

Anthropocentrism and the Staging of Robots

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Abstract. By investigating the representations of the human throughout a history of the robots, we analyze robotic performances from a theatrical audience ‘pragmatic’ point of view. Hence, this interpretation of robots as performers, or staged robots, involves an act of **suspension of disbelief** as a first and constitutive condition of **theatrical reality**. As an early analysis of **robotic performances** and **robots as performers**, this paper focuses on the notions of **anthropomorphism** and **anthropopathy**.

Keywords: Robotic art, kinetic art, acting, puppetry, artificial intelligence, artificial life, theatre, stage, ontology.

1 Introduction

What is it that we see on a theatrical stage? It is said that it happens here and now but is it real? Or is it just an illusion? Theatre theory and practice no longer look upon stage production/theatrical performances as being more or less realistic, naturalistic, stylized or openly artificial reality. Theatrical reality has statute of an illusion or a fiction that indicates, evokes and suggests something, but not strictly embodies it. From a semiotics perspective, theatrical performance is considered as means to transform ‘reality’ into sign-systems¹ and/or into a play [2, 34, 38]. This leads towards a formulation of theatre as a laboratory of sign productions and their interpretations. Consequently, robotic theatrical performances deal with the dynamic processes of the sign-robotic creation of significance and interpretations of meanings, within specific cultural and historical contexts. Deleuze [8] positions the mechanical realm within its context: „The machines don’t explain anything, you have to analyze the collective arrangements of which machines are just one component.” Mumford [29] equally analyzes that machines are a mythical construction, which are not solely a complex tool (apparatus) but also a social apparatus. They are not only constituted

¹ In the body of this text, we will refer to sign-systems by the doublet *sign-signifier*, for example *sign-action*.

of material parts but also of immaterial elements, of a mentality and a belief into a goal or an effect.

This paper will focus on an understanding of robotic performances and robots as performers from the audience perspective by questioning the human ability and need to identify, empathize and project him/herself into performers, either objects or humans, on the stage.

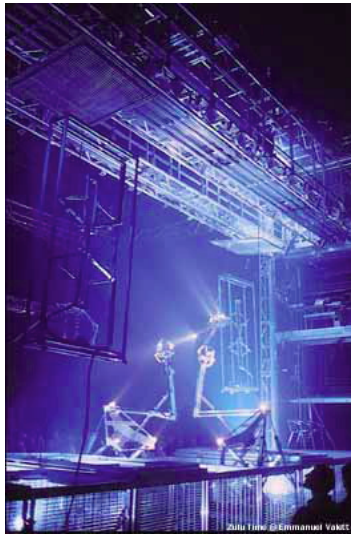


Fig. 1. Robot characters from *Le Procès* (1999).

The robotic characters depicted in Figure 1 are the main protagonists of the machinic performance adaptation of *Le Procès*, a novel by Franz Kafka (Kafka 1925, Demers 1999). These robots are deliberately part zoomorphic (an arm, a hand), part mechanomorphic (the lower body is a simulation platform structure); a sign-design that vehicles both the inert and the living aspects of the performing objects. In parallel to human performers, we can ask, whether and how are these robot performers able to carry an alternate set of sign-systems of their bodies (shape, material) and their behaviors (actions).

The semiotic system of theatre is based on theatrical convention as well as on automatisms of (human) semiological communication and understanding. Dennett refers to one of these automatisms when he sustains, that intents are attributed to outside agents that act upon the physical world [13]. This raises questions about the level of anthropomorphism needed in robots to attribute intent onto their behavior [15, 26]. It also raises discussions in relation to the act of projecting intent, questioning if this is an inevitable reflex or not [16].

2 Robots – A History of Lures

The history of representations, models and simulations of the living by means of mechanical objects is around two millennia old. This history is driven by the ongoing quest for a true genesis and the deeper understanding of the inner self or the universe. It is significant that outcomes of this effort, embodied in different robots/machines, are typically exploiting theatrical means [20, 36]. Theatrical stage allows, by its ambiguous ontological character, to arrange mise-en-scenes that resonate with the paradoxical status of the quasi-living entities.

