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Could a robot become a successful actor? The case of Geminoid F

Summary

Could a robot be a good actor? Could it build an effective relationship of understanding and empathy with other actors or spectators? This paper offers just a glimpse, a first trace of research of a now important phenomenon that affects the Performing Arts, namely the integration of artificial agents both in the creative process and in the theatrical performance. It will be treated for this purpose by the example of the android *Geminoid F*, protagonist of the play *Sayonara* (2010) by Japanese director Oriza Hirata, created by Osaka University's robotics expert Professor Hiroshi Ishiguro, whose gestures have been learned by imitating those of a real professional actress. Watching this android act is an alienating aesthetic experience: from the position of the audience, the boundary between human and robot is unclear. *Geminoid F* was chosen as co-star in the film of the same name, shot in 2015 by the internationally acclaimed Japanese director Koji Fukada, precisely because of her expressive qualities, as effective as those of a human actor, capable of arousing an empathic reaction in the viewer.

Keywords: android theatre, actroid, embodiment, entanglement, performing arts

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Neither the true nor the possible
 are the subjects of the theatre
 but the likely.
 (F.H. d'Aubignac)

Introduction

Although robotics as such developed in the twentieth century, when humans achieved the complete inventive power of creating their own mechanical double, the starting point of such dreams is lost in the dawn of history, as far back at least as the third century B.C., when Philo built his famous, gentle, automatic *Servus*, perhaps the first true robot in history. However, real automatons and other artificial men came about only the Renaissance, with the recognition of the power of science. While in literature the first reference to an artificial being created by man occurs in Mary Shelly's 1818 gothic novel *Frankenstein*, in painting it dates back to 1909 with the automaton as the subject of a Futurist painting. It was in 1927, with Fritz Lang's film *Metropolis* – the progenitor of the science fiction film genre – that a robot made its appearance on the silver screen.¹ We now come to the focus of our interest, the official meeting between science fiction and theatre took place in 1921, the year Karel Čapek, the famous Czechoslovakian writer and playwright, wrote *R.U.R. – Rossum Universal Robots*, a drama destined to be fundamental for science fiction and especially meaningful for the collective imagination of the century to come. From the linguistic introduction in the 1920s of the term robot (“robot” comes from the Czech *roboti* or *robota*, which means “forced labour”) to the production of artificial beings in series, the problem of man crushed by the machine and becoming mechanized himself began to be presented artistically.

An echo, that of the robots entering the stage, also provoked by the contemporary development and proliferation of companion robots in our daily lives; in accordance with the desire to make these devices more familiar to us, to recognize them as a form of companionship that is not only useful, but also sensitive. The conquest of ubiquity requires familiarization with these artifacts, the understanding of a new distribution of social tasks and constant adaptation to new needs, inscribing these machines in the narrative structure of everyday life, including the artistic dimension.²

¹ L. Beatrice, *Robot. Il grande atlante visivo sul robot, dall'antica Grecia alle intelligenze artificiali*, 24 Ore Cultura, Milano 2016, pp. 4–11; P. Dumouchel, L. Damiano, *Vivre avec les robots. Essai sur l'empathie artificielle: Essai sur l'empathie artificielle*, Seuil, Paris 2016.

² E. Fuoco, *Né qui, né ora: peripezie mediali della performance contemporanea*, Introduction of Steve Dixon, Ledizioni Publishing, Milano 2022, p. 104.

To understand how we came to have a Western theatre with robots as co-protagonists, considered on an equal footing if not as a resource for the human, we can refer to a fast and continuous physiological adaptation of the theatrical genre, which has welcomed “foreign” elements and has evolved into new forms and unprecedented formats to survive and not betray its nature as a hypermedium. Contemporary theatrical art cannot be described with the tools commonly used in consideration of its status as an art of live performance and an art of man. Since the beginning of the 21st century, interdisciplinary approaches have been found to be the most effective for tracing a cartography in the making of a hybridization of performing art.³ Let’s take the recent phenomenon of stage productions using artificial intelligence systems, where the machine – although programmed by man – is the author, the creative and ideational subject, as occurs in the works of the Geneva artist Simon Senn,⁴ or the virtual choreographies experienced above all during the COVID-19 pandemic. Among the many examples are the French duo Adrien M. & Claire B⁵ with Hakanai, and the Italian company AiEP with the recent choreographic project *Dance with the distance* and *Kinexa_studio*.⁶

In this paper, we wish to lay some foundations, with an analysis that follows a new epistemological model, approaching a fundamental figure of theatrical art, that of the actor, in an openly challenging way, according to a diffraction game that depends as much on light waves – in our case, though not exclusively, the theatrical theories of reference – as much as it does on the illuminated object, therefore moving away from a mimetic and hierarchical reflection. We will look for a reading that makes subjects/entities unlinked by ties of “kinship” interact to produce a new critical awareness, one no longer interested in the relationship between original and copy, but in the product that arise from this unprecedented encounter.⁷ It should be added that the analysis or ideas that will be presented are based either on Western theories or on a reading of Eastern theories by Western scholars, which undoubtedly influences the concept of actor, robot or inter-subjective relationship that will be presented. Overcoming the cultural stereotypes relating to the robot/Japan dichotomy, we share the point of view of the scholar Sone who, through the

3 S. Dixon, *Digital Performance: A History of New Media in Theater, Dance, Performance Art and Installation*, The MIT Press, Cambridge, Massachusetts 2007.

