Ph.D. Dissertation

The Posthuman:
Philosophical Posthumanism and Its Others

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Program

Ph.D. in Philosophy and Theory of Human Sciences

Università di Roma Tre

INDEX

(Related Fields)

INTRODUCTION

From Human to Posthuman

Posthumanism is flourishing in an era which has been, and still is, generating a proliferation of "post-s" (from postmodern to postcolonial, from post-feminist to post-apocalyptic, just to mention a few), expressing an hermeneutical need which seems to escape each and every singular "post". Within this scenario, "posthuman" has become a key concept in the contemporary academic debate, to cope with the urgency for an integral redefinition of the notion of the human, following the onto-epistemological, as well as scientific and bio-technological developments, of the 20th and 21st centuries. The philosophical landscape which has since developed includes several movements and schools of thought. The label "posthuman" is often evoked in a generic and all-inclusive way, to indicate any of these different perspectives, creating methodological and theoretical confusion between experts and non-experts alike. Specifically, "posthuman" has become an umbrella term to include: (Philosophical, Cultural and Critical) Posthumanism; Transhumanism (in its variants as: Extropianism, Liberal Transhumanism and Democratic Transhumanism, among other currents); New Materialisms (a specific feminist development within the posthuman frame); the heterogeneous landscape of Antihumanism; Posthumanities and Metahumanities. This thesis attempts, on one side, to highlight the similarities and differences between the various terms and schools of thought, tracing their genealogies, analogies, and overlaps. On the other, it wishes to offer an original contribution to Philosophical Posthumanism, developing its theoretical endeavors on ontological and epistemological grounds. In Part 2, I will present the results of the empirical study I conducted with Prof. Kevin Warwick on Gender and Artificial Intelligence. By engaging with the data recollected, I will reflect upon the risk of turning artificial intelligence into the new symbolic "other", the reverse mirror through which the humanistic subject may attempt to reaffirm the "real" human, once the deconstruction of the human has irredeemably destabilized any possibility for essentialist claims on human nature.

Part 1

Historical / Theoretical

The thesis is divided into two parts. The first part, which is more strictly historical-theoretical, is developed around three thematic nodes, identified in the questions:

What is Philosophical Posthumanism?
Of which "Human" is the Posthuman a "Post"?
Have we always been Posthuman?

The three questions do not constitute sharp thematic divisions, but they shall be regarded as suggestions which inform the development of the discourse, which is articulated through consequent sections. A historical recollection of Philosophical Posthumanism (***sections 1, 2, 7***) corresponds to the first question. Philosophical Posthumanism is presented as a recent development of Critical and Cultural Posthumanism, which arose within the field of Literary Criticism – from the coining of the term (Hassan 1987), until the Nineties and the publication of the key text "How We Became Posthuman" (1999) by Katherine Hayles. In respect to Critical and Cultural Posthumanism, Philosophical Posthumanism, which is still a philosophy in the making, has developed a more strictly philosophical approach, from the first decade of the 21st century until today. Its genealogy, traced from the "Letter on Humanism" (1947) by Martin Heidegger, passes through Postmodernism, the Studies of the Difference (including, among others: Gender Studies, Critical Race Studies, Queer Theory, Postcolonial Studies, Disability Studies) and Cyborg Theory. Philosophical Posthumanism is genealogically related to the radical deconstruction of the "human", which began as a political cause in the Sixties, turned into an academic project in the Seventies and evolved into an epistemological approach in the Nineties, resulting in a multiplication of situated perspectives.

While aware of its epistemic limitations (as theorized by and for humans), the non-

hierarchical perspective of the posthuman does not grant any primacy to the human, and articulates the conditions for an epistemology concerned with non-human experience as site of knowledge – from the non-human animal (Wolfe 2010), to artificial intelligence, robotics and even unknown forms of life (Badmington 2004). Such a comprehensive approach is rooted in the recognition that the difference is already constitutive of the human species, with all of its gendered, ethnic, social and individual varieties. In other words, the posthuman recognition of non-human alterities starts with the recognition of human alterities. Posthumanism can be considered a second generation of Postmodernism, leading the deconstruction of the human to its extreme consequences by bringing to its theoretical revision speciesism, that is, the privilege of some species over others. The onto-epistemological openness of Posthumanism is placed in a hybrid vision of humanity itself: through the cyborg, specifically located in the critical reflection of Donna Haraway (1985), Posthumanism has internalized the hybrid as the origin which has no origin. On the one hand, Posthumanism can be seen as a "post-humanism", that is, a radical critique of humanism and anthropocentrism; on the other hand, in its significations as a "posthuman-ism", it recognizes those aspects which are constitutively human, and nevertheless, beyond the constitutive limits of the human in the strict sense of the term. Posthumanism is a praxis, as well as a philosophy of mediation, which manifests post-dualistic, post-centralizing, inclusive and comprehensive types of approach.