2.1 Artificial Humans – an early quest

In recent artificial intelligence (AI), the so-called social robots have mainly embraced the humanoid form with friendly behaviors as the privileged mode of intercommunication [17]. The urge for humanoid form/appearance of robots, in the contemporary sense of the word, connects them with a long history written in myths, legends and even in real experiments. This demand includes in itself two motives: On one hand – it is the human dream to create an artificial human being. We can analyze this as an attempt to imitate a ‘Creator’, to make a creature in our own image or even to discover the secret of life. On the other hand – it is an entirely practical ambition to make optimal or perfect servants of man (this motif is often connected with utopian projections of an ideally ordered social system). Already Aristotle in his fundamental work *Politics* wrote: “For if every instrument could accomplish its own work, obeying or anticipating the will of others, like the statue of Daedalus, or the tripods of Hephaestus, which, says the poet, ‘of their own accord entered the assembly of the Gods’; if, in like manner, the shuttle would weave and the plectrum touch the lyre without a hand to guide them, chief workman would not want servants, nor master slaves.” [1]

Robotic art emerged in 1960’s (see section 2.5), around the same time as Robotics and Artificial Intelligence - scientific and engineering disciplines that have developed from assumptions established by Cybernetics. However, robotic art has deeper roots and a rich cultural history. It refers to modern science-fiction as much as to artificial creatures (either real or imaginary) from ancient artificial maidservants, mediaeval Golem and Homunculus of Renaissance to Enlightenment androids.

Tomas writes about historical modifications of human-machine relationship as the “machine-based history of western body” [39]. Tomas often refers to Cybernetics discourse, particularly to Norbert Wiener’s writing on a history of mirroring of human body in machine. Wiener (1948) [40] traced parallel history of machine and human body when he presented a history of automata that was divided into four stages that generated four models of the human body: A mythic Golemic age that refers to the body as a malleable, magical, clay figure. The age of clocks (17th and 18th centuries) that sees body as a clockwork mechanism. The age of steam, that Wiener saw as an originator of the governor mechanism itself (late 18th and 19th century) that brought about body as a “glorified heat engine, burning some combustible fuel instead of the glycerin of human muscles”. And finally the age of communication and control (Cybernetics), an age marked by a shift from power engineering to communication

engineering, from “economy of energy” to the economy based on “the accurate reproduction of signal” that understand body as an electronic system.

2.2 Čapek’s Robots

It is impossible to interpret and understand robot and robotic art out of its cultural context and history, outside amount of different connotations and associations connected with the word robot.² The word robot appeared for the first time in a play R.U.R. Rossum’s Universal Robots (National Theatre in Prague, 1920/21) by Czech writer Karel Čapek.³ Figure 2 (left) shows the robot embodiment in the first official stage production of the play, whereas the right image shows the robot as a puppet/apparatus in a later production (Paris, 1924). The variation between mechanized man on the left and the humanoid machine on the right side indicates an interpretative shift on the understanding of Robot during the 20th century [23, 24].

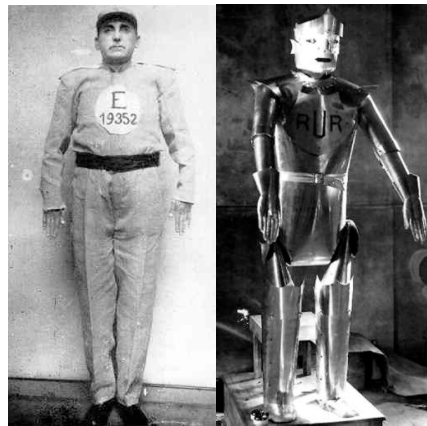


Fig. 2. Robot character from R.U.R. Left, first night in Prague. Right, later in Paris

Karel Čapek wrote about concepts/ideas that stand behind his decision to write ‘play about Robots’. It shows Čapek’s understanding of his Robot/s as an embodiment of the image of man of his time, formed by industrial serial mass production (see machine-based history of human body [39]), “Robots were a result of my traveling by tram...People were stuffed inside as well as on stairs, not as sheep but as machines. I started to think about humans not as individuals but as machines and on my way home I was thinking about an expression that would refer to humans capable of work but not of thinking. This idea is expressed by a Czech word robot.”⁴

² The word robot is a neologism derived etymologically from the archaic Czech word *robot*. *Robot* means in Czech — a drudgery or an obligatory work.

³ R.U.R. is interpreted as a comedy of confusion in which we are not able to distinguish between man and Robot in [22].

⁴ Čapek, K. [...] Evening Standard (June 2, 1924). In Čapek, K. R.U.R. Halík, M. (ed.) Československý spisovatel, Praha, 1966.

Čapek connected his Robots with history of artificial creatures. Specifically with Prague Golem legend, when he said: “R.U.R. is in fact a transformation of the Golem legend into a modern form.... Robots are Golem made with factory mass production.”⁵

A further understanding of the origins of the Robot character is to be derived from the many other artificial creatures of the Čapek brothers. The short story *Systém* (System) (1908/18) is often mentioned as an earlier version of R.U.R. plot. The story is based on the idea of “culturally reformed” workers adjusted for manual work exclusively. In an *Instructive Story* (1908) and *L’éventail* (1908/16) brothers Čapek brought into the fiction *Jacquet-Droz* (see next section) as a real character and his fictitious mechanical androids (see fig. 4).

