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*From Self-Portraits to Geminoid Androids.
Identity and Difference in Robotic Doppelgänger*

Ethics provided us a rich vocabulary to explain the human behaviour: consciousness, identity, decision, responsibility for actions and, like a synthesis of all that, autonomy. It is here that philosophy has played its role in the last Century: as a huge support to the individual autonomy and freedom. Ethics is still here, but nowadays we must be ready to deal with special metamorphoses of what we call human: smart –machines, big data from web searches and digital devices, statistical analysis of everything, prosthetics, robots. Capitalism is using digital economy to be more successful: the whole functioning is an imperative. Cashiers, accountants, surgeons, airline pilots can soon find themselves unemployed: machines will be able to do their jobs less expensively, giving profits more efficiently.

But the question is: are we ready to jeopardize autonomy for automation? Autonomy means *human agency*, in terms of self imposing rules (from Greek αὐτός-self and νόμος – rule), while automation means something moving itself (αὐτόματος). It seems we need to select and prepare all the current equipment in countering the dangerous drift to the final objectification of human lives.

My belief is that we can take into serious account the role of *imagination* in order to maintain our autonomy in all future automation processes, and to be able to assume new responsibilities.

We are going to talk about robotics, walking down a special path: the path of the ambiguous relations between the real and the virtual in the contemporary context of artificial intelligence. In particular, we are going to consider *the art of Self-representation* as an essential goal for artificial intelligence in order to realize the main targets of robotics, for which I appoint three adjectives starting with the letter “P” that are necessary to be: *pervasive, persuasive, productive*. This is what engineers are ultimately asking of the new robotic technology.

So, our focus will be on the link between *Self-portraits in art, Doppelgänger in literature* and robotic process automation in *Geminoid androids*. The theoretical question you can see in backlight is: artistic representations of the Self can really be the resilience of the human essence in robotic identities?

We should begin from the social phenomenon of Self-representation in digital identities before getting into robotic replications of human beings. Cultural models of identity are going to quickly change: "difference" will play a primary role at the heart of identity and we can better understand the reason for this through an example.

In 2013 a mobile application called *Bitstrips* became really popular among young Facebook users. As the application name implies, the virtual fun revolved around making up little comic strip scenes, created by the company and given to its users in order to create their own pithy stories, regardless of drawing skills or digital abilities. But the actual secret of *Bitstrips* was the comic avatars playing those stories: users were able to create an avatar of themselves, customizing their scenes with their own body features, set of facial expressions, hair and eyes colors, also their daily outfits. Lastly, the avatar could bear their real names. That huge success in entertaining allowed the company to launch a second version for educational purposes called *Bitstrips for Schools*: the software was licensed to all publicly-funded schools in its home province of Ontario thanks to a partnership with its Ministry of Education. A few years later, all that clamor slowly faded away. But something was learnt: people and kids using the app weren't just communicating through comics, they were communicating through their own avatars.

In the real world, the presence of the body is absolute proof of existence while in the digital world the user must come "into existence" to communicate: he must build his personal profile, otherwise his digital presence is absolutely unobservable, so he simply does not exist for the community. To compensate for the loss of physical presence, people must create new ways of reading the signals presented by others and new ways to present themselves. Apart from *Bitstrips* figures, the digital Self-representation in itself is composed of signs visible on the screen (like a mirror for each one of us) that show the user's presence distinguishing it from someone else. Email addresses, nicknames, identification numbers and letters, is all used for that purpose. But if we look for more detailed forms of self-representation, people strive to laboriously construct *visual portraits* that reveal chosen aspects of their identity (see the usage of customized stickers on Facebook or Whatsapp). «In the virtual as well as the real world, identity is strictly related to the concept of difference»¹: you must be able to choose or create marks of special distinction in order to be recognized by other users.

Starting from what has been stated before - the assumption that visual portraits reveal chosen aspects of our identity - we will bring this idea forward to its ultimate consequence: that constructed representations of the Self have belonged to an original projection of the Self through the body. Belonging to a deep and long standing

¹ Georges, F. (2009), *Self-Representation and Digital Identity. A semiotic and quali-quantitative approach to the cultural empowerment of the Web 2.0*, translated by E. Libbrecht, La Découverte, "Réseaux" 2009/2, n.154, France, pp.165 – 193; unfortunately we cannot reflect here about one of the interesting themes of this research, about digital identity divided into three sets: *declarative identity, acting identity, and calculated identity*.

experience of corporeality, artistic self-portraits as well as graphic avatars, reflect the same need for human identity that incoming robotics is going to reflect.

