

# Introduction. Against the Stream: Searching for a Concept of the Self in Posthumanist Contexts

“Whoever finds himself is superior to the world”

Syrian Thomas’ Gospel

The aim in the title may sound a mission impossible-like in the light of the post-selfhood turn<sup>1</sup> that has been observed over the last two decades not only in analytical philosophy and the philosophy of mind but also in the so-called *posthumanism*. If we no longer live in a human world, why care about this “central abstraction”<sup>2</sup> projected by our minds, i.e., our *self-identity*?

The problem is not only ontological and cognitive in nature – it is more anthropological, existential, social, and therapeutic. Philosophical anthropology used to formulate it with the Kantian question “What is man?” According to Robert Loaden, Kant’s approach to the human being put an end to “scholastic anthropology,”<sup>3</sup> as it was useless for modern humans who had to revise their concept of human nature after the discovery indigenous nations with their different multicultural identities. However, Kant’s concept of man as an autonomous *subjectivity* delivered a powerful counterbalance to reductionist concepts such as that of La Mettrie (*L’homme machine*, 1747).

In contrast to these approaches, phenomenological and hermeneutical philosophy rather asked ‘Who am I?’ – as a unique human being with interiority (mental life) and exteriority (corporeality, embodiment). Finally, analytical philosophy proclaimed non-egological and conceptions of the self.<sup>4</sup> Contemporary transhumanist scholars seem to follow Peter Strawson’s concept, as they have begun talking about “postpersons” (Julian Savulescu) and post-selves in a radical human enhancement context. “We are not essentially selves (. . .) Being a self is

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1 See Terry C. Muck, “After selfhood: Constructing the religious self in a post-self age,” *Journal of the Evangelical Theological Society* 1998, vol. 41, no. 1, pp. 107–122.

2 Dan Zahavi, *Subjectivity and selfhood. Investigating the first-person perspective*, Cambridge, MIT Press, 2005, p. 111.

3 Robert B. Loaden, “Anthropology from a Kantian point of view: Toward a cosmopolitan conception of human nature,” *Studies in History and Philosophy of Science* 2009, vol. 39, p. 516.

4 Peter F. Strawson has pioneered the analytical deconstruction of realistic self in: P. F. Strawson, *Individuals*, London, Methuen, 1959. Ewa Nowak - 9783631822159

just a ‘phase’ we pass through, like being adults. Nothing psychological is necessary for our existence,”<sup>5</sup> Ingmar Persson argues.

But next to such reductionist or even nihilist claims as those of Persson,<sup>6</sup> one can still find grounds for a non-reductionist, or at least a moderate conception, of the self. Without a doubt, Paul Ricoeur, Owen Flanagan, and Dan Zahavi contribute to this conception: “it is undeniable that the self plays a crucial role in our psychological and social life by giving it organization, meaning, and structure.”<sup>7</sup> Those authors are not the only ones: the return to the non-reductionist self can also be supported by the naturalistic arguments found in the works of all those scholars who shifted the paradigm of selfhood from *owning a body to be (own) a body*, i.e. to be an *embodied self*. St. Aquinas belongs to this camp: “the union of body and soul is certainly a natural one, and any separation of the soul from the body goes against its nature and is imposed on it. So if a soul is deprived of a body, it will exist imperfectly as long as that situation lasts (...) Platonists who (...) believed also in reincarnation, though that is heresy (...) Secondly, what human beings desire by nature is their own well-being. But a soul is not the whole human being, only part of one: my soul is not me.”<sup>8</sup> St. Aquinas’ position breaks with the tradition of St. Paul, which neglected the body as a contingent phenomenon that only disturbs one’s relationship with one’s true non-egological self, of Oriental provenience.

How far can the self be approached as something *experiential* and not substantial, and which kind of experience would provide such a recovered concept of the self with enough evidence? This is a difficult question, because re-identifying oneself (*idem*) again and again, persisting, remaining identical (*ipse*) without becoming estranged to oneself<sup>9</sup> seems to be impossible in our auto-creative,

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5 Ingmar Persson, “Why we are not identical to things of any kind,” in: Galen Strawson (Ed.), *The self*, Malden, Blackwell, 2005, p. 27.

6 See also Daniel C. Dennett, “The self as the center of narrative gravity” as a useful fiction, in: F. S. Kessel *et al.* (Eds.), *Self and consciousness: Multiple perspective*, Hillsdale, Erlbaum, 1992, pp. 103–115.