4 <https://www.santarcangelofestival.com/show/dsimon/> [accessed: 26.10.2022].

5 Live animations based on physical movement modelling, on an original music score played live. After the quadrifrontal performance, the audience will be invited to explore the stage installation, <https://www.am-cb.net/projets/hakanai> [accessed: 26.10.2022].

G. See Giannachi, *Virtual Theatre, An introduction*, Routledge, London and New York 2004.

6 <https://www.aiep.org/events/dancethedistance/>, https://www.aiep.org/creazioni/kinexa_studio/ [accessed: 26.10.2022].

7 R. Diodato, *The Sensible Invisible. Itineraries in Aesthetic Ontology*, Mimesis International, Milano 2015.

lens of performing arts, has narrated the processes of re-signification and reinvestment related to the idea of the robot in Japan.

(...) the widely discussed Japanese affinity for the robot is the outcome of a complex loop of representation and expectation that is also an ideological iteration within Japan's continuing struggle with modernity. It is theatrical, I suggest, because the popular view of the robot in Japan is expressed in terms of the operations of theatre, through concepts such as representation, actor, audience, and setting or *mise en scène*. It is also performative in the sense that the mainstream notion of the robot in Japan is imaginatively maintained through socially enacted reinterpretations and recreations.⁸

In the last two decades of theatrical performances, the presence of robots has replaced the costumes and special effects that previously allowed them to be represented on stage.⁹ Born from the imagination and the desire to overcome the frailty of the human and conceived by engineers in robotics laboratories, robots have slowly gained a place, impersonating themselves instead of acting as surrogates of human beings. These machines are presented as a key to understanding and reading what it means to be human, to unleash questions about the mysteries of creation and their representation – and their implicit limits – sending us our image back as faithful or distorted mirrors. So much so that one wonders if the human body can be considered a prosthesis of the mind, a mere automaton equipped with circuits that can be upgraded through grafts, or if it is rather an inimitable and inaccessible tool for technology? Perhaps there is no philosophically correct answer, but what seems certain is that the anthropocentric and narcissistic vision that has dominated art for decades is now recognized as limiting and limited. What is also certain is that the extension of the contemporary body is displayed in a paradoxical way through the absence or dematerialization of a body mass, or through action performed by a mechanical body.

The aim of the experimentation of the father of android robotics at the University of Osaka, Hiroshi Ishiguro,¹⁰ whose artefacts are almost indistinguishable from a real person, was to show how much at a first approach the external appearance takes precedence over the cognitive one, so as to condition the modalities of our interaction with synthetic “people”. To do this, he chose the field of theatre, where, experimenting with the relational and communicative skills of his robots, he subsequently transposed the acquired methodologies adapting them to engineering. Performing art as a means of discovery and implementation of a robot still unable

⁸ Y. Sone, *Japanese robot culture*, Palgrave Macmillan, New York 2016.

⁹ J. Parker-Starbuck, *Introduction: Why Cyborg Theatre. In Cyborg Theatre*, Palgrave Macmillan, London 2011.

¹⁰ <http://www.geminoid.jp/en/projects.html> [accessed: 26.10.2022].

to emulate the many facets of human expression and the nuances and ambiguities of human gestural and facial language.

Even if the literature of theatrical studies concerning Hirata Oriza¹¹ is already extensive, we want to focus our attention on a barely explored aspect as an attempt to analyse the acting – though not mimetic in a general sense – skills of the actroids¹² on stage, to formulate the hypothesis of a new type of audience synaesthetic relationship and engagement.

Towards a synthetic theatrical actor

Representation is not an absolute imitation, but also and above all an interpretation according to a space and a situation. The interpretation of the role of a robot, like that of an actor, takes place in a specific relationship and according to particular interactions. Even a situation recreated to be staged in all its banality is intended to provoke, direct and preside over a desired impression. In such an experience, there is, on one hand, the choice of a staged situation, and on the other hand the performance specific limits and those related to the behavioural norms of the actors. The experimental platform of the play allows us to put dramaturgical principles in perspective, and it should also allow us to extrapolate the study of android expression. To understand whether a robot, anthropomorphic or not, can become a good actor, it is necessary to trace, or rather to track down, the origins of a theatrical psychology linked to the actor, more often defined, in the contemporary world, as a “performer.” An attempt to focus on a long-debated definition certainly leads us very far back in time to discover that this area has had great, difficult to solve problems which over the centuries have troubled the main figures of the theatrical scene in different forms. Beginning with the question posed by Denis Diderot, in the famous *Actor’s Paradox*, we see how, even back then, what are still living reflections in the different contemporary theatrical systems were already present, acknowledging that even before Diderot some theatrical thinkers had tried to formulate a philosophical thought on the matter.

