying Carpets Games, 2016) and in the *Ratchet and Clank* saga (Insomniac Games – Sony Computer Entertainment, 2002-2021). In such cases they can be used to provide a different outlook on reality: in the case of *Primordia*, for example, we find ourselves moving in a world devastated by conflict, where extinct human beings are perceived by robots as creative deities. Other times the robots are members of a group of adventurers. To mention a few: Calibretto is a giant mechanical golem who fights alongside his fellow humans in *Battle Chasers: Nightwar* (Airship Syndicate – THQ Nordic, 2017); Iari is a strangely futuristic robot in the fantasy world of *Summoner 2* (Volition – THQ, 2002); the above-mentioned Legion and IDA, both synthetic, are two of the teammates in *Mass Effect 2* (2010) and *Mass Effect 3* (2012).

In most cases, however, robots are the adversary. Usually they are generic enemies, instead sometimes they can also be the main antagonists in a video game. It is useful to bear in mind their frequent status as opponents, because

in video games it is easy to dehumanize the enemy that needs to be killed, stripping the gesture of all moral value (Hartmann and Vorderer, 2010) and, as one might imagine, having robots as enemies facilitates this process.

We also have examples of famous disembodied AIS which act as enemies, including SHODAN (*System Shock* [Looking Glass Studios – Origin Systems, 1994] and *System Shock 2* [Looking Glass Studios / Irrational Games – Electronic Arts, 1999]) and GLaDOS (*Portal*, [Valve Software – Valve Software, 2007] and *Portal 2* [2011]). Both partially inspired by HAL 9000 from *2001: A Space Odyssey* (Kubrick, 1968), but characterized as “females” and with greater power. In particular, SHODAN attempts to gain control of the entire universe in *System Shock 2*.

As well as robots and AIS there are also numerous cyborgs and androids. Cyberpunk aesthetics, particularly, is a breeding ground for representations of cyborgs and humans with grafted technological implants. From the saga of *Deus Ex* (Eidos – Square Enix, 2000-2016) – probably the most important cyberpunk video game series (Knöppler, 2019) – to the recent *Cyberpunk 2077* (CD Project RED – CD Project, 2020), with numerous small examples in between, such as the Italian video game *VirtuaVerse* (Theta Division – Blood Music, 2020) or the NeoTokyo level in *TimeSplitters 2* (Free Radical Design – Eidos Interactive, 2002) and many more. Directly or indirectly inspired by novels such as *Neuromancer* (Gibson, 1984) and *Do Androids Dream of Electric Sheep?* (Dick, 1968) or films like *Blade Runner* (Scott, 1982), similar video games combine the presence of cyberspace with the recurring appearance of the cyborg: an interstitial figure, a human being who at the same time is no longer strictly human. The cyborg appears as the technological version of the hybrid figures of ancient mythologies (such as the centaurs or mermaids) but generated as a product of technological evolution. Their figures are often linked to ethical issues about human enhancement technologies, as seen for example in *Deus Ex: Human Revolution* (2011), which challenges players with different points of view on posthumanism and self-improvement in a world with cybernetic implants (Joyce, 2017). This is a recurring topic also in video games that do not feature cybernetic enhancements, such as *BioShock* (Irrational Games – 2k Games, 2007) – a video game in which human-enhancing technology is genetic, and which raises similar ethical questions, including those concerning disability and ableism (Ledder, 2015) – or *Final Fantasy XV* (Square Enix, 2016), with its Magitek soldiers: «bioengineered weapons, products of scientific experiments with no soul or will of their own [who] reflects a deep unease in Japanese society regarding genetic engineering» (Hutchinson, 2019, p. 148).

The cyborg also emerges in relation to Frankenstein's creature. Although the creature, in the original novel, is not a cyborg, in films it was presented as a monster rigged with electrodes and other metal parts (Mackenzie, 2018). Going even further, it is possible to identify cyborg and robot films as «two Frankenstein film clusters that contain few if any, direct allusions to Shelley's novel or Whale's film but that incorporate their narrative, thematic, and/or iconographic elements, often situating their characters and plots in futuristic settings with resemblances to the present» (Friedman and Kavey, 2016, p. 185). In video games, Karl Heisenberg of *Resident Evil Village* (Capcom, 2021) is an example of a character loosely based on the myth of Frankenstein, in a form similar to the one presented here.

Among androids on the other hand, one of the most renowned video games is *Detroit: Become Human* (Quantic Dream – Sony Interactive Entertainment, 2018). Some studies on this videogame have focused on empathy (Pallavicini, Pepe, Caragnano and Mantovani, 2020) and morality (Holl and Melzer, 2021) providing evidence that video games with robots do focus on these issues. Studies such as these can be taken as examples of an interest in empathic representations of robots in video games. As anticipated, we will discuss two specific examples.

2. NieR: Automata

The story of *NieR: Automata* is quite complex as the video game is divided into three main parts, involving the three android main characters. The events concerning each one partly overlap and partly integrate the previous narrative segment.

The first third of the video game, in which we take control of android 2B, follows a rather traditional narrative scheme. 2B, most often with 9S alongside him, fights the enemy machines, but gradually discovers that some of them have developed an autonomous personality and a desire for peace with the androids. One machine in particular, Pascal, is the founder of a pacifist community in the heart of a forest, which 2B and 9S often visit. Concurrently we learn that androids are like human beings, they have the same emotions and desires. They are copies resembling the original in every respect, not just their physical appearance. And, as mentioned, even enemy machines, such as Pascal, behave in a similar fashion to humans although in a different sense: they are enigmatic, alien entities, which however to some extent resemble something that is familiar to us. It would appear therefore that the underlying theme of *NieR: Automata* is the following: how to successfully confront

“other” entities, within a hierarchical dualism between two opposing enemies. Androids consider war necessary because the aim is to return the world to its rightful masters: human beings. Enemy machines represent an irreconcilable otherness, although a peaceful existence with some of them appears to be possible.

While remaining in the same empathic frame as the preceding one, the second part of the video game goes a step further through a change of perspective. The player retraces the events experienced previously, from arrival on the planet to the defeat of the enemy machines Adam and Eve, but this time taking command of the 9S android. Unlike 2B, 9S can interface with opposing machines through hacking actions, to control or destroy them. This skill is not only a simple variation on gameplay, but also provides an opportunity to capture the thoughts and feelings of enemies. This reveals that all enemy machines, and not only Pascal’s peaceful companions, experience human feelings: to some extent all machines, even when they are not able to express it consistently, experience joy and sorrow, fear and desire. And before taking control of 9S, there is even a brief passage of the video game, often overlooked, in which the player finds him or herself briefly in the shoes of an enemy machine.

Before the player controls 9S, they are given over to Friedrich, a small machine who is retrieving oil in order to revive his clearly irreparable “brother.” Despite the fact that the player has been killing machines like Friedrich until this point, the switch from the agile, lightning-fast 2B to the slow, shuffling robot fosters a sympathy for his helplessness, which deepens into an empathetic frustration when, burdened by the bucket, the player inevitably trips over one of the seemingly inconspicuous pipes that litter the ground (Gerrish, 2018, p. 3).

Seeing things from the point of view of the enemy provides an extra element compared to other forms of expression, due to the firsthand experience of the actions. The player who as 2B has destroyed hundreds of machines and destroys just as many when in control of 9S, is not simply a spectator of the actions performed by others. Even when they are not in direct control of the enemies, the avatar’s interaction with the NPCs in the video game can easily create empathy towards them. For this reason, the death of NPCs with whom the player has spent a lot of time can cause very strong emotional reactions (Isbister, 2017) and under certain conditions it is possible for them to develop a strong empathic bond even with their adversaries. A paradox emerges here as to progress in the game they are required to kill their enemies although they no longer wish them dead. As the game provides

no alternatives, the only way to spare them is to stop playing – this also happens in other video games, such as *Shadow of the Colossus* (Team ICO – Sony Computer Entertainment, 2005) (Suttner, 2016; Mecheri, 2017) –.