7 D. Zahavi, *Subjectivity and selfhood*, p. 112; also Owen Flanagan, *Consciousness reconsidered*, Cambridge, The MIT Press, 1992.

8 Aquinas, *Selected Philosophical Writings*, Ed. T. McDermott. New York, Oxford University Press, 1993, p. 192.

9 See Jean Améry, *On aging: Revolt and resignation*, trans. J. D. Barlow, Bloomington, Indiana University Press, 1994; and its 2<sup>nd</sup> German translation as *Sich fremd werden* (or “becoming exteriorized,” as Roy Ben-Shai explains, see “Imposition, or writing from the void. Pathos and pathology in Améry,” in: M. Zolkos (Ed.), *On Jean Améry. Philosophy of catastrophe*, Lanham, Boulder, New York, Toronto, Plymouth, Lexington Books, 2011, pp. 109–135.

auto-poietic and highly technological lifeworld. Humankind never had so many techniques to enhance and modify *herself*, not only to adapt the world for its habitat. Natural evolution did not assign any special life niche for humankind. They have to create their artificial “life field”<sup>10</sup> (*Lebensfeld*) on their own, using their intelligence, freedom, language, technology etc. Their ultimate end is not culture as a “second nature” corresponding to their peculiar needs (*der Mensch als biologisches Sonderproblem*). They are unable to restrain their creative drive. Their technopoietic activity became autopoietic a long time ago: with ambivalent implications for selfhood and identity. It is not just the ship of Theseus but humans themselves who confront more and more advanced technological improvements today. Before introducing them more systematically and showing their effects on self and identity, one more anthropologist should be mentioned here.

Hans Jonas describes the ambivalent effects that technology and technological freedom have on identity and selfhood, which he conceptualized in a naturalized, but non-reductionist way. Jonas defended the self, even in simple living organisms. In the case of human beings, the potential of their selfhood is open-ended and should remain so, he argues. So asking “who do I want to become?” – which is also a great subject of the philosophy of life and hermeneutics – should be accompanied by responsibility for one’s self and identity. Interpreting Jonas’ imperative of responsibility in such a context suggests that self and identity are meaningful. In other words, they are values with some autotelic aspect. The latter is to be understood as a solely human, open-ended potential which should remain out of the reach of determination and power of all kind. Even one’s own freedom might produce power and oppression, and that occurs by means of technologies, Jonas claims. He argues that there are many reasons to be concerned about the condition of the self during the age of excessive technology use. The contemporary narrative self-conceptions seem to respond to Jonas’ concern, for example with Dieter Thomä’s question “how am I doing”<sup>11</sup> (*wie geht es mir*) as it combines experiential and therapeutic aspects with a first-person perspective and the careful relation to one’s own self. It is experiential because no one can respond to it without drawing from self-experience and socially mediated self-experience; and it is potentially therapeutic because it

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10 That originally Nietzschean view was developed by the German anthropologist Arnold Gehlen in *Der Mensch. Seine Natur und seine Stellung in der Welt*, Wiesbaden, Aula Verlag, 1986.

11 Dieter Thomä, *Erzähle dich selbst. Lebensgeschichte als Philosophisches Problem*, Frankfurt am Main, Suhrkamp, 2007, p. 214.

searches for an authentic *self*-experience in a world becoming increasingly artificial, virtual, and fictional.<sup>12</sup> As Maurice Merleau-Ponty warned decades ago, it is our “thinking ‘operationally’ which has become a sort of an absolute artificialism, such as we see in the ideology of cybernetics, where human creations are derived from a natural information process, itself conceived on the model of human machines.”<sup>13</sup>

As will be shown below, Jonas’ methodology still represents the phenomenological tradition, but also provides evidence for biological and experiential foundations of selfhood. If “an *absolute* self-reference”<sup>14</sup> is quite impossible, humans can at least refer to their living and lived embodiment instead.

Association, disintegration, and “self-negation” were diagnosed as traumatic symptoms of the late modern age by Anthony Giddens<sup>15</sup> and the Polish post-war psychologist Kazimierz Dąbrowski. The Holocaust survivor Jean Améry described “the *loss* of the position of selfhood”<sup>16</sup> as a catastrophic existential experience. There is something paradoxical in the modern dialectics of self-negation and self-affirmation. Apparently, when they are existentially endangered, confronting a cultural crisis or clash, human beings show more interest in strengthening their selves and identities.