[...] The actor who goes by Nature alone is often detestable, sometimes excellent. [...] How should Nature without Art make a great actor when nothing happens on the stage exactly as it happens in nature, and when dramatic poems are all composed

¹¹ <http://www.seinendan.org/eng/> [accessed: 26.10.2022].

¹² Actroids are mechanized electronic automata with electric motors or pneumatic or hydraulic systems. They simulate living beings in films or amusement parks using teleoperated, radio-controlled or programmed systems. Some of these androids come close, aesthetically, to the ultra-realistic trend of contemporary sculpture.

after a fixed system of principles? [...] If the actor were full, really full, of feeling, how could he play with the same spirit and success? Full of fire at the first performance, he would be worn out and cold as marble as the third. [...] If he is himself while he is playing, how is he to stop being himself, how is he to catch just the point where he is to stay his hand?

What confirms me in this view is the unequal acting of players who play from the heart. From them you must expect no unity. Their playing is alternately strong and feeble, fiery and cold, dull and sublime. Tomorrow they will miss the point they have excelled in today; and to make up for it will excel in some passage where last time they failed. On the other hand, the actor who plays from thought, from study of human nature, from constant imitation of some ideal type, from imagination, from memory, will be one and the same at all performances, will be always at his best mark.¹³

Given the obvious impossibility to approach a non-human actor with the Stanislavski method¹⁴ it is natural to associate this “non-human actor” with the “über-marionette” (super-marionette) actor theorized by Craig,¹⁵ to try to overcome the limits and imperfections of the actor, imprisoned in the gap between consciousness-emotion-action, through the erasure of the organic-living body and the use of an entity of submission and silence manoeuvred by an external maieutic figure. To associate, also, the theorization of the possibility of evaluating non-human acting and theatrical skills by referring to past theories coeval with those of immediacy. If in the theatrical systems of the early twentieth century the problem of the actor’s psychology with all its different nuances, kept the paradox of the actor’s emotion (*emocija*) at its center, starting from 1930 we see the opening of access paths to the exact same problem originating, however, from investigations of another kind. The researches described in Vygotskij’s *On the Problem of the Psychology of the Actor’s Creative Work* reveal a shift in the methodological analytical approach, placing the acting profession in the general circle of professional psychology studies, thus emphasizing the psychotechnical approach to the actor profession, unlike how it’s generally done, that is, with a focused attention on the question of how certain traits and qualities of the human being must be developed to ensure success in

¹³ D. Diderot, *The paradox of acting*, transl. by W.H. Pollock, Book on Demand Ltd., (1883) 2013, pp. 4–6.

¹⁴ In the 20th century, Stanislavskij (2016) established a new method for training and rehearsing. In this method, actors are supposed to build natural and real acting by focusing on the psychological aspects of the character to be played.

¹⁵ E. Gordon Craig, *The Actor and the Über-marionette*, [in:] *On the Art of Theatre*, Routledge, London (1908) 2008.

the field of theatrical artistic creation; the degree of spontaneity and improvisation, the motor skills, the verbal memory, the excitability of the actors are studied through scientific tests, and on this basis the manual of the actor's work is composed or based on the same principles that inform the composition of the analogous manuals of any other profession.

Psychotechnical investigations, on the other hand, lose sight of all specificity, of all the uniqueness of the actor's psychology, seeing in the creative work of the actor only a special combination of the same mental qualities that are found in a different combination in any profession. Forgetting that the activity of the actor is itself a unique, creative work of psychophysiological conditions, and not analysing these specific conditions in all the variety of their psychological nature, the investigator-psychotechnicians dissolve the problem of the actor's creative work in general, and at the same time, banal test psychology, paying no attention to the actor and all the uniqueness of his psychology.¹⁶

What is useful for the analysis of the phenomenon we are dealing with, the professional use of an android on stage as an actor, is the fundamental character that distances the method theorized by Vygotskij from the other acting systems theorized in his own era or antecedent, meaning by this its relativism, the refusal to formalize in absolute terms the concepts of "emotion," "feeling," "form," "unconscious," and ultimately of "conscience," to use them only after having placed them in a dialectical relationship on precise historical-cultural bases. None of the concepts listed above assumes, in its argument, a naturalistic or intellectual-idealistic perspective to acquire, instead, the condition of a variable and changing phenomenal plexus that manifests itself at the convergence of precise sociocultural factors, to be highlighted in the appropriate methodological perspective suitable for observing a mechanical entity acting on a stage.

Let's now think of three basic "measurable" characteristics in an actor: the autonomy, the ability to imitate and the level of adaptation in interaction and to the unexpected. It would be natural to reject the application of a robot to such functions, but the results of the "Robot Actors Project"¹⁷ contradict the instinctual

¹⁶ L.S. Vygotskiy, *The Diagnostics of Development and the Pedological Clinic for Difficult Children*, [in:] R.W. Rieber, A.S. Carton (eds.), *The Collected Works of L.S. Vygotsky: The Fundamentals of Defectology (Abnormal Psychology and Learning Disabilities)*, Plenum Press, New York 1993, vol. 2, p. 241.