The theme of mechanical humanoid machines is present in separate work by Josef Čapek, the real author of the word, as well. One instance appeared as “mechanical alter-ego” constructed by an engineer in his short story *Opilec* (The Drunkard) included in collection *Lelio* (1917). However, the mechanical double is called simply “mechanism”, not a Robot in the story.



Fig. 4 *L’éventail/Lady with a fan*. Able to say only “si” or “no”. Illustration from J. Čapek’s *Homo Artefactus* (1924)

Artistic essay *Homo Artefactus* (1924) by Josef Čapek is both a recapitulation and a satirical commentary on the theme of artificial man that appeared in the beginning of the 20th century as a notion of a ‘new man’. “The action of a young scholar dr. Karel Čapek was very overrated. ... According to Čapek’s theories and promises this robot should replace workers, but we are claiming openly that it was not very useful in practice; it was used only in theatrical services (...). For that matter, just as living automata of older times were fully constructed from machinery, so they were not in fact humans, Čapek’s robots were made exclusively from an organic jelly so they are neither machines nor less human. ... when he promptly recognized Čapek’s trick and after a first production of robots stated that there had to be some swindle in it” (see fig.2 and 3) [7].

⁵ Čapek, K. R.U.R. *Prager Tagblatt* (September 23, 1935). In Čapek, K. *Divadelníkem proti své vůli* (ed.)Halík, M. Orbis, Praha, 1968.

2.3 Androids

The swindle or trick of Robot can be found in the ambiguous status of artificial human-like (androids) creatures existence. It is present not only in the case of fictitious artificial creatures but also in the case of ‘real’ mechanic puppets or androids. As Sussman [36] argues, thaumaturgical strategies often further intensifies this trick during their public performances. Sussman started from assumption that “Certain pre-technological performances (...) can give us some insight into the tense metaphoric operations and interconnections of faith and skepticism, or belief and disbelief, in the staging of new technologies (...)”. In his analysis of staging of Chess Player automaton by Wolfgang von Kempelen from Bratislava, Sussman came to the conclusion – which can be extended to context of androids/automatons staging in general: “The automatic thinking machine that concealed, in reality, a human person, can be seen as a model for how a spectator might reify, and deify, the hidden power at work in a new form of intelligent machinery (...) The visual proof was, first, the demonstration of control at a distance; and, second, the transmission of human intelligence into inanimate body of the object; the performing object that animates both demystification and reenchantment.”[36]

Androids/automata are often connected with the effort of their designers to show their own (human) competence and workmanship. We can find references to designers of anthropomorphic automatons since Antiquity (Architás from Tarent, Hérón Alexandricos called Mechanicos). Ample references to androids and their creators in the periods of Rococo and Neoclassicism (Enlightenment, 18th century) denote the high popularity of mechanical dolls in these periods. Swiss mechanists and clock workers, father and son Pierre and Henri Louis Jacquet-Droz (1721-1790,1752-1791) constructed The Writer, The Draftsman and The Musician (lady playing the piano) Arguably Jacquet-Droz might used to program his automaton to write the sentence "Cogito ergo sum" in order to make a play of words on Descartes contemporary theories. This play reflects the undecidable (in logic systems, neither true or false) status of the artificial being; a similar logical problem found in the recursive statement: “I am a liar.”.

The ambiguous existence of androids/automata was enhanced not only by the way they were staged [36], but also by their appearance. Wood takes notice that in the Age of Enlightenment, androids/automata were frequently designed in the image of children: “Some inventors intended their objects to be artificial forms of an eighteenth-century ideal-the child as a blank slate, the purest being.”[42] Moreover, Jacquet-Droz’s barefoot writing automaton with its schoolboy appearance represents conviction of that period that children would learn more freely if unhampered by shoes [42]. Child-like appearance served as a trick that would manipulate audiences’ evaluation and impressions from the performance as well: “their creators wanted them to look young so that the mistakes resulting from their early efforts (as a prototypes) would be forgiven.”[42] The android’s child-like appearance functioned as a sign of perfection (innocent beings) and suggestion of automatons’ ability to learn as well as a trick that change audience’s attitude towards (possible) unexpected failures of automatons.