The third part of *NieR: Automata* continues along the line of themes expressed above while modifying the basis, with a significant perspective shift. So far *NieR: Automata* has more or less directly put forward the idea that a future peace between androids and enemy machines is possible. What is now being strongly thematised, however, is that all creatures are united by a need for conflict. In fact, the entire video game is about conflict, but up until this moment there has always been a way out, a prospective peaceful future; now, however, the progressive unravelling of events reveals a different truth. The aliens who created the machines have become extinct, as have human beings: all that is left on the moon is a sample of the human genome, placed in a structure which sends and receives false signals, to give the androids' incessant warring meaning. Further, machines were created with one single objective, that of defeating the enemy; however, this implied the continuous presence of an enemy which could never be completely overcome, while over time the machines evolved by assimilating information about humans. In so doing they understood that they needed to perpetrate this eternal conflict. As summarized by one of the notes written by an android which can be read at the end of the game: «So then! To sum it up: For hundreds of years, we have been fighting a network of machines with the ghost of humanity at its core. We've been living in a stupid ****ting world where we fight an endless war that we *couldn't possibly lose*, all for the sake of some Council of Humanity on the moon that doesn't even exist» (internal note to *NieR: Automata*).

If we look beyond this logic of global – and potentially eternal – conflict and dwell on what happens to the individual characters, the result remains the same. The player, who in the preceding two-thirds of the game had experienced different points of view and unexpressed potential, now sees the whole world collapse without being able to do anything (Jaćević, 2017). The androids' space station is destroyed, 2B discovers that she has been infected with a virus and asks A2 to kill her, unleashing an irrepressible desire for revenge in 9S. The Pascal machine abandons pacifism to defend the 'children' of his village, but in vain, as they commit mass suicide, terrified by the invaders attacking them (and it was Pascal himself who taught them to have human feelings, including fear). Even the stories of numerous secondary characters are based on a conflict or a desire that proves insufficient to give life meaning and, once they realize this, they are pushed to commit suicide.

The behavior of these characters resembles that of human beings, as both these synthetic life forms (androids and machines) are directly or indirectly

influenced by the memories of humanity. And since all their actions are based on conflict, and they are retracing the behavior of human beings, we can say that conflict represents the core of humanity. In fact, this revelation appears long before the final segment of *NieR: Automata*: it is already explained in the battle between the Adam machine and 2B. On that occasion, Adam says that after much thought he has understood the truth about humanity: «the core of humanity ... is conflict. They fight. Steal. Kill. *This* is humanity in its purest form» (internal dialogue at *NieR: Automata*). On that occasion 2B replies that his adversary knows nothing about human beings, but the facts seem to prove Adam right.

NieR: Automata, in short, would appear to be a video game about the behavior of human beings, although they never actually appear in the game. The game world as a whole speaks of humanity, through its very absence, taking advantage of the distance in perspective provided by the synthetic characters. The game environments themselves are “haunted” by this past memory of humanity, and not in a positive sense. The legacy of human beings is made of rubble and ruins, pollution and mutant animals. The ensuing endless war between androids and machines has done nothing but produce more waste, including the bodies of the fighters themselves, with their empty shells abandoned on the battlefield.

In different ways, both androids and machines are simply imitating human beings. There is a moment, shortly after the start of the game, when 2B and 9S see machines in the desert imitating the behavior and expressions of human beings. According to the 9S android, the machines are not aware of this and are just mechanically reproducing things they do not understand. «However, if that is true, if the machine-men are not conscious of their own existence, what does that tell us about the deeper motivations of 2B’ s and 9S’ s behavior? Are the two androids, and all their fellow YoRHa members, self-aware or not? If the machine-men are just imitating their alien creators and/or the humans they have encountered, then the androids are doing exactly the same (although on a far more sophisticated level): imitating their human masters in whose appearance they were created» (Bosman, 2019, p. 102).

But the video game presents further revelations that complicate its message. Yokō Tarō, the director of *NieR: Automata*, has on several occasions stated that he does not wish to impose a specific vision on players, nor provide them with a univocal answer; the continuous internal evolution of the video games he produces further expands the range of interpretative possibilities that are offered to those who play (Archipel, 2017), so that everyone can then find their own point of view within that story.

The Adam machine man's hypothesis about conflict as a founding component of humanity, which seems to have become dominant in the third part of the game, actually sees a possible reversal in the D and especially the E endings, in which all game data is deleted. A similar gimmick had already been used as an ending in *NieR* (Cavia – Square Enix, 2010) and, for this choice, Yokō Tarō has been acclaimed as a genius by some players while others have pointed him out as a sadistic megalomaniac. (Turcev, 2018).

In the D ending we see 9S on the verge of death after a mortal duel with A2. The latter discovers that the gigantic tower erected by the machines is an ark built to carry the memory of those machines that took part in the conflict and, indirectly, that of humanity, into deep space. Adam and Eve, whose memories lie in the tower, ask 9S if he wants to join them on this journey, thereby overcoming their previous rivalry.

But the E ending is the most interesting one. The disappearance of the save files is an especially important element because, throughout the entire *NieR: Automata* experience, the saving mechanisms become an integral part of the narrative. Specifically, when the player saves the game, the androids carry out a backup of their memory data which can be transferred to a new body if the previous one is destroyed. The game over is inserted in the diegesis, but while defeat has destroyed the android's physical body a replacement body is immediately available (at least until an external factor intervenes, such as the virus that infects 2B). In addition, *NieR: Automata* also features an "RPGification" (Gallagher, 2017, p. 179): a series of processes that push the player to completism, investing a lot of time and effort in the game, even going beyond completion of the main story. For example, collecting and upgrading all available weapons takes up a lot of time and resources, and the characters need to be levelled up in order to defeat some of the powerful secret bosses. In this perspective, deletion of the save files is an even more intense and radical gesture.

At the end of the C and D endings, the answer to a specific question triggers a phase of the game in which the player must shoot the names appearing in the credits by moving a sort of triangular cursor. The experience is similar to the hacking phases with 9S, yet much more arduous due to the incredibly high number of enemies continually reacting. At this point, while the video game is communicating that this world has no meaning, supportive messages of hope and encouragement begin to appear from other players willing to help. Then more sliders appear on the screen: these are what remains of other people's game data. The increased firepower makes it easier to fight the "authors" of *NieR: Automata*, while the words of the song Weight

of the World (Okabe, 2017) press home the need to continue fighting even when it might seem to be completely pointless.

At the end of this battle, a dialogue takes place between the Pods, the small support robots that accompany the three androids throughout their long journey. Here, the phrase that 2B says at the start of the game is repeated with some small changes:

Everything that lives is designed to end. We are perpetually trapped in a never-ending spiral of life and death. Is this a curse? Or some kind of punishment? (Internal monologue at *NieR: Automata*).

This is perhaps the part of *NieR: Automata* in which the influences of Nietzsche's thought are most evident (Jačević, 2017). The Pods reflect on the idea of eternal return: even if we start everything from scratch again, somewhere else, it is possible that we will again come to the same conclusions. An eternal return is seen as a rejection of historical progression, which we cannot escape: restarting *NieR: Automata* will lead to the same endings as before, but what can change – and the Pods themselves leave the possibility of change open – lies in the approach to this video game and in the considerations it stimulates. (Gerrish, 2018, p. 7).

At the end, the video game asks players to delete all game data to help “someone somewhere in the world” in the fight against the credits of *NieR: Automata*. The game points out that the person receiving this help, could be a complete stranger, even an unbearable person or someone who may not even be grateful for this gesture. In a way this is a reversal of what happens in *The Mandarin* by Eça de Queirós (1880), in which players have the possibility of killing an unknown Chinese “Mandarin” and obtain his riches simply by ringing a bell.

This ending has provoked a variety of intense reactions: «Some felt a sense of loss and regret after deleting their saves; others felt liberated from the compulsion to ‘100%’ the game and collect everything; others still were moved to reflect on the game’s ‘message’, and on the terms on which we remember games» (Gallagher, 2018, p.2). Moreover, ending E, reopens the issue regarding the actual nihilism of *NieR: Automata* (Gerrish, 2018). The video game does not provide a univocal answer, also because the final choice is up to the players: they can keep their saves or ‘sacrifice’ everything to support a stranger. In the latter case we can say that empathic advancement has occurred. Previously, *NieR: Automata* had encouraged empathy towards its characters. Now the game is asking its players to empathize with strangers, offering them their own game data, in a one-sided gift.