¹⁷ A project born from the collaboration of director Hirata Oriza, of the Seinendan theater company founded by the director in 1983 in Tokyo and the Robotics Laboratory of Osaka University directed by Ishiguro Hiroshi; five shows featuring different types of robots on stage have been produced to date. Among the various volumes dedicated to the director Hirata, the essays written by the scholar, as well as collaborator of Hishiguro, Zavan Paré, Z. Paré, *Des*

denial that arises in front of this hypothesis. As a project that uses the theatre to reiterate and confirm, to the public, certain codified representations of the laboratory, *Geminoid F* is characterized in fact by expressions that can approach the emotional zero level, that neutral mask used in basic actor training without losing the aspect of a real, listening, active, though non-living being. It is the mechanical personification of a serene, conciliatory being, with a fascinating female presence that arouses a feeling of deep empathy, admiration and potentially desire.¹⁸ The computational skills, mechanical abilities, or social potentials of robots, through their simulations programmed in the dramaturgical context, could be considered as the mastery of an exquisitely human art such as that of acting. As we shall see, Ishiguro's robots try to aspire no longer to a mere physical aesthetic imitation but to the psychological identification of the robot's peculiar expressive abilities, an attempt to convey an idea of synthetic agency and intentionality that goes far beyond the reality of a sophisticated mechanized puppet. If, as Du Bos affirmed in his acting aesthetics, verisimilitude, as well as a certain dose of the marvellous, are necessary,¹⁹ then, what better union could there be, in the theatrical artifice, than making the human interact and act with the non-human?

Sayonara from theatre stage to cinema screen

Among robots, the category of androids stands apart as if they were impostors of a sort, whose appearance tries to pass for something they are not, whose essence is that of actors, entities that perpetually wear a mask – a human one. With harmless and limited manipulations and simulations, their behaviours obey the predetermined robotic designs. “But such imitations raise many questions, such as the «human comedy» from the sociological point of view or the question of identity from the psychological point of view.”²⁰ With *Sayonara*, the viewer does not observe a device in action, but the embodiment of the concept of “sonzai-kan,” explored by Ishiguro since his early research, which means feeling of being in the presence of another person.

robots acteurs: le théâtre au service de la robotique, [in:] I. Moindrot, S. Sangkyu (eds.), *Transhumanités: fictions, formes et usages de l'humain dans les arts contemporains*, L'Harmattan, 2013, and the recent Italian volume by Cinzia Toscano, *Il teatro dei robot. La meccanica delle emozioni nel Robot-Human Theatre di Hirata Oriza*.

¹⁸ Z. Paré, *Robots en quête d'auteurs*, ReS Futurae [Online], 2021, pp. 2–4, <http://journals.openedition.org/resf/10250> [accessed: 26.10.2022].

¹⁹ M. Mazzocut-Mis, *Corpo e voce della passione. L'estetica attoriale di Jean-Baptiste du Bos*, LED Edizioni Universitarie, 2010, p. 41.

²⁰ Ivi, p. 5.

In this respect, he touches on the fundamental idea of being a human being, studying it not only from the point of view of his robotic models, but also in terms of who sees the robot: the spectator who is the recipient of this amazing “being present.”²¹

We could define *Geminoid F*, the twin android²² or even better the actroids featuring in “Robot Actors Project” as a clone – a term belonging to biology whose extended meaning has also been applied to various kind of devices which identically reproduce another. It’s a perfect copy, or sometimes only with the same characteristics, devoid of originality and autonomy. And we could approach more familiar terms with the otherness usually present in the theatrical dimension: the double, the substitute, the alter ego, the simulacrum, concepts that in recent years have found an embodiment thanks to the integration of new technologies on stage, bringing avatars on stage or simply projected and digitized images of the performers.

Hirata’s theatrical apparatus works hard to hide the liminality of the robot. At the same time, the robot’s very in-between status, and stagecraft that emphasises the robots’ human-like qualities, allow his plays to use their robot characters – that is, characters that are acknowledged at the narrative level of the plays as robots – to represent the social “other.”²³

Yet defining *Geminoid F* is not that simple: its almost perfect beauty and the mystery of its lack of identity make its being even more fascinating. *Geminoid F* gives an impression of uncanny and false fragility. It can be considered a supreme and sophisticated device but at the same time an ephemeral creature since it is remotely controlled by a human operator, not endowed with the social autonomy that characterizes companion robots, for example, intelligent machines endowed with authority, adaptability and indefinite coordination.²⁴

The play *Sayonara* is a one-on-one conversational drama lasting twenty-five minutes featuring an android whose appearance is elaborately modelled on an existing human being and a human actor.

21 I. Pluta, *Theatre and Robotics: Hiroshi Ishiguro’s Androids as Staged by Oriza Hirata*, “Art Research Journal” 2016, vol. 3, issue 1, pp. 65–79.