These automatons ontology was masked/camouflaged⁶ and interpreted as an ambiguous fluctuation between the mechanic and organic, between living and non-living. “When Pierre Jacquet-Droz exhibited his writing automaton in Spain, he was accused of heresy; both the man and the machine were imprisoned for a time by the Spanish Inquisition.”[42] A journalist that experienced one performance of „Musical Lady“ reports acceptance of androids liveliness. The android was advertised on poster as a “vestal virgin with a heart of steel”, but the journalist gave us a different impression when he wrote: “she is apparently agitated with an anxiety and diffidence not always felt in real life.”[42] The android seems to him to be more alive than life commonly manifests itself.

2.4 Puppets: Inert performers

Robotic performers and puppets share two essential characteristics: they are inert entities further “animated” and are called upon to perform in the front of an audience. In addition, puppets’ morphologies, as for robotic performers, vary widely from virtual disembodied shadows or abstract objects to strong human representations. Tellis[38] states that puppets that attempt to imitate human often create a superficial sense of realism. The illusion of life derived by movements exclusive to their morphology can more easily encourage the audience to accept the living existence of an otherwise inanimate object.

Tellis argues that the puppet takes on its metaphorical connotation because it inherently provokes the process of double-vision, creating doubt as its ontological status. On the other hand it is an example of theatrical suspension of disbelief and projection of audience psychological movements into the actor/character, because “anxiety and diffidence” is a typical human reaction to an artificial double. Sigmund Freud calls it “the Uncanny” [18]. Based on Freud, robotics engineer Mori coined the expression “Uncanny Valley”, an area of repulsive response aroused by a robot with appearance and motion between a "barely-human" and "fully human" [28].

2.5 Puppets as Actors / Actors as Puppets

Čapek wrote his ‘play about Robots’ in the beginning of 20th century where culminates an inspiration of machine aesthetics: the ‘rational’ avant-garde artistic movements of Futurism, Constructivism or Bauhaus. Even in Surrealism we can find principle of creativity based on an autonomous mechanism (automatism) of dream. Avant-garde artists’ attitude toward machine is spread over whole scale from Futuristic and Constructivist adoration of machine to fear and skepticism connected with confrontation of man with individual transcending non-human machinist systems (e.g. Expressionism).

Filippo Tommaso Marinetti, founder of Italian Futurism, wrote in his manifesto *Multiplicated Man and Empire of Machine* that: “Engines (...) are really mysterious

⁶ There are examples of ideas of Androids that bleeds ‘real’ blood or covered with ‘real’ skin [42].

(...). They have their moods, unexpected bugs. It seems that they have personality, soul, will. It is necessary to stroking them and to behave with respect to them (...)" [35]. This quotation illustrates an anthropomorphic and anthropopathic understanding of machine by Futurists, in sense of system complementary or analogical with a human. From this understanding springs the concept of an ideal member of modern society – the ‘man-machine’ fusion arisen from their harmonization and mutual resonance. The ideal of modern human as an individual equipped with machinist qualities as speed, dynamics, or ambiguous moral attitudes.

We can find similarly positive relationship to machine in Russian Constructivism. In opposition to Italian Futurism, it is about more complex understanding of technology and at the same time about collective understanding of human. Significant example of Constructivist aesthetics is Mejerchold’s theatrical **Biomechanics** – a series of exercises for actors that should give ability to control their bodies as instruments or as machines to them. Mejerchold himself said about his method: “According to given study of human organism, biomechanics try to raise a man, that would examine mechanism of his construction, he would perfectly control and complete it. Contemporary man that lives in an age of mechanization can’t ignore mechanization of his organism’s kinetic system. Thanks to Biomechanics we will establish principles of exactly analyzed and than performed motions. (...) Contemporary actor have to behave as a modern automobile on a stage.”[32] According to Constructivism, stage becomes a place where human mechanisms regulated by directors – their designers and mechanics - are presented.

While in case of the Futurists, the idea that human *aligned* with the machine leads towards individual emancipation and the super-human (in the sense of Nietzsche’s superman), in the case of the Constructivists’ Biomechanics, we deal with mechanization of man that releases him from individuality and he/she becomes part of a complex ‘human machine’. Futurists suggest the concept of super-man as an unloving automaton, while Constructivist stage production is understood as a mega-machine constituted of human components. In other words, human group performance is understood as a mega-machine production. This discourse leads towards at least conceptual mechanization of man and anthropomorphisation of machine. In both cases we can talk about mirroring of man in machine and machine in man.