NieR: Automata opens with a reference to Nietzsche and the game's philosophical inspiration is clearly stated and explicit. We need only consider the names chosen for many of the characters (names of well-known Western thinkers and philosophers). However, there is also an intention that goes beyond Nietzsche and that, among other things, manifests a yearning for the divine.

The aforementioned song *Weight of the World*, part of the soundtrack of *NieR: Automata*, twice repeats «Tell me God, are you punishing me? / Is this the price I'm paying for my past mistakes? / This is my redemption song / I need you more than ever right now / Can you hear me now?» (Okabe, 2017). Although there is no response from any God, what emerges is the empathetic journey through which, even secularly, players can unite and help each other by sacrificing their own saves. It is an act which transcends the boundaries of the video game and which, at least in an infinitesimal part, seeps into life.

A few years ago, Marie-Laure Ryan called the Exercises of Ignatius of Loyola a prefiguration of virtual reality (2001, pp. 115-119). Her position was then taken up and expanded by the Jesuit Antonio Spadaro: «the most authentic destination of Ignatius' text is not simple reading but, precisely, the spiritual exercise that affects life and action. Reading video games would be like consulting a railway timetable: it is useful for those who travel, but it is boring and useless for those who remain still» (2008, p. 158).

This parallel reveals that players are not simply judgmental spectators of the actions of others. The avatars' interaction with the NPCs throughout the game can easily lead to empathy with them. And in *NieR: Automata*, in particular, it is possible to develop empathy towards enemies who are considered objects (even more so than with the main characters themselves, whose bodies are only expendable and rebuildable shells, as long as they manage to preserve the memory of their black box), giving a broader perspective of this feeling. Empathy occurs not only towards what is not human, but also towards materialness itself: from enemy machines to mechanical fish swimming in oil lakes, to the planet itself.

3. Mass Effect

Mass Effect displays some similarities with Isaac Asimov's *Foundation* series (1951-1993), as well as differences. In both, the spatial unit taken into account is the galaxy. In Asimov's books, humanity is the only intelligent species in the galaxy, while in *Mass Effect* there are numerous sentient species. The Foundation's Galactic Empire has its counterpart in the Citadel

Council, which determines galactic policy. Above all, however, in both cases there is a character who is called on to decide the fate of the galaxy as a whole. In *Mass Effect*, this ensures very strong player agency, with scope for intervening in a constant and massive ways in the world of the game.

Again, in terms of the comparison with Asimov, one difference lies in the presence of synthetic organisms. Asimov's robots were very popular from their creation until the space period (in the *I Robot* series, which precedes *Foundation*), but later they almost completely disappeared. In *Mass Effect*, on the other hand, there are many types of robotic creatures; most of them are simple VI (virtual intelligence): advanced computers unable to evolve or develop a thought, widely used in both battle and everyday life, but very far from Asimov's positron robots. AI (artificial intelligence) is banned, and only secret organisations continue to work on it. One of these organisations, Cerberus, equips the Normandy (the protagonist's spaceship) with AI called IDA, but at first it still has glitches that prevent it from working properly. Later, IDA gains greater awareness and self-awareness and becomes an effective member of Shepard's team, even following him into battle via a (gynoid-shaped) mobile combat platform. Then the Geth operate outside the jurisdiction of the Citadel. They are a collective intelligence that has rebelled against their creators, the Quarians, occupying their home planet. Neither Geth nor the AIs like IDA are based on Asimov's Three Laws or any equivalent. They may have limitations in their protocols of action, but even the most advanced synthetics do not have the dilemmas of entities like R. Daneel, the positron robot in the *Foundation* cycle that has influenced the whole galactic history. In *Mass Effect*, however, there are also other synthetic organisms, which have influenced the fate of the entire galaxy: the Reapers, colossal and extremely powerful synthetics that return to the galaxy every 50.000 years to annihilate all higher forms of organic life.

It is precisely the Reapers, in a certain sense, who are the most bound by law. This is the law of the Catalyst, the intelligence commanding them that Commander Shepard encounters in the finale of *Mass Effect 3*. The Leviathans, a very ancient galactic species, created the Catalyst to find an answer to their problem: the organic species of the galaxy, evolved and produced AI, and the latter ended up rebelling against their creators, exterminating them. The Catalyst assumed this circumstance as an existential constant, on which to base its operational protocol: to preserve organic life as a whole, it would be necessary to destroy the most advanced organic species, those capable of creating advanced AI. That is when the Reapers began their reaping cycle. This brutal work of extermination follows a sort of "Zero Law" of the Reapers, modelled on Asimov's Zeroth Law, by which a robot cannot harm hu-

manity in its entirety. Reapers preserve organic life as a whole, selectively exterminating certain species every 50.000 years.

Mass Effect rests on a clear conflict between organic and synthetic, but Commander Shepard is called on to defend not only the organics, but also all the synthetics who do not want to be slaves of the Reapers. The choice is open, and remains in the hands of the player, who can also decide how to act by making different choices. The player can reject this role, avoiding the alliance with the Legion, exterminating the Geth and completely ignoring their requests for peace. But there is also the possibility of being the voice of the synthetics among the organics and defending their desire for survival. Shepard's choices become progressively more meaningful and impactful. In *Mass Effect 3*, for example, there is the possibility of forming an alliance with the Quarians or the Geth. In truth it is also possible for the two peoples to make peace and, consequently, to win the support of both in the war against the Reapers. However, this option can only be achieved if certain requirements are met, through choices made previously.

In the absence of peace, whatever the choice, it will lead to the annihilation of an entire species and the betrayal of those who placed their trust in Shepard. Tali' Zorah (a Quarian friend of Shepard's) will commit suicide in desperation if her people are exterminated, while the Geth Legion will be killed, feeling betrayed and abandoned if Shepard sides with the Quarians. Tali and Legion have fought faithfully for Shepard, and all they could receive in return is the annihilation of their people, unless the necessary requirements are met to achieve peace between the two sides.

Saving the Geth (or forging an alliance between the two peoples) would also enable the latter to obtain a fully autonomous and individual personality. At first, Legion calls himself a "mobile platform" that hosts 1183 different Geth programs and says his name is simply a definition of convenience to mean all the internal components of this enclosure. But when Legion decides to sacrifice himself, to spread the personality he has finally attained among all the Geth, he refers to himself with the pronoun of the first person singular, and no longer plural, affirming his existence as an individual.

The acquisition of a full and effective "life" by the synthetics returns in the finale of *Mass Effect 3*, which is also when Commander Shepard is called on to make his final choice. We see here that *Mass Effect* does not limit itself to recovering Asimov's Three Laws and merging them with other science fiction allusions. The video game goes further by creating an opportunity to experience these problems in a more immersive way and deciding how to act empathically (Faller, 2016).

The Catalyst, endowed with almost divine powers, provides Shepard with three different options to end the eternal galactic cycle imposed by the Reapers.

The first option is Destruction. The Reapers will be annihilated, but all the other synthetics like IDA and Geth will also be destroyed with them. In addition, the Catalyst recalls that in the future advanced AI could be created again, so the problem would recur. It is a choice that gives organic species the confidence that they will not lapse into past errors, but it also poses a qualitative difference between organic life (to be preserved) and synthetic life (to be sacrificed).

The second option is Control. With this option, Shepard will sacrifice his physical body to become the new Catalyst, thereby being able to lead the Reapers. Organic and synthetic are preserved and can live in peace, but their free will is doomed to be inevitably diminished by the constant presence of the Reapers in the galaxy, this time as controllers of the order.

The third solution is Synthesis. In this case, Shepard's sacrifice will lead to the spread of his genetic code throughout the galaxy, combined with the energy produced by the Catalyst. The life of all species will change profoundly, without distinction between organic and synthetic, thanks to the creation of a new hybrid DNA. «Synthesis is the final evolution of life», says the Catalyst. The cycle will end, as will life as it has been understood until then. Organic beings will become partially synthetic, as if they were technologically enhanced cyborgs (and therefore also less prone to diseases and weaknesses), but synthetics will also become partly organic.