22 We follow the analysis of various scholars who have attributed to Gem. F the specification of “android” using it in reference to Villiers de l’Isle *Adam’s Future Eve* (1886), instead of the later term “gynoid,” which is applied to female-like humanoid robots. Of course, the Greek etymology *gynē* corresponds lexically to *andro*, but a *gynoid* corresponds to practically anything that can resemble a woman.

23 Y. Sone, *Japanese robot culture*, Palgrave Macmillan, New York 2016, p. 90.

24 P. Dumouchel, L. Damiano, *Vivre avec les robots. Essai sur l’empathie artificielle: Essai sur l’empathie artificielle*, Seuil, Paris 2016, p. 51.

Set in the near future when it has become natural for androids and humans to co-exist, the play asks what humanity, life and death mean to us as humans through a conversation between a girl suffering from a fatal illness and an android trying to console her.²⁵

Geminoid F is the copy of a young Japanese woman, whose identity has not been revealed to preserve her privacy. Being partially of foreign origin, she has atypical features, with long dark brown hair. Particular attention was paid to the clothing, sober but elegant, designed by the designer Junko Koshino: she is wearing a short black lace dress with a wide rounded neckline and three-quarter flared sleeves, black tights and a pair of anthracite grey suede heels. Hirata wrote *Sayonara's* dialogues and directed the two roles,²⁶ that of the placid and calm android, played by the *Geminoid F* teleoperated by the actress Minako Inoue, who controls her behind the scenes, and that of a fragile and ethereal girl, played by the American actress Bryerly Long.²⁷ The choice to make *Geminoid F* debut in an intimate play like *Sayonara* is not accidental: it seems to raise it to an icon of the reconciliation of men with their vulnerability and mortality. Its instructions say that it can laugh, smile or have other more natural and sweet facial expressions than the previous model (*Geminoid HI-1*) and the audience, a few minutes in, forgets that *Geminoid F* is nothing more than a sophisticated puppet whose voice is spoken by a human actress.²⁸

But even in the short time of a scene, an action or a dialogue, the viewer is overcome by an emotional vertigo. As in Chekhov's theatre, Hirata gives consistency to selected moments, staging fragments of them or transforming them into experimental situations of a theatre that does not simply concern actors, or men and robots sharing a stage space, but rather various prosaic situations in which the

²⁵ <https://www.jpf.go.jp/e/project/culture/archive/information/1301/01-04.html> [accessed: 26.10.2022].

²⁶ "The CCTT-based play was written and directed by Oriza Hirata, a world-famous stage director and coauthor of this study. It was produced by Hirata's theatre company «Seinendan», which also employs a technician, lighting designer, acoustic designer, and scenographer. These specialists supplement the actors' performance with their techniques to complete the stage play," VV.AA., *Creation and Staging of Android Theatre "Sayonara" towards Developing Highly Human-Like Robot*, "Future Internet" November 2017, vol. 9, issue 4, p. 6.

²⁷ Both actresses belong to the Seinendan theatre company whose work is based on the practice of *gendai kogo engeki* (contemporary colloquial theater).

²⁸ For further information on the voice synchronization technique and to examine in depth a statistical study based on data collected during reruns in Japan and Europe to understand if the public could mistake the robot for an android, see T. Chikaraishi, *Creation and staging of android theatre "Sayonara" towards developing highly human-like robots*, "Future Internet" 2017, vol. 9, issue 4, et al.

characters could be indiscriminately humans, animals or robots engaged in actions that bring out emotions. A theatre that responds to the characteristics he expressed in his widely recognized “Contemporary Colloquial Theatre Theory.”²⁹

The viewer, in his tacit pact of suspension of disbelief, projects on the android an ability to feel the weakness of the sick young woman and to share the Promethean shame of the human.³⁰ At the same time, the simple fact that a machine listens compassionately to a human, the sick protagonist of *Sayonara*, and is the only companion left to her, provokes a disconcerting fear in the spectator. The other, the stranger, the robot on stage presents itself as a new tragic mirror which, instead of challenging us, embodies perhaps the complexity of its essence.

At this point it is worth mentioning a peculiar phenomenon that has taken the name of *Uncanny Valley*, first introduced by Ernst Jentsch, a German philosopher of the early twentieth century who observed that people felt discomfort when interacting with an object that seemed human when it was not clear whether it was a living creature or not; a process then further theorized by the Japanese roboticist Masahiro Mori,³¹ who took up the reflections of the German philosopher and, on the basis of empirical research, came to the conclusion that, when artificial creatures come close to realistically resemble human beings without however transmitting that empathic feeling of familiarity that would have them considered as possible companions, people would not trust them and would fear them even to the point of revulsion. But when the artefacts become so indistinguishable that they can be mistaken for living beings, the level of acceptance rises sharply and favours the establishing of a potential emotional interaction. And it is here that the introduction of the robot on the theatrical stage acquires a sense of artistic experimentation and no longer a merely technological one. In the end, perhaps the show manages to push the viewer to imagine being able to develop new emotions, to be in tune with yet unimaginable autonomous mechanical entities.