The same can be observed in the recent age of radical human enhancement when humans started facing their *posthuman* or *transhuman* future. But technological developments and critical discourses are not enough to provide the contemporary (and still) human condition with sufficient support. It is the philosophers’ task to resume the search for adequate – and affirmative – narratives, supportive discourses, and therapeutic tools. They cannot be the

12 About robotic self, see D. Zahavi, *Subjectivity and selfhood*, p. 111.

13 Maurice Merleau-Ponty, *The primacy of perception*, Evanston Ill, Northwestern University Press, 1964, p. 164.

14 “. . . *identity* is not a kind of reference. In fact, identity is – from the viewpoint of the Tractarian philosophy – nothing, i.e. nothing that can be said, although we are subject to the illusion that ‘identity propositions’ may have a content (that’s why identity is ‘the very devil’),” Guillaume Decauwert, “Saying and showing,” *Analysis and Metaphysics* 2013, vol. 12, p. 95; for counterarguments see Sydney Shoemaker, “Self-reference and self-awareness,” *Journal of Philosophy* 1968, vol. 65, pp. 556–579.

15 See Anthony Giddens, *Modernity and self-identity. Self and society in the late modern age*, Cambridge, Polity Press, 1991.

16 “It is neither positive nor negative, but *im*-positive: a hybrid,” R. Ben-Shai, “Imposition, or writing from the void: Pathos and pathology in Améry,” p. 121.

same as discourses with universalist claims,<sup>17</sup> which assert that the essentials of humanity and human nature endangered by advanced technologies and progressive cultures. Despite the fact that humanity's survival relies on technological progress, it is neither humanity nor human nature, but rather an individual human that experiences – but not necessarily “has!” – her outdated corporeality and being-in-the-world and tries to update herself. Those two phenomena: one's own changing condition and the world changing faster and faster have only been sparingly problematized by scholars exploring the “no-self-self.”<sup>18</sup> Simone de Beauvoir was one of the last authors who thematized being-in-the-world as the *proper* phenomenal field, as an interactive sphere in which a human being experiences the loss of the self. She said that the ability to experience oneself increases in line with age, but that kind of aging may affect everybody regardless of her metrical age: “According to de Beauvoir, for the elderly man who lives in a world that is changing fast, it becomes easy to find himself out-of-date, useless (...) unproductive,”<sup>19</sup> socially estranged and unattractive. To summarize: we grow old living faster in a world that is changing fast. In the past, there were technologies of the self<sup>20</sup> (or self-examination) developed to integrally strengthen the human self.<sup>21</sup> Today advanced technologies are being developed to recover,

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- 17 According to Foucault, whose diagnostics of the splits of the self is partially outdated, humanism “presents a certain form of our ethics as a universal model for any kind of freedom. I think that there are more secrets, more possible freedoms, and more inventions in our future than we can imagine in humanism as it is dogmatically represented (...) Through these different practices – psychological, medical, penitential, educational – a certain idea or model of humanity was developed, and now this idea of man has become normative, self-evident, and is supposed to be universal. Humanism may not be universal but may be quite relative to a certain situation. What we call humanism has been used by Marxists, liberals, Nazis, Catholics...” Martin Rux, “One truth, power, self: An interview with Michel Foucault,” Oct 25, 1982. In: M. H. Luther et al. (Eds.), *Technologies of the self. A seminar with Michel Foucault*, Amherst, The University of Massachusetts Press, 1988, p. 14.
- 18 T. C. Muck, “After selfhood,” p. 113.
- 19 Daniela Marinova, “Cultural alienation in the aging person,” *Psychological Thought* 2013, vol. 6, no. 2, p. 268.
- 20 See M. Foucault, “The technologies of the self,” in: M.H. Luther et al. (Eds.), *Technologies of the self. A seminar with Michel Foucault*, pp. 16–49.
- 21 “There are three major types of self-examination: first, self-examination with respect to thoughts in correspondence to reality (Cartesian); second, self-examination with respect to the way our thoughts relate to rules (Senecan), third, the examination of self with respect to the relation between the hidden thought and an inner impurity. At this moment begins the Christian hermeneutics of the self with its deciphering of

rejuvenate, or to enhance manifest abilities, traits, qualities, and areas of the self.<sup>22</sup> We are able to track the manifest results of those interventions. What we cannot track, it is the hidden after-effects, spiritual, artistic, and metaphysical in their nature. This, however, is nothing novel in humankind's history. In this sphere, we always already constructed, deconstructed, and reconstructed, idealized, deluded, and disenchanting *ourselves*.