Part of this relatively early-completed evolutionary line of theatrical experiments inspired by machinist aesthetics, are theatrical performances on the **Bauhaus stage**. Schlemmer’s theatrical experiments were a search for “elements of movement and space” [19]. His inspiration by Visual art is reflected in his understanding of dancers on the stage as objects and in his performances that evoked **mechanical effect** reminding **puppet theatre**. We can read in Schlemmer’s diary (1971): “Might not the dancers be real puppets, moved by strings, or better still, self-propelled by means of practice mechanism, almost free of human intervention, at most directed by remote control?” [33]. It is a fact that from a year 1923 puppets, mechanical figures, masks and geometrical costumes became characteristic feature of many theatrical performances of Bauhaus.

Another Bauhaus member, Moholy-Nagy (1924) goes even further in the *The Mechanized Eccentric (Die mechanische Exzentrik)*: “Man, who no longer should be permitted to represent himself as a phenomenon of spirit and mind (...) his organism

permits him at best only a certain range of action, dependent entirely on his natural body mechanism. (...) The effect of this body mechanism (Körpermechanik) arises essentially from the spectator's astonishment (...). This is a subjective effect. Here the human body is the sole medium of configuration (Gestaltung). For the purposes of an objective Gestaltung of movement this medium is limited, the more so since it has constant reference to sensible and perceptive (i.e., again literary) elements. The inadequacy of "human" Exzentrik led to the demand for a precise and fully controlled organization of form and motion, intended to be a synthesis of dynamically contrasting phenomena (space, form, motion, sound, and light). This is the Mechanized Eccentric." [30]

Schlemmer's dream about ideal stage representation of man as a puppet, as well as Futurists' dreams about man-machine or Mejerchold's Biomechanics resonates with the developed vision of modern theatre. A New Theatre as an independent and fully-fledged artistic medium, represented by Craig's vision in which actors are replaced by super-puppets, entirely controlled by the stage director: "An actor has to be removed and at his place, will appear an unloving figure, super-puppet, as we will call it until it will get better name." [6] This **theatre of objects utopia** has its roots not only in an aesthetics of symbolist theatre, but it leads far to the history, to the **concept of puppet**, how we can meet with it in **Romanticism** and whose essence we can find in Henry von Kleist's essay *Über das Marionettentheater* (1810/11). His notion of puppet is a kind of concentration of romantic philosophy generally. We can find in it both fear from reason which if it is not "infinite", only retards artistic performance (because it takes its innocence, thus its geniality) as well as reflection of Rousseau's theory of original perfection of man that we could find already reflected in mechanical androids as well).

Paul de Man in his essay *Aesthetic formalisation: Kleist's Über das Marionettentheater* (1984) [9] confronts Kleist's text with Schillers' concept of humankind's education by aesthetics and shows that in case of Kleist's essay we deal with embodiment of principles of aesthetical formalization: "Each puppet has a focal point in movement, a center of gravity, and when this center is moved, the limbs follow without additional handling. The limbs are pendula, echoing automatically the movement of the center. Every time the center of gravity is guided in a straight line, the limbs describe curves that complement and extend the basically simple movement." [27]

2.6 Robotic art: an anti-mimetic shift?

On the Bauhaus stage we could see **abstract images of the human bodies** reduced to geometrical shapes that refer to an urge to depict an essence of man not in its individual uniqueness, but in its general sense and universal validity. In the Bauhaus case, we can still talk about these machine-like or puppet-like bodies as (generalizing) mirrors of a man. However, the appearance of robotic art in the 1960's is connected with an **anti-mimetic shift** in the history of humanlike-machines. "The cybernetic automaton's mirroring of the human body was not established on the basis of conventional mimicry, as in the case of androids and their internal parts, so much as on a common understanding of the similarities that existed between the control

mechanisms and communicational organizations of machine systems and living organisms.”[39] The **anti-mimetic shift** tends towards cancellation of borders between field of art and reality (artifact and nature), between mimesis, representation and life itself.⁷

We can derive, from three landmark works of robotic art from the 60ies, three different aesthetical problems that have formed development and history of this field: Robot K-456 (1964) by Nam June Paik and Shuya Abe deals with a concept of a **remote control**; Squat (1966) by Tom Shannon represents **cybernetics entities** and The Senster (1969-1970) by Edwarda Ihnatowicz is an instance of **autonomous behavior** in art [25].

Contemporary robotic art brings a new aesthetic dimension that prefers modeling of behavior to form (a representative and mimetic static object). In other words, robotic art creates not only forms but as well actions and reactions of robot according to outer or inner stimuli.

3 Staged Robots

The following discussion of staging robots is based on samples from the artistic work of one of the author's of this paper.⁸ These robotic installations and performances investigate limits and degrees of anthropocentrism. By means of **staging robots in a typical human analogies and situations**, these performances exploit the **robots as the medium** of expression. In the works, examples of machines from the very abstract mechanomorphic to the very representative zoomorphic shapes can be found.