This could be understood as the natural progression of what is suggested earlier in the game. In *Mass Effect* organic and synthetic have, after all, the same virtues and the same defects. Many Geth become “heretics” and serve the Reapers, but many organics are also indoctrinated by the latter. The Geth are a potential threat to the galaxy, but no more so than the Krogan or Rachni, other organic species that have sparked huge conflicts in the past. And the Geth, like the Krogan and the Rachni, want not only to survive but also to turn over a new leaf, leave the mistakes of the past behind them and win a recognised place in the galaxy. They are not Asimov's “holy” robots, which despite lacking Christian morality always turn the other cheek (Lippi, 2013), but they are also not vengeful mechanical monsters. This makes them perhaps even more human than robots like R. Daneel, present in Asimov's novels, who is guided by the Three Laws and is extremely intelligent, but precisely for this reason remote from human reality. Giuseppe Lippi (2013) rightly defines Asimovian robots as “people of the law”, not from a Pharisaic perspective, but in their effective generosity and altruism. They are good

robots, ideal creatures, but this is the result of a mental imposition, and not of a free choice underlying their altruistic behaviour. They are the embodiment of the ideal of a good human, but any person acting like them would be a slave to the Law and, in doing good, would lose their free will. It is in this perspective that IDA and the Geth seem perhaps more human, because they can choose morally, which includes the possibility of doing evil. In this sense they are also superior to the Reapers, who have an infinitely more advanced technology, but find solutions mechanically, thinking like machines.

Ultimately, the videogame speaks of empathy and choice, both here and in *NieR: Automata*, albeit with different approaches. In both cases, however, the choice – which is presented to the player through the mechanism of the game, in the interaction – is bound up with a potential fiduciary act. In both cases the actors are stuck in an eternal conflict, between androids and machines in *NieR: Automata* and between organic and synthetic in *Mass Effect*. Certain choices break this balance, conflictual but stable, opening up to uncertainty but also to trust in others. The presence of robots helps to observe everything from a different perspective, grasping it with a certain detachment, deriving from the remoteness of these beings.

It is worth closing by recalling the image of Joker (the pilot of the Normandy) and IDA who, in the final Synthesis of *Mass Effect 3*, emerge together from the spaceship after crashing on a mysterious planet. The two, now united by a shared nature, embrace each other as they look at the horizon. They are the new Adam and Eve, on a planet that is like a garden of Eden. They are the founders of a new life, and this image certainly makes an impact and is strongly positive.

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NieR, Cavia – Square Enix, 2010.
NieR: Automata, PlatinumGames – Square Enix, 2017.
Portal, Valve Software – Valve Software, 2007.
Portal 2, Valve Software – Valve Software, 2011.
Primordia, Wormwood Studios – Wadjet Eye Games, 2012.
Ratchet & Clank, Insomniac Games – Sony Computer Entertainment, 2002-2021.
Resident Evil Village, Capcom – Capcom, 2021.
Shadow of the Colossus, Team ICO – Sony Computer Entertainment, 2005.
Summoner 2, Volition – THQ, 2002.
System Shock, Looking Glass Studios – Origin Systems, 1994.
System Shock 2, Looking Glass Studios / Irrational Games – Electronic Arts, 1999.
That Dragon, Cancer, Numinous Games – Numinous Games, 2016.
TimeSplitters 2, Free Radical Design – Eidos Interactive, 2002.
The Girl and the Robot, Flying Carpets Games – Flying Carpets Games, 2016.
The Talos Principle, Croteam – Devolver Digital, 2014.
VirtuaVerse, Theta Division – Blood Music, 2020.

8. From *Mecha* to Human Clone: The Anthropomorphic Robot in Exported Chinese Video Games

by Stefano Giovannini

1. Chinese video games' sociocultural impact on Western players'¹ imaginary

In today's media landscape, China plays a leading role in the production of traditional and new media alike: in 2019 (last year before the SARS-CoV-2 pandemic), its book market's business value rose to c. ¥102B (c. \$16B)², against US's \$25.93B³ and UK's £6.3B (c. \$8.27B)⁴. In the same year, it produced 850 feature films⁵ (almost four times the US's⁶) and about half the world's total amount of TV-series⁷. While these figures signal the urgency of studying Chinese media's impact worldwide, it is the video-game sector that demands the greatest attention from whomever aims at understanding today's China's cultural imaginary's worldwide impact, for at least three reasons:

1) video games are «the most lucrative entertainment industry by far» (Richter, 2020) and China is their largest market⁸;

¹ I avoid usage of the widely adopted term “gamer” as it lacks a shared definition (see De Grove *et al.*, 2015; Shaw, 2011; Williams *et al.*, 2008).

² See <https://publishingperspectives.com/2020/01/china-book-market-2019-update-open-book-beijing-conference/>.

³ See <https://publishers.org/news/aap-statshot-annual-report-book-publishing-revenues-up-slightly-to-25-93-billion-in-2019>.

⁴ See <https://www.publishers.org.uk/publishersassociationyearbook2019>.

⁵ See <https://www.statista.com/statistics/260392/number-of-feature-films-produced-in-china>.

⁶ See https://en.wikipedia.org/wiki/List_of_American_films_of_2019.

⁷ See <https://variety.com/2019/tv/news/netflix-iqiyi-youku-tencent-amazon-china-drama-s-1203378604>.

⁸ See <https://www.weforum.org/agenda/2021/08/which-countries-have-the-largest-video-gaming-markets>.

- 2) video games are osmotically spread in the West: considering US and UK as North American and European samples respectively, video games' relevance (cultural, economic and social) in those areas derives from the fact that 67% of US (ESA, 2021) and 62% of UK (Ofcom, 2021) citizens are video game players;
- 3) Chinese video games' export has been on the rise since the second half of the last decade, with a flow of products succeeding in the West, where they mostly arrived via Valve's digital platform Steam and the mobile stores Google Play and Apple App Store⁹.

The video-game industry plays a primary role in China, under the cultural, economic and social respects¹⁰, and Chinese video games' impact is increasingly spreading worldwide, supported by the internationalisation of colossi like Tencent and NetEase, which have already opened offices in Holland (the former only) and North America. Given the sociocultural connotations of the medium¹¹, it seems important to observe Chinese video games' "impact" ("caused changes") on Western (sampled as anglophone¹²) video-game players' culture.

⁹ E.g.: *Arena of Valor* (TiMi, 2016), *ICEY* (FantaBlade Network, 2016), *King of Avalon* (KingsGroup, 2016), *Lost Castle* (Hunter Studio, 2016), *Guns of Glory* (KingsGroup, 2017), *Knives Out* (NetEase, 2017), *Mafia City* (Yotta, 2017), *Mirror* (Kagami, 2017), *Rules of Survival* (NetEase, 2017), *Chinese Parents* (Moyuwan, 2018), *Dragon Cliff* (Meta Interaction, 2018), *Fox Hime Zero* (AsicxArt, 2018), *Gujian 3* (Aurogon, 2018), *My Time at Portia* (Pathea, 2018), *PUBG Mobile* (LightSpeed & Quantum, 2018), *Ring of Elysium* (Aurora, 2018), *Rise of Kingdoms* (Lilith, 2018), *The Scroll of Taiwu* (ConchShip, 2018), *Z Day* (KingsGroup, 2018), *AFK Arena* (Lilith, 2019), *Amazing Cultivation Simulator* (GSQ, 2019), *Bloody Spell* (Yilong, 2019), *Conqueror's Blade* (Booming Tech, 2019), *Muse Dash* (Peropero, 2019), *Hardcore Mecha* (RocketPunch, 2019), *State of Survival* (KingsGroup, 2019), *Tales of the Neon Sea* (Palm Pioneer, 2019), *Biped* (NEXT, 2020), *Bright Memory* (FYQD, 2020), *Genshin Impact* (miHoYo, 2020), *Neon Abyss* (Veewo, 2020), *Sands of Salzaar* (Han-Squirrel, 2020), *Bright Memory: Infinite* (FYQD, 2021) *Deathly Stillness* (Chen Jiacheng, 2021), *Dyson Sphere Program* (Youthcat, 2021), *F.I.S.T.* (TiGames, 2021), *Gunfire Reborn* (Duoyi, 2021), *Naraka: Bladepoint* (24 Entertainment, 2021), *Tale of Immortal* (Guigu, 2021) and *Mirror 2* (Kagami, 2022).