Three considerations will lead the way for our analysis.

The first one comes from Francis Bacon's paintings. Instead of having subjects model for him, Bacon preferred to adapt his paintings from photographs of people, creating a sort of "dark" portraits, distorting their true likeness. Quoting from his words «if you want to convey fact, this can only ever be done through a form of distortion. You must distort to transform what is called appearance into image»². Bacon's portrait do not aim to tell us a story: he denies the obvious representation of facial identities. How could he realize that? Isolating certain figures, fading outlines and impressing movement by colors. Bacon's portraits produces the *uncanny* feeling to see something that refers to something else, a double subject that is familiar and strange at the same time. Just think of his *Study for Portrait II (after the Life Mask of William Blake)*, or *Portrait of Isabel Rawsthorne*. We will have this experience of uncanny feelings again, when we are in front of robots.

Let's move to the second consideration now. It comes from Emil Cioran, the Romanian philosopher who published works in both Romanian and French. He was a kind of anti-philosopher of philosophy, disregarding categories, moral imperatives and definitions given by professional philosophers. Reason seemed to him a weak superstructure built on the irrational force of life: decay, death and silence have the last word, they are the only unavoidable approach to the meaning of existence. However, there is a small exception to this rule: something still able to resist and fight against the impotence of thought when faced with annihilation. What is it? The hidden transcendence in human portraits. Let's look at it further, together.

In *Anthologie du Portrait: de Saint-Simon à Tocqueville*, a collection of brilliant portraits selected by Cioran³, he follows Maister Eckhart's ideas. The German speculative mystic made a distinction between "the inner man" (the interior and spiritual man) and the "outer man", that is the individual over time, throughout history, in society. Well, Cioran is convinced that only portraits can give a form to the "outer man", the one living in the history, experiencing time under the gaze of society. But, on the other hand, portraits have the power to let us imagine the "inner man", to raise infinity. So, following Cioran, we can say that every mysterious (*uncanny*) inner life needs an "outer man" to be recognized: a portrait is what gives temporality and history to the Self.

² Bacon, F., quoted by H. Davies and S. Yard (1986). *Francis Bacon*, New York: Abbeville Press, pp. 41-44; Sylvester, D. (1987). *The Brutality of Fact: Interviews with Francis Bacon*, London: Thames and Hudson.

³ Cioran, E. (1996). *Anthologie du Portrait: de Saint-Simon à Tocqueville (An Anthology of Portraits: from Saint Simon to Tocqueville)*, Paris: Gallimard; White, K. (2017). *Emil Cioran. The Anti-Philosopher of Life and Death*, <http://www.fourbythreemagazine.com/issue/death/emil-cioran-the-anti-philosopher-of-life-and-death>.

We have come to the third consideration, taken from Spinoza, the seventeenth-century Dutch philosopher who presented a radical alternative to the Cartesian philosophy of difference between *res cogitans* (mind, idea, thought) and *res extensa* (body, nature) that has much shaped our cultural heritage. He upends the hierarchical dualism between mind and body, so that neither is more fundamental than the other, claiming that a person's mind and body are actually one and the same, even though minds think and do not move (in the mode of thought), whereas bodies move and do not think (in the mode of extension): they share the same substance. Identity over time is linked to substance⁴. Continuing on this, body is not just *res extensa*, occupied space, but it is linked with ideas, involved in *affections* with other bodies, and nature. "What is a body capable of?" is the question asked by Gilles Deleuze reading Spinoza's philosophy. That is to say, not what a body is, but what are its possibilities, its activities, its performance in motion: capacity that depends not just on the body, but on the extended shapes of the world around it in every way. The same applies to animals and inanimate things: which is their capacity?⁵ And so, to summarize our third consideration, portraits of humans have the power to be virtual representation of body's capacity. As Deleuze writes «the virtual is opposed non to the real, but to the actual. The virtual is fully real in so far as it is virtual». Robotics inherit this conception of the body as virtual-actual in its mode of existence.