Scholars who incline towards naturalized, but non-reductionist phenomenology and philosophy of mind employ some methodologies to approach selfhood, even in the unfavorable opportunities of today. They propose “a representationist and functionalist analysis of what a consciously experienced first-person perspective is”<sup>23</sup> when a human psychosomatic condition confronts radical changes. Among the three core theories of the self, e.g., the Kantian-Husserlian transcendental, the Ricoeurian permanently re-storied ego (be it a string-like or stringless series of biographical episodes),<sup>24</sup> and the naturalized but non-reductionist phenomenological approach to “the Self as an experiential dimension,”<sup>25</sup> the latter offers the most impressive and still underexplored heuristic potential. However, in this book, I will be drawing on all three theories to justify the notion of the self. Undoubtedly, not all mature and clinically sane persons show a conscious, existential, or psychological requirement for being a diachronic *self*, as Derek Parfit expresses it in reference to his own biographical experience, e.g. as an “episodic”<sup>26</sup> self embodiment.

But let's speak in the name of those who permanently recover, reidentify and reconfigure themselves, balancing between experiences that synchronize mental states with the experienced world. Scholars are focused on such questions as “what is the relation between the reality of experience as we have it from moment to moment and physical reality as we take ourselves to know it in everyday life

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inner thoughts.” Foucault explains several technologies of the self including Syrian, Hellenistic, Roman, Monastic, Cartesian, Puritan etc. technologies of the self. Today we do not have neither *meditatio* (imaginative training of the self) nor *gymnasia* (“training in a real situation”), p. 36.

22 See Stephen L. White, *The unity of the self*, Cambridge, The MIT Press, 1991.

23 D. Zahavi, *Subjectivity and selfhood*, p. 101.

24 See Galen Strawson, “Against narrativity,” in: G. Strawson (Ed.), *The self?*, Malden, Blackwell 2005, pp. 63–86.

25 D. Zahavi, *Subjectivity and selfhood...*, p. 104.

26 Derek Parfit, “Personal identity,” in: Jonathan Glover (Ed.), *The philosophy of mind*, Oxford, Oxford University Press, 1976, pp. 142–162.

and in science?,<sup>27</sup> while medical professionals, therapists, and their patients are concerned with crisis, disintegration,<sup>28</sup> or, at least, with tension between actual and ideal, past and future selves, between statics and dynamics, sameness and otherness, identity and alterity:

Despite the fact that he is always the same (he has the same name, and the same identity), the individual is the subject of life pressure, of the bios- and of the socio- that uninterruptedly contain and modify him (physically as much as psychically). We have, therefore, identity and change, constancy and modification, oneness of the being and yet plurality of its aspects, as attributes of the individual unavoidably defined as oxymoronic. This had been presented, with its characteristic share of comic, in 'Our Relations' film, starring Oliver Hardy and Stanley Laurel. Meeting, at an adult age, his twin brother – Alf (who noticed how much Stanley changed), Stanley replies: 'You've altered too, but you haven't changed a bit.' We are and we are not the same, we keep changing but we keep our identity despite the more or less elective tropisms. In the end, the concept of the individual affords only one theme, a paradoxical one: the same and always different, recognizable despite the ceaseless transformation.<sup>29</sup>

Being the youngest link of natural evolution, humankind has some strengths, but also some deficiencies when compared to other species. It has no predetermined habitat. Rather it is ubiquitous but, at the same time, forced to create own artificial habitat by means of *techno-poiesis*. In turn, creative activities and technologies are constantly changing the human condition itself. The original potentialities of the human are to be enhanced and reinforced by technologies, including bio-medical ones. Still, the biological life we share with other living beings remains vulnerable and mortal. Fluid changes caused by countless interfering factors demonstrate that vulnerability. Both changes and vulnerability can be observed and involved in one's psychosomatic biography:

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- 27 "(...) the terms 'mental' and 'physical' undoubtedly have a correct application to phenomena that we encounter in everyday life. For they undoubtedly have a correct use as applied to such phenomena, and it follows immediately that they have a correct application to—that they really mean or denote—phenomena that we encounter in everyday life (...) Hence reality is certainly both mental and physical in its essential nature," as Galen Strawson puts it. His argument will support my own, postdualist view on the embodied self and its biotechnological peregrinations, as shown in subsequent chapters, see Galen Strawson, *Mental reality*, Malden, The MIT Press, 2010, 2<sup>nd</sup> edition, pp. 44–48.
- 28 Also Ewa Nowak, "Podmiot jako pacjent chroniczny," in: Adriana Warmbier (Ed.), *Spór o podmiotowość: perspektywa interdyscyplinarna*, Kraków, Księgarnia Akademicka 2016, pp. 207–224.
- 29 Zeno Gozo, "Interiority and exteriority. Searching for the self," *Philobiblon* 2015, vol. 20, no. 7, pp. 319–333.

(...) my body has changed remarkably in just the past few months. I make sense of these experiences by imaging that my embodied mind is embedded in a series of bodily states, and that I have the capacity to go from one 'still photo' sense of myself to the next (...) The Self changes as the body changes, and so alas, the Self for the most part dies when the body dies.<sup>30</sup>

Regarded as a finished "series" of interrelated bodily and mental states, the self shows its permanent dynamics. These dynamics gain even more complexity when the embodied self confronts the technological enhancement offered nowadays to make the vulnerable and mortal human condition transhuman resp. posthuman. There is no doubt that modifications of that kind will affect human self-identities throughout life. Disintegration, traumatic and schizophrenic-like symptoms, limited autonomy, and authenticity are just the first problems to mention here.

## Objectives

But can such a dynamic entity as the *self* be fostered to deal with radical technological transformations? Can she draw from her chronic crisis? That is the core issue of this book.

The book contains six chapters, which are guided by the following questions: What kind of the self-identity would best cater to subjects' needs in the era of radical auto-technopoiesis, and increasing interest in posthumanist experience and metahumanist manifestos? Does it make sense to consider a posthuman self-identity as a next 'developmental' stage of self-identity known to human beings<sup>31</sup> (Chapter I). Weaving between critical narrative concepts of the self and the embodied self as being the most applicable in the light of advanced technologies, a presentation of how conceptualizations of the human body have evolved across disciplines follows (Chapter II). The question of how technologies can affect and change one's representations of one's own body and its functionalities is examined in Chapter III. On the one hand, humanity is familiar with changes and modifications of the individual self-image and self-representation, caused by such experiences as using instruments that are extensions of their embodied intelligence, confronting disabilities, transplants, and bionic prostheses – an issue which is also explored in the third chapter. However, on the

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30 Robert Pollack, "The embodied self," *Columbia Journal of Gender and the Law* 2013, vol. 27, no. 1, pp. 38–39.

31 See Jaime de Val, „Metahumanism Manifesto – Metabody Projects,“ retrieved from <https://metabody.eu> (on 21 December 2019).

other hand, in terms of their vulnerable psycho-somatic conditions, human beings can easily be affected by macro- and micro-technologies, including psychosurgery and man-computer interfaces. The outcomes deeply revise the sense of their autonomy and authenticity, which is essential to remaining themselves, as is shown in Chapter IV.

Dealing with technopoiesis and permanent changes, individuals are prone to the disintegration of their self-identity. The health services, which are technicized, contracted, increasingly based on algorithms supported medical diagnostics and treatment, show not only less and less humanism, but also little interest in promoting the agential potentials of subjects, and the latter are becoming passive (*patient-like*, in terms of both phenomenology and medicine). Do subjects have any means of strengthening auto-therapeutic strategies at their disposal, such as those offered by medically and psychologically engaged phenomenology? Chapter V deals with this and related issues, however, without questioning the benefits of evidence-, technology-, and efficiency-based treatment. The point is rather to re-empower the agential aspects associated with being an autonomous decision maker and informed user of the technologies that make us passive.

Chapter VI deals with the following issue: if designing intelligent and autonomous machines will be successful, will humans be able to face their 'alter-egos' in their artificial fellow humans – and can they rely on cooperation and socialization within a socio-moral environment that would involve both natural and artificial humans?

To work out and discuss arguments which provide answers to these questions, cross-disciplinary methods are provided and applied.