Posthumanism will then be compared with other currents of thought (***section 3***), starting with with the main distinction between Posthumanism and Transhumanism (***section 4***). Both movements arose more clearly in the Nineties, orientating their interests around similar topics, but they do not share the same roots nor perspectives. While Posthumanism generated out of Postmodernism, Transhumanism seeks its origins in the Enlightenment, and therefore does not expropriate humanism; on the contrary, it can be defined as an ultra-humanism. In order to greatly enhance human abilities, Transhumanism opts for a radical transformation of the human condition by existing, emerging and speculative technologies (as in the case of regenerative medicine, radical

life extension, mind uploading and cryonics). For transhumanists, human beings may eventually transform themselves so radically as to become posthuman (the concept of posthuman itself is interpreted in a specific transhumanist way). It is important to note that Transhumanism is not an homogeneous movement. In particular, I will present some of the main voices of Extropianism (More 1990, 1998) (Vita-More, 2004), Democratic Transhumanism (Hughes 2004), and the Singularity (Kurzweil 2005). These various currents, while differing on certain aspects, share the main theoretical points of Tranhsumanism. More in general, if the strength of the transhuman vision consists in its openness to the possibilities offered by science and technology, therein lays its weakness, which can be detected in a techno-reductionist assimilation of existence, and in a progressivist approach that does not leave space to deconstructionist practices.

If rationality and progress are at the core of the transhuman postulation, a radical critique of those same notions is the kernel of Antihumanism, a philosophical position which, although sharing its roots in Postmodernity with the posthuman, should not be assimilated to it (***section 6***). The deconstruction of the human, which is almost absent in the transhuman reflection, is crucial to Antihumanism. This is one of its main points in common with Posthumanism, while their main distinction is already embedded in their morphologies, and specifically, in their composition: the structural opposition implied by the prefix "anti-" has been challenged by the posthuman post-dualistic process-ontological horizon. Posthumanism, after all, is aware of the fact that hierarchical humanistic presumptions cannot be easily dismissed or erased. In this respect, more than with Foucault's death of Man, the posthuman is in tune with Derrida's deconstructive approach (1967). In this section, the *Übermensch* of Friedrich Nietzsche (1882; 1883-5) will be related from different perspectives, both to Post-, as well as to Trans- and Anti-Humanism. Another aspect which will be presented in a comparative way within the posthuman scenario (understood here in its broadest sense), is technology and its potentials offered to the revisitation of the notion of the human (***section 5***). In the transhuman reflection, such a focus is mostly centralized and instrumentalized: technology resolves as a means and an end for obtaining specific goals – from

increasingly advanced technology to immortality, redefined as radical life extension. Philosophical Posthumanism, on one side, explores technology as a mode of revealing, passing through "The Question Concerning Technology" (1953) by Martin Heidegger, and thus re-accessing its ontological and existential potentials; on the other, the notion of technologies of the self (Foucault 1988) becomes significant in a posthuman scenario which has deconstructed the dualism Self / Others (***section 12***).

We can now address the second question, namely: ***of which "human" is the posthuman a "post"?*** Historically, the recognition of the human status has been regularly switched on and off. In Western history, for instance, the concept of "human" has been reinscribed within categories marked by exclusionary practices. Sexism, racism, classism, ageism, homophobia and ableism, alongside other forms of discrimination, have informed the written and unwritten laws of recognition as to who was to be considered human (in Western history, this meant, more specifically: white, male, heterosexual and propertied citizens, who would comply with institutionalized norms, as well as with ethnic, cultural and physical characteristics). Slaves and women, among many others, have represented the margins of the human, the chaos, the non-disciplinable (***section 11***). One consequent question which needs to be asked in order to achieve an inclusive approach to the notion of the human is: how have the (categories of) humans who have been repeatedly dehumanized, dealt with their humanness? How have they re-configured such a denied status? In order to conceive a comprehensive posthuman approach, it is first necessary to reflect on the meaning of the "human", both by investigating on the technologies of the self historically developed by the human "others" (***section 12***), as well as by underlining the ways by which its hegemonic outfits have been established. We will inquire into the process of humanizing – here conceived as a verb, "to humanize" (***section 9***) rather than as an "anthropological machine" (Agamben 2002) (***section 10***) –, and then delve into the semantics and pragmatics supporting the term "human" (***section 13***). Specifically, the human will be investigated both in its Latin etymology (*Humanitas*) (***section 14***), as well as in its taxonomic classification as *Homo sapiens (**section 15***). Such inquiries are necessary in order to reflect upon the relevance of postulating a "post" to the notion of