What happens if portraits become double? For example, we can think of double self-portraits as the enigmatic *The Two Fridas* painted by Frida Kahlo in 1939: one is the traditional Frida in Tehuana costume, with a broken heart, sitting next to an independent, modern dressed Frida. This duality of her identity is central to the painting, which could be alluding to her heritage, the European influence of her father and the Mexican influence of her mother, especially after the painful end of her love affair with the Mexican painter Diego Rivera⁶.

We can consider also a famous photographic self-portrait by the Italian painter Umberto Boccioni, theorist of the Futurist Movement in art. He records his photographic self-image as a multiple or repetition of himself. The photograph, dated 1905, represents five Boccioni: the mysterious photograph is entitled *Io-Noi* (I-We), in an obvious attempt to transform a personal act of self-representation into an act of objectification of the same subject and identity⁷.

⁴ Spinoza, *Ethics* (1996). E. Curley (ed.), introduction by S. Hampshire, London: Penguin Classics; Deleuze, G. (1988). *Spinoza: Practical Philosophy*, San Francisco: City Lights Books.

⁵ Deleuze, G. (1995). *Difference and Repetition*, translated by P. Patton, New York: Columbia University Press; Deleuze, G. (2007). *Cosa può un corpo? Lezioni su Spinoza*, A. Pardi (ed.), Verona, Italy: Ombre Corte, pp-80-82.

⁶ Stockwell, M. (2019). *The Two Fridas: Duality and Surrealism in Kahlo's Famous Portrait*, <https://blog.singularart.com/en/2019/07/23/the-two-fridas-1939-duality-and-surrealism-in-kahlos-famous-portrait/>; www.FridaKahlo.org.

⁷ Verdicchio, P. (2011). *Looters, Photographers and Thieves. Aspects of Italian Photographic Culture in the Nineteenth and Twentieth Centuries*, US: Fairleigh Dickinson University Press, pp.28-29.

We can give another example, taken from a known movie by Stanley Kubrick in 1980. I do not think anyone can ever forget the *Shining*'s iconic twin sisters, their creepy appearance in the horror sequences in the movie.

From the beginning nature gave us the mystery of the ambiguous identity of twins. We only have to look at Greek mythology: the Dioscuri gods were the twin brothers Castor and Pollux. Just like our literary tradition gave us the enigma of the double impersonation, the Doppelgänger. We only have to look at the ancient Latin literature: Plautus' play entitled *Amphitruo* created the famous character of *Sosia*, at the end of the third century B.C. In the plot, the god Mercury changes his appearance to look like Amphitryon's slave *Sosia*, and when the real *Sosia* arrives, he beats him and sends him away from the house. Thoroughly confused by having been beaten by himself, *Sosia* returns to the ship to relay what happened to his master Amphitryon. Coming to more recent times, *The Double* is a novel written by Dostoevskij in 1846: the government clerk *Jacov Petrovich Goljadkin* finds out not only that he has a double, but that his double is taking over his life. While *Goljadkin* is confident, charming, aware of ethical values in his actions, the double is the opposite, corrupt and unscrupulous. The outer duplicity is the metaphor for the moral duplicity in human beings.

The performance of identity, we can say. The double self-representation, to a certain degree, is not a phenomenon that was invented in the digital age. People have always presented themselves in a manner which is inconsistent with who they really are and with their set of real beliefs and values; however they need their double in order to discover something about themselves, to go beyond the limits, to self-enhance their true identity.

Is *duplication* a threat or a source of enrichment?

A keen interest has been taken in this issue, because this matter should concern all of us: it is not only interest in self-representation, but in the incipient penetration of robotics in our lives. Duplication can contribute to strengths that already exist, but can also contribute to its impoverishment. Do self-representations improve our self-perception, or do they distort? This is an old aesthetic issue, which is going to have a new answer, with the help of robotics.