3.1 Sign-body: weak Anthropomorphism

Kinetic art, physical artworks with the element of real-time, can be seen as a one of the historical predecessors of robotic art as well as a broader interpretative context of this field of art. Kinetic art is usually mechanomorphic and feeds on the continuous transformation and participation of the viewer. The movement (or perceptible change of state) of an object can be seen in part as its objective nature, while its perception can be its subjective counterpart. Consequently, a rather abstract inert shape can become, from an audience perspective, fluid, organic and eventually anthropomorphic, solely by means of **contextualization** and **movement perception/reception**.

⁷ Burnham described it as a history of both figurative sculpture according to mechanistic automatons of 17th century and robotic sculptures (Cyborg art in his text). He concludes that: “Suddenly, art history naturally assimilates history of life creation as well as an evolution of machine.”[4]

⁸ Please refer to www.processing-plant.com for a comprehensive description of the robotic works in this section.

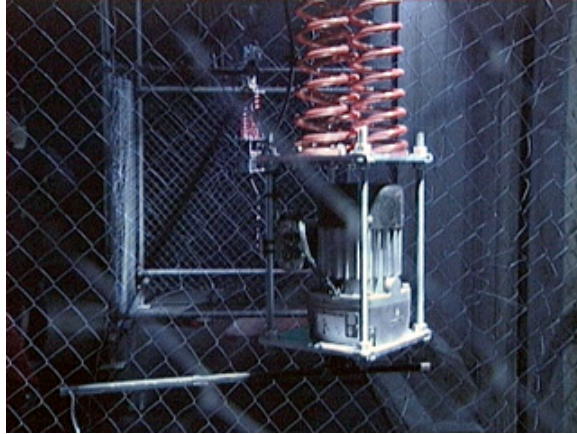


Fig. 5 Untamed machine (La Cour des Miracles 1998)

For example, in Figure 5 the *Untamed Machine* is a simple motor mounted on spring coils and this assemblage creates a rich range of chaotic and unpredictable movements. Aligned with the anti-mimetic shift reported in the recent robotic art and also with the swindle of the Chess player [36], the behavior is delivered without an immense degree of computation (as in bottom-up AI [31, 5]).

Staging this object in a cage results on the viewers' anthropomorphisation of its nature by means of an interpretation of the whole situation as a captive untamed and miserable entity in *La Cour des Miracles* [10,11,12]. The interpreted behavior emanates out of the juxtaposition of this social mise-en-scène and the inherent "out of control" motion of a complex dynamic and chaotic system in action.

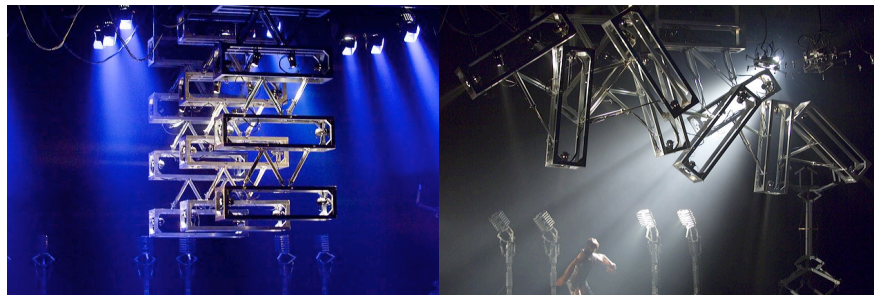


Fig. 6 Organic cubes (Devolution 2006). Left: Neutral Position. Right: Unfolded and floating.

An equal approach was undertaken with the *Organic cubes* (Figure 6) in which shapes were created by a set of discrete manipulators [37]. These geometries evoke the *Deus ex machina* of the Greek theatre during the dance performance called *Devolution* [10]. Beyond the aesthetics of the hypnotic organic movements of these machines, audiences readily address the intent. The uncanny manifestation and cognitive dissonance of these heavy and large floating objects do not push the viewer to retract from the dialogue but rather induce a fascination to understand its stage

presence and character. In this scenario, the *signs-design* (squares, abstract, rigid, cold metal) and the *signs-action* (fluid and soft, chaotic, organic quality) are in conflict. It is distant to the androids of the Enlightenment era where *signs-design* (human body) and *signs-action* (human gestures) are aligned: the goal being to achieve greater mimesis. The weak anthropomorphism here is an advantage as it frees the *sign* from the *signified*. Therefore, it enables a multiplicity of readings from a simple starting shape: an array of cubes as an incarnation of super/non human elements/forces.