## Methods

Chapter I draws on psychological (developmental or 'evolutionary', as Robert Kegan would put it), phenomenological, narrative and post-narrative theories of self-identity to select and examine their properties withstanding with new posthumanist challenges. In the same chapter the concept of the embodied self pioneered in the 20<sup>th</sup> century by Maurice Merleau-Ponty in phenomenology, and by Anthony Giddens in sociology, is then adapted and reinforced in Chapter II, in which the evolution of body conceptualizations in the 20<sup>th</sup> and 21<sup>st</sup> centuries (including living organism, lived body, intercorporeality and the 'new materialism') will be selected as combining ontological, experiential and cognitive potentials most challenged by technologies. Among others, Hans Jonas' theory of the individual and autonomous organism and Margrit Shildrick's concept of crosscorporeality reveal their usefulness in defining the embodied self in terms

of its simultaneous vulnerability and plasticity. Advanced macro- and micro-technologies take advantage of our material conditions (also at the molecular level), that is, through exploiting their accessibility and plasticity, also to effect and modify our minds. One of the last efforts made to protect our vulnerable internal life with bodily ‘exteriority’ was that of Emmanuel Levinas. But advances in the theory of embodied mind and self seem to make both, ‘interiority’ and ‘exteriority’, defenceless when confronting advanced technologies. However, this book addresses the re-empowering of the self (or self-identity) rather than disempowering or banning technologies from our lives. We need to develop ourselves, so we need technologies by means of which beings can achieve their human becoming (*Menschenwerdung*<sup>32</sup>, as Paul Alsberg puts it) according to their specific, human-developmental principle, which as yet does not seem to have been achieved.

To advocate for the hypothesis according to which body image and body schema show plasticity (Chapter III), theoretical and experiential arguments were drawn from Hans Jonas’ and Arnold Gehlen’s philosophies of technique, and from the contemporary findings of philosophy of mind and post-phenomenology.

In Chapters I, III and IV, the symptoms of technological interventions in human embodied self are discussed on the basis of clinical examples reported in medical literature and analysis of modern phenomenology and philosophy of mind (Chapter I presents three cases of radically transhumanist crisis drawn from F. Kafka and T.J. Brown). ‘Embodied technesis’, partial body representations, anomalous self-experience, facial allograft self-experience, and the social imaginaries of abled and disabled bodies, were analysed and illustrated. As such clinical evidence (which is different than the visions offered by posthumanist and transhumanist authors) is not easy to access, despite the large amount of literature reviewed for this study, two additional surveys with Polish and international participants were conducted in order to predict social preferences with regard to the ‘posthuman’ embodiment, as well as towards the postconventionalization of persons with disabilities. The findings are reported and discussed in Chapter III. In Chapter IV, the documented results of neuro- and psycho-enhancement are critically discussed.

In Chapter V, four phenomenological and psychological concepts of empowering our agential ‘self’ as a remedy against the negative effects of radical technopoiesis are applied, namely those developed by Hans-Georg Gadamer, Bernhard Waldenfels, Kazimierz Dąbrowski and Antoni Kępiński. Autotherapy

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32 Paul Alsberg, *Das Menschenrätsel*, Dresden, Sybillen Verlag, 1979, p. 113.

was redefined in terms of hermeneutics and dialogics contributing to the positive disintegration (Dąbrowski) and learning from crisis (Kegan). This complex methodology was elaborated as a component of the self-recovery concept, which offers an alternative to narrative theory and the fate of “post-persons” or “post-humans” assigned to humanity by the proponents of so-called posthumanism.

Finally, to thoroughly examine whether autonomous artificial intelligence equipped with moral and ethical ‘software’ could provide alter egos and social environments that are compatible with the socialization of human beings (or at least socially safe), the leading approaches to moral machines were revisited and discussed. The hypothesis of social robots provided with the cognitive skills necessary to make decisions based on the categorical imperative procedure would be the most radical, as that procedure was related to a transcendental principle and a moral metaphysics unavailable for intelligent devices. As humans and machines do not share abilities and principles of that kind (neither do they share affects and emotions which cannot be disconnected from their physiological, experiential or evolutionary foundations), the nature of socialization and self-identity development within an intersubjective exchange between human and non-human intelligence requires novel conceptual tools which as yet do not exist.

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