In 1919 Sigmund Freud wrote *Das Unheimliche (The Uncanny)*, an essay about that special psychological experience of something as *strangely familiar*: uncanny is something that appears familiar and known, but immediately turns out to be strange, obscure, even creepy⁸. Freud refers to the work of Otto Rank, the psychoanalyst author of *The Doppelgänger*, and to a famous short story written by Ernst Theodor Amadeus Hoffmann - the «unrivalled master of the uncanny in literature» - which is entitled *The Sandman*. Well, when Freud gets to the point of describing what uncanny is, he uses *Olimpia*, a particular character in the story: she is an automaton, a mechanical doll with the appearance of a pretty girl. *Nathanael*, the protagonist, has been invited to a party

⁸ Freud, Sigmund (2003). *The Uncanny*, H. Haughton (ed.), translated by D. McLintock, London: Penguin Books.

and falls in love with Olimpia, who plays the harpsichord, sings and dances. Her stiffness of movement and coldness of touch appear *strange* to many of the company. Nathanael dances with her, enchanted. During the next days he visits Olimpia, talks to her, but her simple replies “ah, ah” to everything, sound a little bit strange. Once, when he arrives at her house, he finds an argument in progress between the two creators of the doll, who are fighting over the body of Olimpia, arguing over who made the eyes and who made the clockwork. The sight of Olimpia's eyes lying on the ground shocks Nathanael⁹. Here the uncanny impression is shown: a hand cut from the body, a severed head, feet dancing alone; something very far from the rules of nature. The uncanny sensation caused by imperfect simulations of human appearance and movement provokes a rejection: it happens in everyday reality when we face prosthetic arms, or prosthetic eyes, as well. It is called the *uncanny valley effect* in robotics. The Japanese robotic expert Masahiro Mori was the first one explaining this special effect in 1970, and he gave a precious warning to his successors: be careful in building too humanlike robots! Even the most perfect one, may result as uncanny and distressing, because its movements will be imperfect, or just because it deviates from norms of physical beauty. «Androids in various states of mutilation, decapitation, or disassembly are reminiscent of a battlefield after a conflict and, as such, serve as a reminder of our mortality»¹⁰, that is why we feel little confident with them.

If we are quite surprised by Hoffman in 1816, we will be even more surprised learning that the first uncanny valley effect appears in *The Iliad*, the ancient Greek poem by Homer, due to unexpected “robot women”. May be it is a bit much to say “robot women”, but it is a good description. I draw your attention to the episode in which Thetis, the mythological mother of Achilles, goes down to Hephaestus’s workshop in order to ask him for a special shield for Achilles to be made. Serving as the blacksmith of gods in Olympus, Hephaestus built women automatons of metal to work for him, and special tripods which were able to walk to and from the Mount Olympus to carry food and drinks at the assembly of gods. Homer writes that those Hephaestus’ maidservants had “mind in heart”, voice and strength just like human girls¹¹, and that was really impressive to Thetis.

«My research question is to know what is a human – says Professor Hiroshi Ishiguro, roboticist at Osaka University in Japan - I use very humanlike robots as test beds for my hypotheses», and these hypotheses are about human nature, intelligence, and behavior¹². Professor Ishiguro is famous all over the world for the *Geminoid HI-1*, his mechanical doppelgänger, made of silicone rubber, pneumatic actuators, powerful electronics, and hair from his own scalp, remotely controlled through his computer.

⁹ Hoffmann, E. T. (1982). *Tales of Hoffmann*, translated by R. J. Hollingdale, London: Penguin Classics.

¹⁰ MacDorman, K. – Hiroshi, I. (2006). *The Uncanny Advantage of Using Androids in Cognitive and Social Science Research*, in *Interaction Studies*, 7, 3, 2006, p. 313.

¹¹ Homer, *The Iliad* (1999). B. Knox (ed.), translated by R. Fagles, London: Penguin Classics.

¹² Giuzzo, E. (2010). *Hiroshi Ishiguro. The Man who Made a Copy of Himself*, https://spectrum.ieee.org/robotics/humanoids/hiroshi-ishiguro-the-man-who-made-a-copy-of-himself?utm_source=robots.ieee.org

The android reproduces Ishiguro's voice, his intonation, and is able to blink, twitch and tilt its head. *Repliee Q2* is one of his creatures: an uncannily lifelike female robot able to mimic our natural blinking, breathing and speaking, with the ability to recognize and process speech and touch. *Geminoid F* is another female android modeled after a woman in her twenties. She can show facial expressions, such as smiling or frowning, in a more natural looking way than Ishiguro's previous androids: a wide range of facial expressions and body movements seems to be one of Ishiguro's main goals. He coined the term "geminoid" after *geminus*, which is Latin for twin, to mean that these androids' appearance closely resemble a specific human model.