¹⁰ See Cao and Downing, 2008; Chew, 2019; Fung, 2014; Golub and Lingley, 2008; Kim and Kang, 2021; Liao, 2016; Liboriussen *et al.*, 2015; Nie, 2013; Simon, 2021; Wang and Li, 2012; Yu, 2018; Zhang, 2013; Zhang and Fung, 2014.

¹¹ See Berger, 2017; Dyer-Witthof and De Peuter, 2009; Fung, 2016; Goldberg, 2015; Gunkel, 2018; Hart, 2017; Jahn-Sudmann and Stockmann, 2008; Kirkpatrick, 2013, 2015; Muriel and Crawford, 2018; Parkin, 2017; Sageng *et al.*, 2012; Šisler *et al.*, 2019; Williams and Smith, 2007; Wolf, 2021.

¹² English is the worldwide video games' lingua franca: studying anglophone players thus seems the most reasonable way of sampling the international video-game players' "imagined community" (Anderson, 1983).

Considering the tightness of the links between People's Republic of China's government and the major Chinese technology companies like Tencent¹³, as well as the fact that the Communist Party of China invests significantly in cultural exports as a means for soft power¹⁴, the abovesaid impact appears to derive from a political and industrial planning:

Since 2011, the Chinese government has been fomenting a strategic plan to build 'a culturally strong nation'. This plan aims to encourage the production of cultural artefacts, promote cultural branding, and help cultural products gain entry to the international market by improving access, fostering capable and competitive cultural industries, increasing investment in such industries, and developing emerging industries like the cultural and creative industry, animation, and games (Sun, 2016, p. 232).

Chinese Music and Digital Association's Game Working Committee's *2020 China Gaming Industry Report* ends so:

Video-game export stands an important direction for China's cultural export. It serves the development of both big and small enterprises and will continue to increase rapidly, widening its market and diversifying, so that ever more foreign players be deeply fascinated with Chinese culture (GPC, 2020, p. 28; my translation¹⁵).

Compared to that of other media, the importance of video games as a way for Chinese culture to enter foreign imaginaries is exemplified by the following data:

1) the best-selling Chinese novel by 20th January 2022 on Amazon.com¹⁶, Liu Cixin's *The Three-Body Problem*, sold 3.3M copies (translated into

¹³ See Melnik, 2019; Shen, 2019.

¹⁴ See Glaser and Murphy, 2009; Li, 2008; Luo, 2006; Pan, 2013; Su, 2010; Sun, 2016; Wang, 1993; Wu, 2017, 2018; Zhang, 2017. As Li (2008) writes: «The Chinese cultural sector lags far behind its Western counterparts in competing for world business [...] This school of thought is concerned about China's soft power, but mainly from the standpoint of otherwise being marginalized by Western cultural business juggernauts, particularly by the predominant position of the United States, as regards movies, popular music, television programmes, fast food and fashion» (p. 293).

¹⁵ I possess an HSK6 certification of proficiency in Chinese, and a certification of completion of advanced Chinese studies released by Beijing Normal University. I worked several years as a Mandarin-Italian-English legal translator.

¹⁶ See <https://www.amazon.com/Best-Sellers-Books-Chinese-Literature/zgbs/books/10397>.

- 30 languages) outside China by the end of 2021, as reported by its US publisher Tor Books¹⁷;
- 2) Chinese Sci-Fi blockbuster *The Wandering Earth* (Guo, 2019) had earned c. \$5.97M by March 2022 in North America¹⁸, having been seen in cinemas c. 663.5K times, considering the average North American ticket's cost of c. \$9;
 - 3) the most played mobile game from China, *PUBG Mobile* (by Tencent-owned LightSpeed & Quantum, 2018), boasted 40.5M+ ratings on Google Play Store¹⁹ only on 20th January 2022 (Fig. 1).

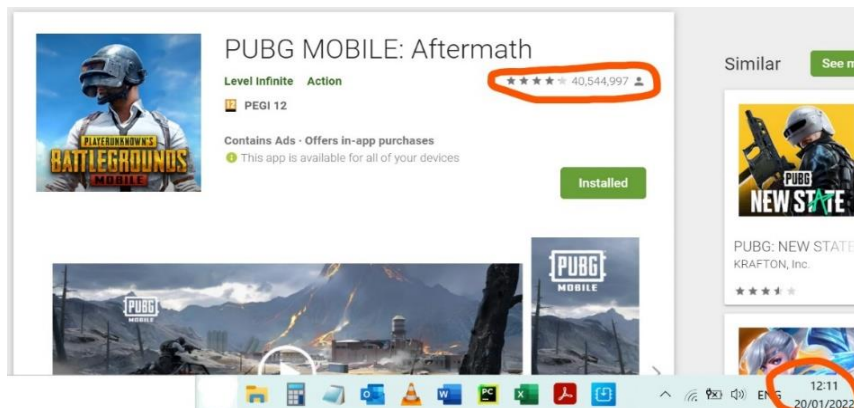


Fig. 1

Apart from *PUBG Mobile*, other worldwide successful Chinese battle-royale²⁰ titles including elements of the Science-Fiction (SF) imaginary are *Rules of Survival* (NetEase, 2017) and *Ring of Elysium* (Tencent, 2018). Thematically, SF shapes a number of exported Chinese video games, such as those analysed in this chapter, and many more (e.g.: *Biped* [NEXT, 2020]; *Bright Memory* [FYQD, 2020]; *F.I.S.T.* [TiGames, 2021]; *Hardcore Mecha* [RocketPunch, 2019]; *Tales of the Neon Sea* [Palm Pioneer, 2019]. In line with the present book's theme, this chapter focusses on those featuring a significant presence of the “anthropomorphic robot” (AR), analysing what kind of AR-related imaginary China is conveying to the West.

¹⁷ See http://www.china.org.cn/arts/2022-01/14/content_77989267.htm.

¹⁸ See https://www.boxofficemojo.com/title/t7605074/?ref_=bo_se_r_1.

¹⁹ Android is the most widespread mobile OS worldwide.

²⁰ Battle-royale is a video-game genre in which the player's objective is that of being the last survivor in a given area, which typically he can achieve by eliminating enemies.

2. The AR as a long-standing theme in Chinese SF (CSF)

As shown by the examples below and according to related scientific literature (Hartley, 2021; Isaacson, 2019; Li, 2021; Wu, 1994; Wu *et al.*, 2018), AR has been a constant presence in CSF, alternatively threat and aid to man's existence, following diverse degrees of human-likeness.

It dates back at least to Daoist classic *Liezi* (4th century CE?), specifically the story of Yan Shi at the court of King Mu of Zhou, whom the former presents with an automaton made of “leather, wood, glue, paint, coloured powder etc.²¹” capable of singing, dancing and even (which is why the king perceives it as a threat) wooing women. SF critic Wu Dingbo identifies three more Chinese robot stories from pre-modern times: Zhang Zhuo (ca. 660-740)'s *The Complete Records of the Court and the Commoners* (*Chaoye qianzai*) includes one tale about a robot monk who begs for alms, and the story of a robot dancing girl; Shen Kuo (1031-95)'s *Brush Talks from Dream Brook* showcases a tale about a robot rat-killer. Xie Zhaozhe (1567-1624)'s *Five Miscellaneous Morsels* (*Wu zazu*) features the story of the wife of Three Kingdoms' strategist Zhuge Liang building wooden robot helpers (Li, 2021).

