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

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Abstract
The real and the virtual maintain ambiguous relations in the contemporary context of artificial intelligence. From the social phenomenon of self-representation in digital identities to the robotic phenomenon of replication of human beings; cultural models of identity are going to quickly change: "difference" will play a primary role at the heart of identity. The focus of this paper will be on the link between self-portraits in art, the doppelgänger in literature, and robotic process automation in geminoid androids. A geminoid robot appears and behaves just like its source person. How important is it to overcome the discomfort of an uncanny resemblance? Is similarity in robotics going to be the access key to the source of the self? Because of their resemblance to people, androids have the potential to contribute to an understanding of human behavior and the roles our brains and bodies play in it. Is it true that "certain questions about human beings can only be answered by employing androids experimentally?" as robotics engineers write? This presentation will try to answer these new questions.

Keywords: Identity, Portrait, Self-Representation, Robotics, Android

Introduction

I am going to talk about Art, taking a particular path: the path of the ambiguous relations between the real and the virtual in the contemporary context of artificial intelligence.

I am 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": pervasive, persuasive, productive. This is what engineers are ultimately asking about in new robotics technology.

So, my focus will be on the link between self-portraits in art, the doppelgänger in literature, and robotic process automation in Geminoid androids. The theoretical question is: can artistic representations of the self really be the resilience of the human essence in robotic identities?

A Quick Look at Self-Representation in Digital Identities

I shall begin from the social phenomenon of self-representation in digital identities before getting into robot 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 *Bitstripes* became very 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 eye color, as well as their daily outfits. Lastly, the avatar could bear their real names. That huge success in entertainment 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 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 of us) that show the user's presence, distinguishing it from someone else's. Email addresses, nicknames, identification numbers and letters, are 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.

The legacy of Portraits: uncanny feeling, externality and virtuality

Starting from what has been stated before - the assumption that visual portraits reveal chosen aspects of our identity - this idea is brought forward to its ultimate consequence: constructed representations of the self, have belonged to an original projection of the self through the body. Belonging to a deep and long standing experience of corporeality, artistic self-portraits as well as graphic avatars, reflect the same need for human identity that forthcoming robotics is going to reflect.

Three considerations lead the way for my 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 sorts of "dark" portraits, distorting their true likeness. Quoting 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 portraits do not aim to tell a story: he denies the obvious representation of facial identities. How could he do this? Isolating certain figures, fading outlines, and impressing movements by color. Bacon's portraits produce the *uncanny* feeling of seeing something that refers to something else, a double subject that is both 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*. This experience of uncanny feelings will again be had, when one is 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-philosophy philosopher, 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 ineluctable 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*, a collection of brilliant portraits selected by Cioran[3], he follows Maister Eckhart's ideas. The German speculative mystic made a distinction

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[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, *Réseaux,* 2/2009, n.154, France: La Découverte, 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*.

[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-*

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 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 see beyond reality. So, following Cioran, we can conclude that every mysterious (*uncanny*) inner life needs an “outer man” to be recognized: a portrait is what gives temporality and history to the self.

The third consideration is 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 one 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 substance[4]. Continuing from this, a 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, while reading Spinoza’s philosophy. That is to say, not what a body is, but what are its possibilities, its activities, its performances 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: what is their capacity?[5] And so, to summarize my third consideration, portraits of humans have the power to be virtual representations of the body’s capacity. As Deleuze writes «the virtual is opposed not to the real, but to the actual. The virtual is fully real in so far as it is virtual». Robotics inherits this conception of the body as virtual-actual in its mode of existence.

The Need for The Double

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, modernly 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 Rivera[6].

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

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Philosopher of Life and Death, http://www.fourbythreemagazine.com/issue/death/emil-cioran-the-anti-philosopher-of-life-and-death.

[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.), Italy: Ombre Corte, pp-80-82.

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

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 identity[7].

I can give another example, taken from a well-known movie by Stanley Kubrik 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 has given 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 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 Dostoevskji 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 themselves, to go beyond the limits, to self-enhance their true identity.

Resemblance to Robots: the advent of *Geminoids*

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

A keen interest has been taken in this issue, because this matter concerns 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 creepy[8]. Freud refers to the work of Otto Rank, the psychoanalyst author of *The Doppelgänger*, and to a famous short story written by Ernst Theodor

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

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 Olympia, 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 and falls in love with Olympia, 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 Olympia, 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 Olympia, arguing over who made the eyes and who made the clockwork. The sight of Olympia's eyes lying on the ground shocks Nathanael [9]. 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 robotics expert Masahiro Mori was the first one to explain 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 to learn that the first uncanny valley effect appears in *The Iliad*, the ancient Greek poem by Homer, due to unexpected "robot women". Maybe 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 Mount Olympus to carry food and drink at the assembly of gods. Homer writes that those Hephaestus' maidservants had "mind and heart", voice and strength just like human girls[11], and that was really impressive to Thetis.

«My research question is to know what a human is – 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 behavior[12]. Professor Ishiguro is famous all over the world for the *Geminoid HI-1*, his mechanical doppelgänger, made of silicone rubber, pneumatic actuators, powerful

[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, Netherlands, 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

electronics, and even hair from his own scalp, remotely controlled through his computer. 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 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 this android's appearance closely resembles a specific human model.

What makes Geminoids unique is the concept behind them: 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 contact/interaction». 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 epidemic. To be accepted in these roles, robots must behave more like humans then like machines. It is like "new horizons for empathy". «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 social, and cognitive science, and ethology can therefore be used to evaluate android performance, which were previously used to evaluate human performance. In comparing human-android versus human-human interaction, topics under study include the effects of thinking, lying, age, and 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 robots». 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]. 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.

Conclusion

At the end of these reflections, we should take up the question which was posed in the introduction: can artistic representations of the self really be the resilience of human essence in robot identities? Well, the answer is definitely yes. «Certain questions about human beings can only be answered by employing androids experimentally», geminoid engineers say. This is maybe going too far.

We must admit, though, that human-android interaction will change people's behavior and lives soon, and we believe that it will only work if we are capable of staying human in that interaction, using robots as an interface of our humanness. This is why self-representations were the object of our focus: before any ethical reasoning, it is a matter of aesthetics, perception and recognition. The body immediately grants

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

existence to the person allowing him or her to be visible to others, and to construct an identity through difference.

The long history of self-portraits in art and doppelgänger in literature is evolving in the form of personalized digital media sources and will, eventually, in androids, with increasingly perfect human features. I appointed three adjectives at the beginning with the letter “p”: pervasive, persuasive, productive. It is about time to introduce another word (always beginning with P): personable.

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