What makes Geminoids unique is their concept behind: researchers have long been interested in making robots act like human beings, but many of these robots are all mechanical looking, while «our brains - Ishiguro says - are wired to relate to other humans, we're optimized for human-human». Robots are slowly moving from factories into daily life. Just think about the use that are made of them in hospitals, monitoring the sick in intensive care units during these difficult days of the Covid-19 pandemic. To be accepted in these roles, robots must behave more like humans than like machines. It is like "new horizons for empathy". Also «because of their resemblance to people, they have the potential to contribute to an understanding of human behavior and the roles of our brains and bodies play in it»¹³.

If androids are more likely to fall into the uncanny valley than mechanical looking robots, the reason may be that our brains are processing androids as human (...). Methodologies from the social and cognitive science and ethology can therefore be used to evaluate android performance that were previously used to evaluate human performance. In comparing human-android versus human-human interaction, topics under study include the effects of thinking, lying, and age on eye contact and gaze. This means that we can use human participants to obtain a more finely-grained analysis of the behavior of androids than is possible with other kinds of robots¹⁴.

Geminoids will be very useful in studying human perceptions, and they will enable social and cognitive science to approach the human measure from a different scientific perspective.

At the end of these reflections, we should take up the question which was written in our introduction: can artistic representations of the Self really be the resilience of human essence in robotic identities? Well, our answer is definitely yes. «Certain questions about human beings can only be answered by employing androids experimentally», geminoid engineers say. That is quite a statement.

¹³ MacDorman, K. – Hiroshi, I. (2006). *The Uncanny Advantage of Using Androids in Cognitive and Social Science Research*, p. 319.

¹⁴ MacDorman, K. – Hiroshi, I. (2006). *The Uncanny Advantage of Using Androids in Cognitive and Social Science Research*, p. 301.

However, we agree that: human-android interaction will change people's behavior and lives soon, and we believe that it will only work if we are capable to stay human in that interaction, using robots as an interface of our humanness. This is why self-representations was focused on: before any ethical reasoning, it is a matter of aesthetic approach, perception and recognition. The body immediately grants existence to the person allowing her or him to be visible to others, and to construct an identity through differentiation.

The long history of self-portraits in art and doppelgänger in literature is evolving in the form of personalized digital media sources, and eventually in androids, with increasingly perfect human features. We appointed three adjectives starting with letter "p": artificial intelligence needs to be pervasive, persuasive, productive. It is about time to claim another word (and another P): personable.

Lifelike, but not alive? can be the dilemma.

Human anthropomorphism of robotic dolls, robopets, household robots, companion robots, raises questions of whether these artifacts dehumanize people and substitute impoverished relationships for real human interactions. Some concerns, such as whether artificial moral agents will lead humans to abdicate responsibility to machines, seem particularly pressing (Allen & Wallach): we believe that traditional symbol-processing approaches to artificial intelligence and more recent approaches based on artificial neural nets and embodied cognition could provide technologies supporting functional morality. The work of resemblance can work as an integration of human functions (think of care-bots, nursing robots or companion robots for the elderly and children) or as an integral replacement of human presence (think of land mine-seeking robots): but this, in the long run, will depend on the meaning we give to resemblance and human identity.

Here we also see examples of medical robotics: robots that perform precision surgery and nurse robots that have provided care in hospital for Covid 19 patients. But also assistive and socially interactive robots that help elderly people with dementia or children with autism spectrum disorders. The alternative between integration and substitution is still premature, but above all it is still all to the advantage of the functions that we decide to give to robotics. External robotics meets requirements, emotions, empathic reactions already embedded in a social body (not only the solitary-private ones): they fit into the affective co-determination between human agents. "The creation of Substitutes promises to enrich and transform our plurality condition. It promises to introduce among us new actors, who, similarly to animals, but in another way, will be at once like us and different from us" (Paul Dumouchel and Luisa Damiano).

How will we manage this amplified knowledge? Are we going to use it for the market rules or for the human autonomy? I believe moral philosophy must seriously take these matters into its hand, challenging with its critical thinking a merely technologists' and scientists' approach.