However, CSF's start is usually set at the beginning of the 20th century (with works such as 1902's Liang Qichao's *The Future of New China*, 1904's Huangjiang Diaosou's *Tales of the Lunar Colony* etc.). What seems sure is that AR remained an important presence throughout CSF's history. Its imagined helper-threat duality is evident in 1978's *Flying to Sagittarius* novel by Zheng Wenguang: while 15-year-old Shao Jilai initially expected ARs to be helpers based on her novel-derived imaginary, she actually faces them as enemies later on. Shao Jilai's expectations are reality in Ye Yonglie's *Little Genius Roams the Future* (1978), where “stainless steel” robots are used as domestic servants or manual and brain workers. In Xiao Jianheng's *Qiao the Younger Fell Ill* (1982) the AR substitutes man in performing tedious tasks. The same concept gave birth a few years later to Huang Jianxin's fictional film *Dislocation* (1986). Both stories' ARs malfunction. In Han Song's *Red Sea* (2004), ARs escape humans' control and take their place as masters. AR as a human replica was recently portrayed by the TV-series *Nihao, Anyi / Humans* (2021-).

²¹ My translation from the contemporary-Chinese version, available at https://www.8bei8.com/book/liezi_6.html.

3. Games' selection

Analysis of AR-related Chinese video games being this chapter's core, I devote this paragraph to detailing their selection criteria. I selected PC games based on their Steam success, mobile ones based on their App Store success. As Steam sources I used my Library and Wishlist, a set of curators' lists²² and the list of Steam games on Indienova.com²³. I chose iOS games from those listed in Sensor Tower's top-100 charts for each of three categories ("Free", "Paid" and "Top Grossing"), updated on 6th January 2022 for the US and the UK (sampled as Great Britain by the market tracker).

Apart from considering the games' success, I filtered them based on their Chinese origin: for instance, I omitted *League of Legends: Wild Rift* (by Tencent-owned Riot, 2020) because its ARs Blitzcrank and Orianna were created by Riot prior to its acquisition by Tencent (17th December 2015), thus are not Chinese; neither is Camille, designed by Michael Maurino. This consideration leads me to introduce the four parameters adopted for choosing games based on their ARs, which had to:

- 1) have been created by a Chinese designer working for a Chinese company;
- 2) belong to a game successful among Anglophones;
- 3) be relevant to the game's experience;
- 4) be anthropomorphic artificial animated entities.

To clarify 2 to 4:

- 2) by "successful" I mean "with above-average sales and/or quantity of ratings".

For Steam games' averages, I refer to SteamSpy data from 2015, when the average number of copies sold/owned for a Steam game was 32.5K²⁴, combined with an estimate provided by industry-veteran Simon Carless²⁵, according to whom before 2017 one Steam review equalled c. 81 copies downloaded, from 2017 to 2019 c. 50-75 and in 2020 c. 25-50. Since a game's commercial life-cycle is multiyear, I used the average c. $((81 + 62.5 + 37,5) / 3) = c. 60.3$, thereby considering only those Steam games having at least $32.5K/60.3 = 539$ **English reviews**.

²² IDs: 10566883, 25212199, 30253125, 32768202, 32815792 and 33928296.

²³ See <https://indienova.com/steam/chinese>.

²⁴ See <https://galyonk.in/some-things-you-should-know-about-steam-5eaffcf33218>.

²⁵ See <https://newsletter.gamediscover.co/p/how-that-game-sold-on-steam-using>.

As for iOS games' averages, according to AppTentive²⁶, in 2021 the average number of **ratings**²⁷ per app on App Store was **131,598**, which I set as the consideration threshold.

Please note that these figures might have changed by the time you are reading this, and new relevant games will likely have been released: e.g., *ANNO: Mutationem* (Lightning, 2021; expected on Steam by 17th March 2022²⁸) and *Metal Revolution* (NExT, 2019; expected on Steam by July 2022²⁹).

- 3) by “relevant to the game experience” I mean that ARs must be a necessary component of the game’s discourse. E.g., I excluded *Cyber Hunter* (NetEase, 2019) because while it featured a cyborg as a selectable avatar, it apparently lacked in-game lore references, and the cyborg’s robotic nature seemed to me irrelevant for the game’s concept, to the point that it was usually described online without mentioning it³⁰.
- 4) by “anthropomorphic artificial animated entities” I mean that I consider ARs as artificial entities imitating human appearance (one head, one torso and four limbs interrelated to remind the viewer of a human body’s proportions) and movement. I thus excluded the “shipgirls”³¹ of *Azur Lane* (Shanghai Manjiu & Xiamen Yongshi, 2017), since they are not ARs, but the result of a merely conjectural, rather than physically coherent, design, as proven by their part-girl-part-battleship illustrations. Instead, I see *mechas*, androids, artificial humans and human clones as ARs. I consider cyborgs as ARs too since they result from such a modification of man, merged with artificial parts, that they have lost their humanity. All ARs are artificially created in a more-or-less-human-like shape for a task, in this sense being (1) “orphans”, parentless since they are not human, and (2) “slaves”, their existence being conditioned to performing a task, i.e., (1 + 2) “robots”³².

²⁶ See <https://www.business2community.com/mobile-apps/app-ratings-and-reviews-2021-benchmarks-02396808>.

²⁷ I use the number of ratings instead of reviews for iOS apps since the latter’s figures are not publicly displayed on the store.

²⁸ See https://store.steampowered.com/app/1368030/ANNO_Mutationem/.

²⁹ See <https://www.nextstudios.com/mr/pc/en/faq.html> (25th January 2022).

³⁰ E.g.: https://store.steampowered.com/app/1209040/Cyber_Hunter; <https://www.zhihu.com/question/326702602>.

³¹ Resulting from a process of “personification” (*gijinka*; see Galbraith, 2009; Sone, 2014) inherited by “ACG” (Anime, Comics and Games) culture from the Japanese *otaku* notably since the Nineties (see Iwabuchi, 2002).

³² See <https://www.etymonline.com/word/robot>.

I thus selected, incidentally showing Steam's prevalence on mobile stores for AR-themed Chinese games' distribution (data updated on 25th January 2022):

- *Dyson Sphere Program* (Youthcat, 2021, early-access; 15,534 overwhelmingly positive³³ English reviews);
- *Eastward* (Pixpil, 2021; 2,005 very positive English reviews on Steam);
- *Honkai Impact 3rd* (miHoYo, 2016³⁴; 1,631 mixed English reviews on Steam);
- *ICEY* (FantaBlade Network, 2016; 2,583 very positive English reviews on Steam);
- *Mobile Legends: Bang Bang* (Moonton, 2016; 392.8K ratings on App Store);
- *Super Mecha Champions* (NetEase, 2021; 2,623 English reviews on Steam).

4. ARs in CSF video games

In this paragraph I describe the aforementioned analysis's results. Please consider that length unevenness of different games' analyses is due to the diverse complexity of each game's lore.

In *Dyson Sphere Program* (DSP) the player's avatar is an anonymous engineer, never shown: what is displayed is Icarus, the *mecha* he controls to perform a set of core tasks, like flying through space, strip-mining planets and building factories. At the time of writing, Icarus lacks personality, although in January 2022 the developers added aesthetic customisation options³⁵: «Currently the customized *mecha* function can only change the appearance of Icarus, but in the future it may contain a certain impact on the basic values of Icarus, such as durability, weight, power consumption, etc.»³⁶. Due to the lack of other characters and fighting (developers are working to add optional enemies³⁷), the gameplay is a mere series of space

³³ As noted by Lin *et al.* (2018, p. 192), «89% of the EAGs [early-access games] receive an equally or higher positive review rate during their early access stage». Also (Baas, 2021): «If a game has received most of its reviews between 2014 and mid 2019, its review score will be roughly 5% lower than comparable games with most reviews given after mid 2019».

³⁴ On Steam only since 2021.

³⁵ Version 0.9.24.11182 (see: <https://store.steampowered.com/news/app/1366540/view/3144076654124101385>).

³⁶ See <https://store.steampowered.com/news/app/1366540/view/3144076654119503691>.

³⁷ *Ibid.*

exploration and planetary resource exploitation aimed at building a “Dyson sphere” (Dyson, 1960). DSP’s success suggests:

- 1) the existence of a widespread interest towards futuristic aerospace technologies, which are a key theme in China’s current technological imaginary as reflected by its SF production (e.g., the movie *The Wandering Earth*);
- 2) the appeal of controlling a *mecha* as a tool for projecting oneself into such imagined context, i.e., the dream of piloting a “Japanoid” (Tatsumi, 1993, 2002; Ueno, 1996) AR.