In Hirata’s “colloquial theatre” the actors recite some sentences in a voice so low as to be barely audible, several conversations take place at the same time and it may happen that the actors turn their backs on the audience. This gives a strong dramaturgical sense and adds pathos even to moments of silence. This form of new theatre is studied by cognitivists to understand how such staging turns out to be perceived as more realistic than others.³² At times, since listening to these almost silent dialogues is very limiting, a deeper understanding of situations is given by

²⁹ Ivi, p.75.

³⁰ *Sayonara* is the story of a young woman suffering from a terminal disease. Locked up in her small apartment, her parents give her an android to keep her company.

³¹ M. Mori, *The Uncanny Valley*, “Energy” 1970, vol. 7, no. 4, pp. 33–35.

³² O. Hirata, *Gendai Kogo Engeki No Tameni (for Contemporary Colloquial Theater)*, Banseisha, Tokyo 1995.

other elements. Through their presence, robots create a new kind of interdisciplinary theatre that combines art with science in a mutual exchange. By working on situations and the dramatized dialogues conceived by Hirata, more space can be given to the natural – for example by introducing a hesitation of the machine, even a simulated error, and the figure of the engineers joins and superimposes that of the demiurge director giving the impression of a consequent psychological fragility. “For the first time, Japanese robotics considers dialogues, movements and gestures as components of the naturalness of robots, capable of significantly enhancing their expressiveness and thus giving more life to the mechanics”³³ and it does so by choosing the centuries-old art of theatre.

In conclusion, a brief mention of the acting performance of *Geminoid F* in the film adaptation of the play *Sayonara*, which Fukada³⁴ directed in 2015. Just as a dance choreography or a puppet show lose their potential to inspire amazement when they are seen on a screen, confined in a two-dimensionality, delimited by the perimeter of a frame³⁵ and even the emotional effect of a Shakespearean tirade seen in the dark amidst an audience fades if seen in video, so the impressive ability of the actroid *Geminoid F* – as we have seen capable of a richly nuanced performance – is lost in the multiple and sophisticated cinematic tricks and computer based effects. If anything, the robot looks unusually limited, artificially confined to a wheelchair because its range of motion doesn’t extend much beyond the eyes, mouth, and neck – which may explain why human co-star Beverly Long – who is co-star in the theatrical version as well – plays her role in such an unnatural quasi-monotone. In the film *Sayonara* the dynamic of human-robot mutual aid remains, but this time it is the robot who suffers from a handicap that forces it into a wheelchair and leads it to need human help.

Japan’s nuclear reactors have already exploded when the film begins, poisoning the entire country. Most of the survivors have already left, and stragglers like the South African girl Tanya (Beverly Long), her Japanese boyfriend and her best friend are all waiting for their name to come up on the national evacuation list. Leona, the companion her father bought for her as a child, scoots around in her motorized wheelchair on errands while Tanya sleeps lethargically on the couch of her rural home. Little by little, things get worse.³⁶

³³ Z. Paré, *Robots en quête d’auteurs*, “ReS Futurae [En ligne],” 2021, p. 6. <http://journals.openedition.org/resf/10250>; <https://doi.org/10.4000/resf.10250>

³⁴ <https://iffr.com/en/persons/fukada-koji> [accessed: 26.10.2022].

³⁵ V. Gallese, M. Guerra, *Lo schermo empatico: cinema e neuroscienze*, Raffaello Cortina Editore, Milano 2015.

³⁶ The Hollywood Reporter Staff 24th October 2015 “*Sayonara*”: *Tokyo Review*. Retrieved February 21, 2021, from <https://www.hollywoodreporter.com/movies/movie-reviews/sayonara-tokyo-review-834475/>. Last access 10 January 2022.

For Fukada, *Sayonara*³⁷ fits into the same subtle emotional approach seen in previous films *Au revoir l'ete* and *Hospitalite*, the style of which critics have compared to that of Eric Rohmer. The atmosphere seems forcibly rarefied and the human protagonist is shown as a victim of radioactivity present in the air as if to betray a need to adapt the register and the semi-fixity of the actroids. Whereas the play is liable to turn into a Turing test of sorts, in which the audience is naturally inclined to judge the performance of a robot against that of a human actor, the cinematic medium seems to have won its own challenges when it comes to android involvement. If in cinema the robot finds its maximum actualization in apocalyptic contexts or dynamic plots, *Geminoid F* loses its human likeness and grace and its minimal almost imperceptible movements in the macro-dimension of a film.

Conclusion

We have seen how a robot is certainly an actor with no emotional memory, but the ability to interpret and emulate human acting can make him superior to the mechanics of a puppet and we could state that the *Geminoid F* robot seems like an attempt to go beyond simple physical identification. If psychological identification with a character can potentially occur through voice and posture, how does the interpretation of gestures with a psychological intention take place? This is what can be understood by experiencing the acting skills of a robot on stage, an experiment that proposes a theatrical aesthetic sensibility that combines the traditional, the ritual and the human with the most advanced technology, a place where culture and science converge. Geminoid F represents a sophisticated artistic attempt to depict an artificial expressivity, a point of intersection between the natural and the mechanical that reflects the changing nature of the iconic human expressiveness of emotions. Of course, while it can be said that here the soul is in the face, it must also be recognized that robotics has yet to advance in the development of robots capable of walking, emulating the grace and fluidity that a human is capable of.