3.2 Sign-action: anthropopathy

To explore the acceptance of artificial behaviors, theatre can provide **fictitious environments** to stimulate a **suspension of disbelief**. Stage performers share similarities with the social robots and the puppets in that they both utilize **gesture, body** and **physical action** to incarnate behaviors. Even without an anthropomorphic body, the *sign-action* of the performing objects can nevertheless find foundations in human acting methods to trigger empathic responses in the audience.

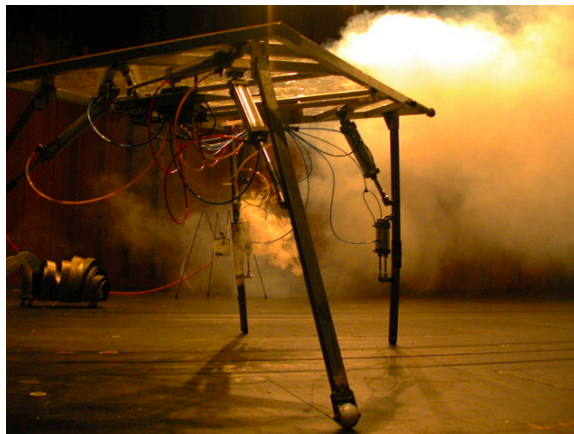


Fig. 7 A Walking Table (*Shockheaded Peter* 2000).

Acting methods may call for **psycho-physical unity** where behavior is inherently physically grounded [21]. This unity finds a resonance in Kleist's essay (1810/11) when it comes to the mechanical performer. For instance, the *Walking Table* during the junk opera *Shockheaded Peter* (Figure 7) manages to ambulate and properly navigate even under an inflicted and deliberate handicapped gait. The behavior, a tedious stumbling object desperately moving to its destination, is a collaboration of the unstable equilibrium of the construction and the staging. The introduction of a latent failure in the gait not only creates a poetic moment but also gives a supplementary spark of life to the object. In a similar fashion, it is suggested to add *Perlin Noise* for enhancing life likeliness of the social robots [15], an observation already reported about the *Musical Lady* (refer to section 2.3).

Acting methods also propose that opposite stances as **presence or absence** can be taken by actors even during single performance: The **presence** calls upon the performer's experience to dwell on his/her experience to deliver the character (and refers rather to Performance art and quality of an authentic presence of theatrical production). The **absence** requires an abnegation of the self to produce a pure rendering of the directors' directives and scripts (and refers in its ultimate form to stage production as a re-presentation or sign system, a formal physical rendering of play-writer's text or director's ideas).

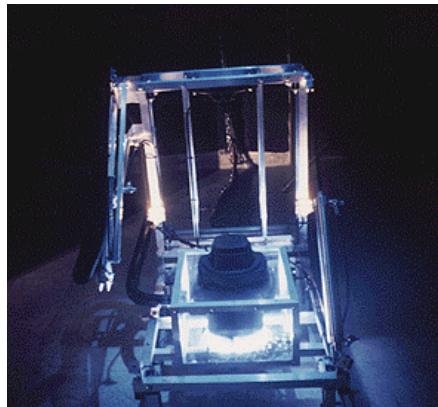


Fig. 8 A begging machine - *La Cour des Miracles* (1998)

The Beggar of Figure 8 had neither experience of misery nor of being pitiable. Its shape was a square box (symbol of a chest) that could rock over a hinge connoting the body language of imploring. The beggar performer is rooted towards absence while the table is ingrained in presence via the physicality of its gait.



Fig. 9 A machine under convulsion – *La Cour des Miracles* (1998)

In **La Cour des Miracles**, all the robotic performers are playing the role of miserable machines (begging, convulsing, trapped, limping and crawling) using the

above-mentioned acting methods. The convulsive machine of Figure 9 is staggered on the floor, helplessly shivering with spasms. The structure of this robot is derived in such way that the actual mechanisms are under a supreme physical stress and tension. This tension percolates into a perceived psychological stress, enhancing the psycho-physical unity of this machine. In fact the malfunctions are so carefully “planned” that they become functional dysfunctional entities. Furthermore, these deviant machines are shaped upon hypothetical functional machines, which never even existed. The perceived behaviors manifested by these robotic agents are then **neither real nor strictly faked** (as no evidence of robot pain has been proved) but yet they are undoubtedly material and visible. They produce illusive behaviors created by our tendency towards empathy and anthropopathy; models that implode within the hyperreal staging of robotic characters.