the human. On the one hand, the post-human must be aware of its genealogical relationship to the human, and thus delve into the historical as well as philosophical meanings of what this may entail. On the other hand, Posthumanism successfully manifests its critical commitment and establishes its approach through the conditions of the "post" (***section 8***).

The posthuman destabilizes the limits and symbolic borders posed by the notion of the human. Dualisms such as human/animal, human/machine and, more in general, human/non-human, are re-investigated through a perception which does not work on oppositional schemata. In the same way, the posthuman deconstructs the clear division between life/death, organic/synthetic, natural/artificial. We are now entering the domain of the third question: ***have we always been posthuman?*** Here, we will investigate the "bio" realm: life and biology (***sections 16 a, b, c***), as well as bioethics and bio-technical evolutions of posthumanities (***sections 19, 20***). The anthropocentric choice of privileging *bios*, instead of *zoē*, exposes the exclusivist domain of "life" itself, which is more clearly presented as a human notion based on the human cognitive apparatus. The posthuman perspectivist approach will be here recognized in its embodied character, delineated historically through the proposal of Friedrich Nietzsche (1887; 1901/6) (**section 18**); and biologically, through the concept of "autopoiesis" (Maturana / Varela 1972) (**section 17**). Ultimately, Posthumanism challenges biocentrism, sentiocentrism, vitalism, and the concept of life itself, blurring the boundaries between the animate and the inanimate, in a quantum approach to the physics of existence. It is now time to access the third level of reconfiguration of the posthuman, which is more specifically ontological. I will start by investigating the dynamic and pluralistic natureculture of matter (***section 22***) through Quantum Physics and the String Theory, philosophically explored within the frame of New Materialisms (***section 21***), and in particular, through the reflection of Karen Barad (2007) and her relational ontology. Within this frame, the human is perceived not as a single agent, but as part of a semiotic, material, as well as multidimensional network (Latour 1987, 2005); in this sense, the human is already posthuman. Evolution, in its materialistic configuration, can be approached as a technology of existence; every

material manifestation may be perceived as nodes of becoming, in a pluralistic monist, as well as a monistic pluralist approach to the multiverse.

The notion of the multiverse (***section 23***) refers to the scientific investigations on matter from the micro to the macro level of materialization, which recently brought different fields (from Quantum Physics to Cosmology and Astrophysics), to the same hypothetical conclusion: this universe might be one of many. The hypothesis of the multiverse is inherently posthuman; it not only stretches any universe-centric perspective (problematizing the inclusive, but still centralized, notion of a universe), but it materializes the dissolution of strict binaries, dualistic modes and exclusivist approaches. And still, despite the undoubtedly non-human centric character of this notion, the hypothesis of the multiverse has been mostly developed in human-centric and solipsistic terms, both scientifically (Everett 1966), as well as philosophically (Lewis, 1986). Instead, I will revisit such a notion through the rhizome (Deleuze / Guattari 1987), and develop it speculatively, not by counting on any essentialism, polarity or strict dualism, but by relying on a hybrid, mediated and process-ontological perspective. I will present such an interpretation of the multiverse, which I will refer to as the "posthuman multiverse", both as a thought experiment, which might expand a speculative perception of the self, as well as a material hypothesis, which may conceal a possible physics outfit of the actual multiverse. Such a hypothesis, based on the deconstruction of the Self/Others paradigm, entails that matter, while constituting this universe, it would also be actualizing an indefinite number of other universes, in a process of both relationality and autonomy. This original acquisition of meaning of the multiverse reveals itself inductive for a posthuman ontology which can be described both as a monistic pluralism, as well as a pluralistic monism, materializing the posthuman overcoming of any strict dualisms.