The upper torso of Geminoid F has 12 DOFs controlling the most essential expressions in human communications (raise/lower brow, scowl, open/close eyelid, vertically move eyeball, horizontally move eyeball, open/close mouth, lift corner of mouth, incline head, shake head from side to side, chest movement, and bowing). Each DOF is driven by pneumatic actuators, electromagnetic valves, and control boards installed inside the body. As the air compressor can be installed outside the

³⁷ <https://quinlan.it/2016/02/03/sayonara/> [accessed: 26.10.2022].

android body and connected by a long air tube, the android's motions are less noisy than those of robots installed with electromagnetic motors, rendering the android suitable for theatrical use.³⁸

How, then, can a machine simulate organic acting as Lee Strasberg of the Actors Studio recommended? A technique that founded Stanislavsky's method of "the actor's work on the self" – which focus on training the actor's sensory imagination – together with "the actor's work on the role" – which focuses on preparing stage material for performance.³⁹ And how can it convey an impression of free will and interpretative truth? To try to open avenues of analysis, rather than finding definitive assertive answers, we must start from the idea that all social behaviours are based, as is well known, on complex mediations that provide opposite reinforcements, that is, rewards and sanctions, both symbolic and emotional (and derivatively also tangible). The subjective perception of these mediations takes the form of emotions, perceived for example with synthetic terms such as "interest," "trust," "embarrassment," "guilt," "disgust," "contempt," etc.: evocators that always translate into individual and/or collective actions, but always preceded by various dramatization strategies that can have both an institutional and regulated matrix (rites) and a spontaneity springing from the unexpected occasion. The human-robot interaction falls within the second species, since in this case the dialectic of identity/otherness is unprecedented or almost although the genre literature has contributed to forming a collective perception that is more negative than positive.⁴⁰

The human propensity to assign mental states to inanimate objects or animals is strongly influenced by the characteristics and context of the interaction and when this is a theatrical one, in which dialogue, alongside the action, plays a predominant part, then we would spontaneously be led to see the actroids as interlocutors.⁴¹ Now the empathy felt will be closely related to their external appearance, but the judgment of their acting prowess will be expressed on the ability of the director and the other actors to interact in a spontaneous and realistic way. Therefore, we can say that it is the approach of how to teach acting and how to train a robot, as it happens for any actor, that brings out the maximum potential. And to do

38 VV.AA., *Creation and Staging of Android Theatre "Sayonara" towards Developing Highly Human-Like Robot*, "Future Internet" November 2017, vol. 9, issue 4, p. 4.

39 P. McAllister, *Lee Strasberg's Method*, "Stanislavski Studies" 2018, vol. 6, no. 1, pp. 105–110. <https://doi.org/10.1080/20567790.2018.1446410>

40 See R. Notte, *You, robot. Antropologia della vita artificiale*, Vallecchi, Firenze 2005 and S. Dixon, *Cybernetic-Existentialism: Freedom, Systems and Being-for-Others in Contemporary Arts and Performance*, Routledge, London 2020.

41 D. Lu, *Ontology of Robot Theatre*, [in:] *Proceedings of the ICRA, Workshop Robotics and Performing Arts: Reciprocal Influences*, St. Paul, MN, USA, 14 May 2012.

this well, a non-anthropocentric starting point must be assumed, which is based on the observation of the limits and capabilities of the robot in the various dramaturgical settings.

I propose a specific posthumanist notion of performativity – one that incorporates important material and discursive, social and scientific, “human” and “nonhuman,” and natural and cultural factors. (...) A posthumanist account calls into question the givenness of the differential categories of “human” and “nonhuman” examining the practices through which these differential boundaries are stabilized and destabilized.⁴²

By reserving the right to develop such a fruitful theme elsewhere, which sees the machine at the service of man but also the opposite, it is certain that the path towards a New Humanism has now begun. In its “individuality” of mechanical being, by recognizing a robot’s limitations and weaknesses, we can understand the real sense of “being human” – or an artist – in a technological environment, and, at the same time, this kind of constructive approach demonstrates the role of art in developing robots.

Bibliography

- Barad Karen, *Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter*, SIGNS, Spring, 2003.
- Čapek Karel, *R.U.R (Rossum’s Universal Robots)*, La Différence, Paris 2013.
- Chikaraishi Takenobu et al., *Creation and staging of android theatre “Sayonara” towards developing highly human-like robots*, “Future Internet” 2017, vol. 9, issue 4, pp. 1–18.
- Craig Edward Gordon, *The Actor and the Über-marionette*, [in:] *On the Art of Theatre*, Routledge, London 2008.
- Diderot Denis, *The paradox of acting*, transl. W.H. Pollock, Book on Demand Ltd, 2013.
- Diodato Roberto, *The Sensible Invisible. Itineraries in Aesthetic Ontology*, Mimesis International, Milano 2015.
- Dixon Steve, *Cybernetic-Existentialism: Freedom, Systems and Being-for-Others in Contemporary Arts and Performance*, Routledge, London 2020.