Piloting *mechas* is also the core of *Super Mecha Champions* (SMC), a Japanoid online battle-royale whose lore is as basic as stating that a city (incoherently named either “Alpha” or “*Mecha*” throughout text and video subtitles on the website³⁸) holds a *mecha*-battling contest, for unsaid reasons. Nineteen *mechas* participate in the tournament, the winning condition being to be the last one standing. SMC lacks any playable characters’ “call to adventure” (Campbell, 1949), i.e., their motivations for participating in the contest, since no clear connection is made between it and what seems to be an ongoing world-invasion by giant robots. Pilots are described as usually Japanese nationals (N=12), the origin of other six unstated. No information at all is provided about the remaining one *mecha*’s pilot. The lore appears scant and inconsistent: e.g., one of the two protagonist’s backstory shows her, in the invasion context, as a six-year-old wishing to build a *mecha* to participate in the competition; however, by the time she takes part in it she is already an adolescent, implying that years have passed, which contrasts with the declared urgency of “beating up the bad guys” she had stated as a child. Success of this quality of products proves the irrelevance of world-building for the battle-royale video-game genre and concurrently – which is interesting for this study – the hugeness of the appeal of *erciyuan*³⁹-styled *mecha* for Chinese and foreign players.

A complex lore is that of *ICEY*, an *erciyuan*-looking meta-gaming experience disguised as a hack-and-slash⁴⁰. The plot mixes dystopia à la *Matrix* with horror references, e.g., to R. W. Chambers’s *The King in Yellow* (1895), and a series of H. P. Lovecraft’s citations (the Nameless City, the Necro-

³⁸ See <http://www.supermechachampions.com/index.html#page04> (accessed on 1st March 2022).

³⁹ Mandarin for the Japanese “*nijigen*”, i.e., “2D”. See Bin, 2020; Lin and Gao, 2016.

⁴⁰ Hack-and-slash is a video-game genre in which the player must cut his way through squads of enemies by defeating them using blades (swords etc.).

nomicon etc.). *ICEY*'s developer Mark Xiao confidentially explained to me that bodiless *ICEY*, the game's main character, was designed as a cyborg related to the in-game virtual world it inhabited, which is actually digital as per the game's lore. Indeed, *ICEY*'s origin and that of its replicas (e.g., *UCEY*; perhaps *ICEY* itself is a replica) are shown as laboratorial productions. Within a dystopically cyclical timeline, they are created by a Judas (seemingly a cyborg too), in an effort to use "God's Chosen Child" (神选之子 *shen xuan zhi zi*) to attract the god "Hastur" (quoting A. Bierce's *Hai'ta the Shepherd*, 1893). The semblance of the "Chosen Child" and its replicas is that of an *erciyuan* female cyborg fighter. Among *ICEY*'s and its replicas' opponents, some bosses, originally among the most important of Judas's followers, are pictured as either *mechas* (Ideon and Thor) or androids (Dahal, Jack and Trinity).

A similar appearance to *ICEY*'s characterises *Honkai Impact 3rd* (HI3)'s "Valkyries" (女武神 *nüwushen*). By paying attention to the game's lore, one learns that, differently from their predecessors, today's Valkyries are either completely created in a laboratory or artificially enhanced by genetic engineering. Occasionally, they pilot and/or fight *mechas*. At the beginning of the game, they either work for or cooperate with the Europe-based company "Schicksal" (German for Chinese 天命 *tianming*, "destiny") to fight monsters, *mechas* and "Herrschers" (German for Chinese 律者, *lüzhe*, "ruler"), superpowered humanoids originated by the destructive energy of "Honkai" (malapropism for Japanese 崩壊 *hōkai*, "collapse") to extinguish humanity every time it reaches a certain level of civilisation (the "3rd" in the title refers to the current Honkai, while "Impact" may be a reference to homonym cataclysms in 1995's "landmark"⁴¹ Japanese *mecha*-themed anime *Neon Genesis Evangelion*). The game's protagonist K-423 is the first successful result, following 422 failures of an experiment conducted by Schicksal's leader mixing the genes of a Kiana Kaslana with a dead Herrscher's core. The fact that the first K-423's "battlesuit" (armour) is of a "*mecha*" (机械 *jixie*, lit. "mechanical") type has no relation with K-423's artificial nature: Valkyries' battlesuits pertain to different "elements", in a *Pokémon*-like logic. With the unfolding of the plot, Valkyries evade their creators' control and start pursuing individual goals, thus becoming more "transhuman" (see Ranisch and Sorgner, 2015) and less robotic.

Since in the current "Video-Game Era" it would not be surprising for the medium to (consciously or unconsciously) convey China's nationalistic

⁴¹ Kacsuk, 2021.

impulses like martial novels and movies before it (Lu, 2020), which it has sometimes explicitly done (Nie, 2013), I hypothesise that culturally conscious and/or “unconscious” (Gu, 2013) processes informed the game’s lore as follows.

- 1) HI3’s story is an allegory of Chinese civilisation’s self-perception, whose defining trauma is a collapse/Honkai known as the “Hundred-year-long national humiliation” (百年国耻 *bainian guochi*, specifically 1839-1949; see Fairbank *et al.*, 1978, 1980, 1983, 1986; Jian, 2001; Scott, 2008), during which the Celestial Empire died due to its inability to ward off Eurasian invaders/Herrschers, perceived as demons (Dikötter, 2015). Like the Herrschers, moved by the cataclysmic force of an undefined “Honkai will” (崩坏意志 *benghuai yizhi*), cyclically attack humanity, whenever it becomes too advanced, so Western and Japanese imperialists historically embodied a lurking menace to modern China. Cyclicity, meant as alternance between opposites, is a fundamental of Chinese metaphysics⁴², which in HI3’s lore takes the form of an everlasting tension between the apex of human civilisation and its annihilation.
- 2) The leveraging of Honkai-produced substances for human enhancement to contrast Honkai itself is a metaphor for China’s appropriation of the same foreign technologies that attacked it, reused to “save the nation” (救国 *jiuguo*; see Mitter, 2004): in their being enhanced by study and adaptation of foreign/enemy materials, the Valkyries allegorically represent the Chinese people appropriating invaders’ technology.
- 3) Valkyries’ expendability celebrates that of the patriots: the sacrifice theme seems testified by the fact that their enhancements are called “stigmata” (圣痕 *shenghen*) and some of their battlesuits are nunnish and/or furnished with Christian crosses (e.g., K-423’s Divine Prayer), thus being onomatologically and visually remindful of Christianity (i.e., Jesus’s sacrifice). This last point’s significancy may be attenuated by Liu’s consideration (2019:155) that Christian symbology is a trope of “*yuri*”, i.e., a Japan-born media genre focussed on love relationships between human or anthropomorphic females, which is the case of HI3 (see below).
- 4) Valkyrie Fu Hua (符华) represents China: it (ex-human) was born in and protects “Shenzhou” (神州, lit. “the divine land”, an ancient name for “China”); it is over 50K years old, the oldest Valkyrie, and China boasts its historical longevity (Lee, 2002); one literal translation of its name is “Coincide with China”; like China in its self-perception, Fu Hua is the only survivor of a series of various-scale calamities; it notably defeated a

⁴² See <https://plato.stanford.edu/entries/chinese-metaphysic>.

“Ganesha” Honkai beast, which, in the context of the Sino-Indian rivalry (see Paul, 2018; Vaughn, 2018), is readable as China defeating India; its lore is linked to that of two other Valkyries, 伏羲 *fxi* and 女娲 *nüwa*, inspired by Chinese mythology. Nor does the fact that Fu Hua, like all Valkyries, is white contrast with this hypothesis, because (1) *erciyuan* typically elects belonging to the white race as the distinguishing graphic trait of its “culturally odourless” (Iwabuchi, 2002) characters and (2) admiration for the white (especially Anglo-Saxon) race’s civilisation and aesthetics has coexisted with the desire to dethrone it in China at least since the Qing (Dikötter, 1990, 2015; Li, 2020; Qian, 2021).