Part 2.

Empirical / Experimental

In Part 2, I will present the empirical results of the research that I conducted with Professor Kevin Warwick – known for his experiments "Cyborg I" (1998) and "Cyborg II" (2002) – at the Department of Engineering, University of Reading (England), October 2010 / January 2011. A questionnaire based on Feminist Epistemology was answered by more than one hundred students and researchers of the Department. The theoretical questions which motivated me to investigate this experimental field, a hybrid between philosophy, sociology, and the techno-sciences, can be so presented: how and to what extent do gender and the intersectional differences characterizing the human species inform the development of Artificial Intelligence and Artificial Life? How is the cyborg conceived, at an onto-epistemological level, within contemporary scientific thought? Revealing the *Weltanschauung* of students and researchers of Cybernetics becomes crucial to contemplate the possibilities of the cyborg. What is at stake is the risk of constituting a new essentialist dualism – of the "human" (one hundred percent biological) versus the cyborg / the robot / artificial intelligence – turning them into the new "others", the reverse mirror (Irigaray 1974), through which the human can be reaffirmed.

In the posthuman perspective, the differential value of artificial intelligence is not interpreted in a hierarchical way, but as a complementarity. The fact that artificial intelligence is developing a different type of intelligence than the human model, is not assessed through anthropocentric and dualistic lens (based on the Cartesian dichotomy mind / body), typical of the fathers of AI, according to which the model of intelligence *par excellence* is the human one (Minsky 1985; Moravec 1988). Posthumanism dismisses the need to establish the symbolic "other" – which has historically characterized the human, and which is being re-adopted in the representation of artificial intelligence, robots and, on a different level, cyborgs. Posthumanism recognizes the potentials of the differences in an integrated way, as an extension of possibilities: AI is thus approached as another type of intelligence, which cannot be reduced to the human range. This part of

the dissertation emphasizes feminist reinterpretations of science and technology and, more in general, the contribution of the Sexual Difference Theory in approaching the multiplication of differences, which are developing in the fields of Robotics and Artificial Intelligence.

Attachment 1

Towards A Posthumanist Methodology: A Statement

In the emerging field of Posthuman Studies, extensive debate has been formulated on what is Posthumanism. The main focus has been directed towards the contents and meanings of a posthuman paradigm shift, while the methodology employed to reflect upon has hardly been disputed. This statement argues the potential of Posthumanism as a research method, presenting the reasons why posthumanist theorists should reflect on methodology, and which kind of methodological risks they may encounter. Posthumanism finds in the difference its theoretical kernel. Such inclusiveness must be reflected in its methods. A posthumanist methodology should not be sustained by exclusive traditions of thought, nor indulge in hegemonic or resistant essentialist narratives. It should be dynamic and shifting, engaging in pluralistic epistemological accounts, not in order to comply with external requirements of political correctness, but to pursue less partial and more extensive perspectives, in tune with a posthuman future which will radically challenge human comprehension. In so doing, Posthumanism may ultimately become a mode of existential inquiry to be applied in everyday life.

Legenda

I wish to mention that, within the text, the dates of life and birth of quoted authors have only been placed when both were completed; the date of birth of living authors has been omitted.

PART 1

Philosophical Posthumanism and Its Others

1. Premises: The Politics of the "Post"

Posthumanism is flourishing in an era which has been, and still is, generating a proliferation of "post-s": from post-modern to post-postmodern, from post-colonial to post-industrial, from post-feminist to post-racial. More than articulating on the ways such terms have been employed in contemporary debates, I would like to locate the posthuman within this need for "post-s", this urgency to express something which seems to escape each and every singular "post", and which should be investigated, more generally, through the politics of the "post" itself. There are many traditions of thought which could be held responsible for this tendency: the integral deconstruction of fixed categories invested by postmodernity; the epistemological impact of quantum physics; the increased role of technology in the formation of human identity[1], with a lead to hybridization as a constitutive technology of the self[2]. The posthuman reflects upon the broader significance of technological developments, but does not exhaust its analysis there. Actually, considering that a large number of the population world-wide is still engaged in the attempt of surviving, if the posthuman was reduced to a reflection on the technological kinship of the human revisited in its specific technical endeavors, such a preference would confine it to a classist and techno-centric academic movement[3]. In fact, the