⁴² K. Barad, *Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter*, SIGNS, Spring 2003, pp. 5–6.

- Dixon Steve, *Digital Performance: A History of New Media in Theater, Dance, Performance Art and Installation*, The MIT Press, Cambridge, Massachusetts 2007.
- Dumouchel Paul, Damiano Luisa, *Vivre avec les robots. Essai sur l'empathie artificielle: Essai sur l'empathie artificielle*, Seuil, Paris 2016.
- Fuoco Ester, *Né qui, né ora: peripezie mediali della performance contemporanea*, with an introduction of Steve Dixon, Ledizioni Publishing, Milano 2022.
- Gallese Vittorio, Guerra Michele, *Lo schermo empatico: cinema e neuroscienze*, Raffaello Cortina Editore, Milano 2015.
- Giannachi Gabriella, *Virtual Theatre. An introduction*, Routledge, London–New York 2004.
- Hirata Oriza, *Gendai Kogo Engeki No Tameni (for Contemporary Colloquial Theater)*, Banseisha, Tokyo 1995.
- Lu David, *Ontology of Robot Theatre*, [in:] *Proceedings of the ICRA, Workshop Robotics and Performing Arts: Reciprocal Influences*, St. Paul, MN, USA, 14 May 2012.
- Mazzocut-Mis Maddalena, *Corpo e voce della passione: l'estetica attoriale di Jean Baptiste Du Bos*, Led Edizioni, Milano 2010.
- Mori Masahiro, *The Uncanny Valley (Bukimi no tani)*, “Energy” 1970, vol. 7, no. 4, pp. 33–35.
- Notte Riccardo, *You, robot. Antropologia della vita artificiale*, Vallecchi, Firenze 2005.
- Parker-Starbuck Jennifer, *Introduction: Why Cyborg Theatre. In Cyborg Theatre*, Palgrave Macmillan, London 2011.
- Pluta Izabella, *Theatre and Robotics: Hiroshi Ishiguro's Androids as Staged by Oriza Hirata*, “Art Research Journal” 2016, vol. 3, issue 1, pp. 65–79.
- Stanislavski Konstantin, *An Actor's Work*, 1st Edition, Routledge Classics, London 2016.
- Toscano Cinzia, *Il teatro dei robot. La meccanica delle emozioni nel Robot-Human Theatre di Hirata Oriza*, Clueb, Bologna 2018.
- Vygotskij Semënovič Lev, *The Diagnostics of Development and the Pedological Clinic for Difficult Children*, [in:] Robert W. Rieber, Aron S. Carton (eds.), *The Collected Works of L. S. Vygotskij: The Fundamentals of Defectology (Abnormal Psychology and Learning Disabilities)*, Plenum Press, New York 1993.
- Yuji Sone, *Japanese robot culture*, Palgrave Macmillan, New York 2016.
- Zaven Paré, *The art of being together with robots: A conversation with Professor Hiroshi Ishiguro*, “International Journal of Social Robotics” 2015, vol. 7, issue 1, pp. 129–136.
- Zaven Paré, *Robots en quête d'auteurs*, “ReS Futurae [En ligne]”, 18-2021, <http://journals.openedition.org/resf/10250> [accessed:26.10.2022]; <https://doi.org/10.4000/resf.10250>
- Zaven Paré, *Sayonara. Un addio ad un androide*, [in:] C. Pasqualino, (a cura di), *Macchine vive. Dalle marionette agli umanoidi*, Edizioni Museo Pasqualino, Palermo 2021, pp. 103–121.

Ester Fuoco

Czy robot może zostać odnoszącym sukcesy aktorem? Przypadek Geminoida F

Streszczenie

Czy robot może być dobrym aktorem? Czy może zbudować relację opartą na zrozumieniu i empatii z innymi aktorami lub widzami? Niniejszy artykuł oferuje zaledwie przełlysk, pierwszy ślad badań nad ważnym obecnie zjawiskiem, które ma wpływ na sztuki widowiskowe, a mianowicie integrację sztucznych agentów zarówno w procesie twórczym, jak i w przedstawieniu teatralnym. Problem zostanie przedstawiony na przykładzie androida Geminoid F, bohatera sztuki *Sayonara* (2010) japońskiego reżysera Orizy Hiraty. Jego twórcą jest ekspert robotyki z Uniwersytetu w Osace, profesor Hiroshi Ishiguro, który uczył androida przez naśladowanie gestów profesjonalnej aktorki. Oglądanie androida jest specyficznym doświadczeniem estetycznym: z pozycji widza granica między człowiekiem a robotem jest niejasna. Geminoid F stał się bohaterką filmu o tym samym tytule, nakręconym w 2015 roku przez uznanego na całym świecie japońskiego reżysera Koji Fukadę.

Słowa kluczowe: teatr androidów, aktroid, ucieleśnienie, uwikłanie, sztuki performatywne

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