3.3 Sign-design: mechanomorphism

Reflecting on Aristotle’s *Politics* and the analysis of what could be a robot body on the theatre stage, **The Colonies** [10] are a series of performances and installations where the robot shapes are solely derived from an assemblage of pre-existing mechanism found in assembly lines and industrial manipulators/robots. The initial intents of these robots shapes are purely functional and furthermore, these structures are mostly unknown to the average audience. Thus, the *sign-design* of the machine is not directly conveying nor commenting on any anthropomorphic entities. The perceived behaviors of these shapes are then primarily rooted in the *sign-actions* rather than *the sign-design* of their morphologies or representations (again as opposed to the Androids of the mid 18th century).

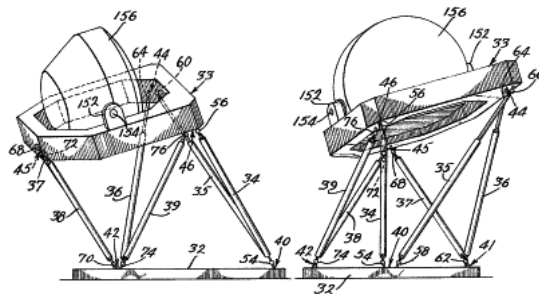


Fig. 10 Flight simulation Platform Mechanism

Figure 10 shows the patent drawings of a simulation platform used as part of the body of the robotic performers of *Le Procès* (Fig. 1). Utilizing existing mechanisms to construct life-like objects brings us back to the paradox of the *quasi-living* objects of the robot history (see section 2).

4 Ontologies disorder

The theatrical **play of signs** can happen owing to a “double” quality of the space - that is physical (theatrical) stage and (dramatic) scene at the same time. Every-thing and every-body that is brought on this double-space room is transformed into its double-existence. It means itself and something else at the same time: man can mean thing and thing can mean man. Actions can get their intrinsic philosophical sense, and Hamlet’s hesitation (that can be seen as a kind of movement without effect) could be felt as a dramatic action.

Two mentioned stances of dramatic art/acting - presence and absence (see section 3.3) - are usually parts of actors’ production dynamically altering each other – from illusive re-presentation of the dramatic character to actors’ pure presence and action in front of an audience and vice versa. The theatrical “play of signs” leaves open the question if what we see on the stage is real/natural or artificial. As Denis Diderot asked in his famous *Paradoxe sur le comédien* (Actor’s Paradox) [14]: Who is crying on the stage? An actor or the character he re-presents? But does he/she only represent the figure when he/she acts in front of us? This old question wasn’t answered yet. In recent science-fiction as well as in *R.U.R.*, robots are often playing their own roles, anthropomorphized by human theatrical codes. So who is acting? The robot itself, its robot-role character? Or the meta-robot? As in the case of examples from section 3, mechanomorphic entities/copies do not represent any originals in “reality” but rather, constitute their own hyper-reality.

What can happen with our understanding/interpretation of robot when it is placed on the stage? We can say that “robot” is originally a dramatic character because it appeared for the first time in a play (see K.Čapek). It was made to “function” on a theatrical stage but then it has escaped its fictional existence and became real. Machines have functioned in a field of art and theatre traditionally as re-presentations and mirrors of human being (see androids above). Does this direction channel the potential of the robot behaviors linking those solely to humanoids shapes and activities? The bottom-up approaches in AI now strongly argue that the body shapes the intelligence [31, 41]: recent researches on intelligent machine behaviors are based upon robot morphologies that bear no direct resemblance to zoomorphic entities. Inspired from the long history of puppetry, we argue that the **robotic performer**, as a stage character embraced with the act of suspension of disbelief from the audience, can potentially take **any shape and form**. (See examples of section 3)

We could associate Baudrillard’s [3] symbolic orders with the degrees or stages of anthropomorphisation of the machine: it is the reflection of a basic reality, it masks and perverts a basic reality, it marks the absence of a basic reality and finally, it bares no relation to reality whatsoever. The first three call upon **anthropomorphic incarnations of the robot** while **the last is pure simulacra**. The Puppet, as Tellis argues, leads the audience to ultimately grapple with matters of being and ontology. The Puppet-Stage and the world-stage both present figures where we have to comprehend and arbitrate on the nature of being.

These artistic explorations of robotic performances and robots as performers/actors (see section 3) fuel themselves in the growing blurred division between the man and the machine and demonstrate the paradox of artificial life - stuck between the real and

the artificial, the flesh and the metal, the sign and the signified. The anthropomorphisation of the robot suffers from Multiple Ontologies Disorder, a high-level manifestation of human-robot schizophrenia [12]. Since the principal of artificial reproduction favors the human form and the human existence as construct, is anthropocentrism at the center of this disorder.

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