1 On the relation between identity and technology, it is interesting to observe the development of the thought of Sherry Turkle, one of the pioneers in focussing on the sociology and psychology of the growing impact of virtuality in the constitution of human identity. From her enthusiastic work "The Second Self: Computers and the Human Spirits" (1984), in which she pointed out how computers cannot be seen as external tools, but are part of the social and personal life of their users, to "Life on the Screen: Identity in the Age of the Internet" (1995), in which she debated that computers affect the ways humans see themselves as humans; to her last work "Alone Together: Why We Expect More from Technology and Less from Each Other" (2011), in which she argues that social media represent more of an illusion of companionship rather than authentic communication.

2 The technologies of the self, that is, the methods and techniques through which human beings constitute themselves (Foucault 1988), are a crucial notion for the posthuman; I will delve into this aspect in section 12.

3 As Katherine Hayles, in her influential book "How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics" (1999), has stated:

posthuman cannot be accounted only in relation to the human or to technology, but it should be engaged *per se*. Posthumanism is an onto-epistemological approach, as well as an ethical one, generated as a philosophy of mediation which discharges any confrontational dualisms, as well as any hierarchical legacies. Historically, the posthuman can be seen as the philosophical approach which suits the informal geological time of anthropocene (Crutzen / Stoermer 2000): while the posthuman focuses on decentering the human from the center of the discourse, the anthropocene marks the extent of the impact of human activities on a planetary level, and so it stresses the urgency for humans to became aware of pertaining to an ecosystem which, when damaged, negatively affects the human condition as well. Posthumanism exceeds the particular tradition of Western academic thought, and it may be traced and enacted in different cultures, as well as in different modes. Vandana Shiva's environmental activism, for instance, is supported by a body of thoughts which shares a lot in common with a posthuman approach[4]. In "Monocultures of the Mind": Perspectives on Biodiversity and Biotechnology" (1993), she states:

> The main threat to living with diversity comes from the habit of thinking in terms of monocultures; from what I have called 'Monocultures of the Mind'. Monocultures of the mind make diversity disappear from perception, and consequently from the world. The disappearance of diversity is also a disappearance of alternatives (…). Alternatives exist, but are excluded. Their inclusion requires a context of diversity. Shifting to diversity as a mode of thought, a context of action, allows multiple choices to emerge. (5)

> The thirty million Americans who are plugged into the Internet increasingly engage in virtual experiences enacting a division between the material body that exits on one side of the screen and the computer simulacra that seem to create a space inside the screen. Yet for millions more, virtuality is not even a cloud on the horizon of their everyday worlds. Within a global context, the experience of virtuality becomes more exotic by several orders of magnitude. It is a useful corrective to remember that 70 percent of the world's population has never made a phone call. (20)

4 It has to be noted, though, that in her engagement to the social and political voices of disadvantaged groups of Indian society which still need a recognition of their status as humans, Shiva adopts a political agenda which favors humanistic practices, strategically oriented towards egalitarian planetary policies (see for instance: Shiva 1995a; Shiva 2005).

Shiva presents traditional knowledge systems as major contributions to the understanding of biodiversity, ecological sustainability and natural/cultural diversity. In a similar way, it should be noted that Posthumanism is not only an academic perspective, but a transhistorical attitude which has been part of human culture trans spaces and eras. Concepts such as hybrid, assemblage, chimera, which were reintroduced as cultural and existential metaphor by Postmodernism and developed an ontological significance within Posthumanism and the rise of biotechnological cultures, have been part of the human symbolic heritage since the very beginning of recorded civilization[5]. Although most of my focus in this dissertation will be on a Western philosophical genealogy of the posthuman, such a non-reducibility of sources needs to be mentioned in order to avoid falling into the trap of presenting Posthumanism as hierarchical, parochial and culturally biased in its own premises. Before delving into the meanings and possibilities of a posthuman approach, there is one more epistemological premise which has to be addressed. In the economy of knowledge, humans are both subjects and objects: even when trying to avoid human-centric positions, humans are still communicating specific and situated human understandings in a human language, to other human beings. Hannah Arendt (1906-1975), in "The Human Condition" (1958), wrote:

> It is highly unlikely that we, who can know, determine, and define the natural essences of all things surrounding us, which we are not, should ever be able to do the same for ourselves – this would be like jumping over our own shadows. (10)

Posthumanism shares with Humanism the fact that it is still enacted by human beings, but accesses such an epistemological standpoint through the feminist policies of situating the self[6]. The posthuman postulates a specific self-awareness and a recognition of the unredeemable presence of the "shadows" – to use Arendt's expression –, without placing that specific embodied location at the top of any epistemological hierarchy. Andy Miah,

5 Hybrid representations can be traced as early as the Upper Paleolithic age: the lion-headed figurine of the Hohlenstein Stadel (Germany), which is determined to be about 32,000 years old, is the oldest known zoomorphic sculpture that has been found in the world till present (Hahn 1993).