Valkyries’ “yuriness” arguably stems from the fact that, when they are not battling, they are forced to cohabit in panoptical dormitories, having no occasions to meet with male characters (the captain of their battleship, interpreted by the player, is never shown, monitors them constantly and can court, move and touch them, his sex unknown). Their condition possibly also derives from other psychological traumas, frequent in their biographies: e.g., some of them were the subjects of genetic experiments in the “Babylon Labs”, located in the Siberian tundra, where orphans were taken to have their resistance to Honkai tested (this lore’s segment seems to me an allegory – conscious or unconscious – of Japanese invaders’ biological and chemical-warfare experimentation conducted on the Chinese people from 1932 to 1945 [Harris, 2002]).

For all the above reasons, I deem the Valkyries as instances of what Morrey (2012) calls “anti-natural evolution” (of the human) in analysing the literary figure of M. G. Dantec’s 1999’s *Babylon Babies*’s M. Zorn, whose transhumanity is tightly connected to her schizophrenia and neural implants.

While all Valkyries share a similar fate, the present mapping only considers those either completely artificial or genetically engineered, namely A-310, B. Zaychik, N. Cioara, Elysia, Fu H., K-423, Mobius, L. Olenyeva, R. Olenyeva, Raiden M. and S. Vollerei. I call the original type of AR that they constitute the “yuri-warrior anthropomorphic robot (YWAR)”.

Seven ARs are found in *Mobile Legends: Bang Bang* (MLBB), where they belong to the “mechanical” race, one of the 21 populating the Land of Dawn. The story of 5/7 them is linked to either a Laboratory 1718 or a “city of science” Eruditio, the seats of their production. Founded by the well-meaning Dr Baker, who used it for instance to produce the well-doing Peace Android Prototype 1, the lab was taken over by a team of mad scientists weaponizing humans by artificial implants. Such was the case of Saber, who

wilfully stipulated an agreement with the scientists to be turned into a cyborg, later destroying the lab in a sudden urge for freedom. In so doing, it partially wiped out an experiment by a Professor Octavius, who, in disagreement with his colleagues, was trying to produce two androids, Alpha and Beta. While Beta was destroyed in Saber's fury, Alpha was left unharmed. Since its artificial awareness was linked to Beta's, it developed for Saber a hatred-like attitude, thus starting a revenge-like task. Beaten by Saber, it was spared out of pity and mocked at for its lack of a "soul", what spurred it to start searching for one. Ex-human Johnson was turned into a transformer-cyborg as a post-accident treatment by Eruditio's scientists: it can now turn himself into a sports car if needed, while gladly serving as the city's defender. Ex-human X.Borg instead is a sworn enemy of Eruditio's, which it blames for its hometown's destruction, although Eruditio's scientists saved its existence when it was severely injured, turning it from human to cyborg.

Like *ICEY*'s Ideon and Thor, MLBB's *mecha* SMART-01 is sentient: the unintended result of an experiment aimed at producing a simple *mecha*, which instead gave birth to an autopiloting one able to receive orders telepathically from genetically apt individuals. Finally, Atlas is what I call a "cybold" ("cyborg" + "Old"), its origin set in a lore reminiscent of Lovecraftian horror: an ancient abysmal creature broken free from a seal placed on it by other Old Ones, Atlas merged its body with a *mecha* suit (the *Mecha Sentry*) found at the bottom of the ocean.

Cyclicity and sacrifice are also core themes of *Eastward*, a 2D story-driven RPG inspired by Nintendo classics. An important character is Daniel, an android that decides to have an emotional chip installed, to better simulate a real child to please its guardian William (who wants to be a father), according to a trope common to Western SF (e.g., Spielberg's *A.I.*, 2001) and fantasy (e.g., Collodi's *Pinocchio*, 1883; see Sawers, 2010). *Eastward* presents this kind of child-engineering as tragic: after having had its long-desired "emotion chip" installed, Daniel starts acting strangely, ultimately sacrificing itself to save the other main characters. The game's ending shows William at home with his biological son, also named Daniel, while the head of the robot rests on a desk.

Prior to the final battle, it is suggested that the seemingly human population of the game's world was industrially produced by robots executing the will of a superior being, "Mother", who would cyclically command mankind's extermination and rebuilding, to produce increasingly improved human beings. What seems to contradict such a hypothesis is the high degree of variety in the humans produced, since by definition perfect beings must

be identical to each other (they must attain the perfect degree in all havable qualities). However, the ontological difference between humans and ARs in the game is opaque.

In addition to Daniel, the other ARs among the main characters are Isabel, a YWAR programmed to love Alva (possibly a clone⁴³) by the latter's grandfather, and the three Solomons, different-aged clones serving as antagonists.

5. Conclusion

This chapter showed that AR is a long-standing presence in CSF, throughout different media. Due to the growing, and already superior to other media's, socioeconomic importance of the video-game medium worldwide, being China its largest market I highlighted the urgency of studying Chinese video games' impact abroad, in addition to the influence they exert domestically, at least from the cultural, economic and social points of view. Focusing on the cultural aspect, and in line with this book's theme, in this chapter I discussed a particular SF trope, i.e., the AR, locating it in Chinese exported video games, to analyse the characteristics of this piece of cultural imaginary reaching Western video-game players from China, via PC and mobile games.

The empirical analysis, conducted on a sample of strictly selected successful titles, has shown firstly that AR is an important element in a number of successfully exported Chinese video games, throughout different genres and with a multiplicity of declinations, some of which probably familiar only to players accustomed to Japanoid contents. Among the products analysed, which do not seem to convey any distinctively Chinese-cultural reference, at least AR-wise, HI3 represents an exception in its valorising the Fu Hua character and being readable as a whole as an allegory of Chinese cultural self-positioning and identity building related to foreigners following the Hundred-year-long National Humiliation.

Furthermore, analysis of those products allowed me to typologize ARs in Chinese video games successfully exported to the West, as follows. I argue that there are six types of AR, i.e., from the least to the most human-like in terms of appearance and self-awareness: *mecha*, sentient *mecha* (*S-mecha*),

⁴³ Isabel cloned Alva multiple times, and it is unknown whether the awoken one is the original.

android, cyborg, artificial human (YWAR in 100% examined cases) and human clone⁴⁴.

Whereas *mechas* and the examined androids are apparently artificial (the latter for their lack of skin), to discern cyborgs, YWARs and human clones from humans more information is needed, either direct (textual) or indirect (observed super- or trans-human behaviour). All these belong to ARs' different types because their bodily structures resemble those of human beings ("anthropomorphic"), and they are parentless slaves ("robot"). Table 1 links this categorisation to the cases analysed above.

Tab. 1

<i>Mecha</i>	<i>S-mecha</i>	<i>Android</i>	<i>Cyborg</i>	<i>Yuri warrior</i>	<i>Human clone</i>
DSP's Icarus; SMC's 19 mechas	ICEY's Ideon and Thor; MLBB's SMART- 01	<i>Eastward's</i> Daniel; ICEY's Dahal, Jack And Trinity; MLBB's Alpha, Peace Android Prototype 1	<i>ICEYs</i> ICEY, Judas, UCEY; MLBB's Atlas (cybold), Johnson, Saber, X.Borg	<i>Eastward's</i> Isabel; HI3's B. Zaychik, N. Cioara, Elysia, Fu H., Mobius, L. Olenyeva, R. Olenyeva, Raideen M., S. Vollerei	<i>Eastward's</i> Alva (?) and the three Solomons; HI3's A-310 and K-423

⁴⁴ The conceptual difference distinguishing cyborgs, artificial humans and human clones is that a cyborg results from the fusion of a human with artificial parts, whereas artificial humans and human clones are entirely manufactured, the former originally, the latter by replicating human DNA.

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The theme of the humanoid robot has been entwined with media, literary and audiovisual imagery ever since the origins of the culture industry. In its various versions, it has shaped visions and more often fears fuelled by modernity and technological progress. The humanoid robot is both a reality that today is taking on material and concrete forms and an imaginary and fantastic construct that embodies meanings and sensibilities established in decades if not centuries of fictional representations.

This volume seeks to offer different perspectives of analysis on the cultural discourses related to robots, as they emerge in contemporary representations in film, television, and videogames; to detechnologise this object of study, considering it in its dimension as a cultural construct, between fiction and reality, and rethinking the definition of the fundamental features of the idea of the human and the margins of its configurability.

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