6 To be intended, specifically, in a nomadic way (Braidotti 1994).

in his comprehensive "A Critical History of Posthumanism" (2008), stated:

> A crucial premise of posthumanism is its critical stance towards the idea that humans are a superior species in the natural order. In this sense, the 'post' of posthumanism need not imply moving beyond humanness in some biological or evolutionary manner. Rather, the starting point should be an attempt to understand what has been omitted from an anthropocentric worldview. (77)

The posthuman can definitely be both a reflection on what has been omitted by the notion of the human, as well as a speculation about the possible developments of the human species, on the premises that such a speculation is rooted within a critical understanding of what the notion of the human implies. A critical revision of the human is necessary for the development of the posthuman, and is a practice that should be constantly re-enacted. Only when such a practice becomes part of the posthuman approach, the posthuman, as an inclusive and unfixed notion, can emerge without the need for a redemption[7].

2. From Postmodern to Posthuman

Within academia, Posthumanism came along within and after Postmodernism, generated out of the radical deconstruction[8] of the "human", which began as a philosophical as well as a political project in the late Sixties, and turned into an epistemological one in the Nineties. Posthumanism is a "post" both to the notion of the "human" (historically located within a Western, white, male, heterosexual elitist schemata), as well as to the historical occurrence of "Humanism", connected to a hierarchical social construct based on anthropocentric assumptions. Both the notion of the "human", as well as the historical occurrence of "Humanism", have been sustained by reiterative formulation of symbolic "others", which have functioned as markers of the shifting borders of who and what

7 I will come back to this aspect, specifically in sections 6 and 12.

8 The term was coined by Jacques Derrida (1930-2004) in "Of Grammatology" (1967), as a personalized translation of *Destruktion*, to be found in Martin Heidegger's "Being and Time" (1927). Derrida's semiotic deconstruction of the binary oppositions which sustain the constitution of the text, can be traced as one of the genealogical sources of Posthumanism, as it will be noted in section 6.

would be considered "human": women, non-Europeans, non-whites, queers, freaks, animals, automata, among others, have historically represented such oppositional terms. As Rosi Braidotti in "Metamorphoses: Towards a Materialist Theory of Becoming" (2002), puts it:

> Postmodernity is notoriously the age of proliferating differences. The devalued "others" which constituted the specular complement of the modern subject – woman, the ethnic or racialized other and nature or 'earth-others' – return with a vengeance. They are the complement to the modern subject, who constructed himself as much through what he excluded. (174)

Posthumanism may arise once the need for such a "vengeance" has been fulfilled, and the voices of subjectivities who have been historically reduced to the realm of the "Other", have been regained. Posthumanism is inextricably related to the Studies of the Differences, referring to the fields of research which developed out of the deconstruction of the "neutral subject" of Western onto-epistemologies[9]. The deconstruction enacted, within the historical and philosophical frame of Postmodernism, by Feminist, Black, Gay and Lesbian, Postcolonial and Chicana theorists, together with differently abled activists and other outsiders, pointed out the partiality of the construction of the Discourse[10], historically formulated by one specific subject, which finally appeared in its embodied vestiges, as: Western, white, male, heterosexual, propertied and abled, among other specific terms. In order to postulate a post- to the human, the differences which are constitutive to the human, and which have been historically erased by the self-claimed objectivity of hegemonic accounts, have to be taken into account. Posthumanism is indebted to the reflections developed out of the "margins" of such a centralized human subject, which emphasized the human as a process, more than as a given, inherently characterized by differences and shifting identities: Women's and Gender Studies, Gay

9 Such a genealogical location of the posthuman is already pointed out by William Spanos in his pioneer text "End Of Education: Toward Posthumanism", published in 1993.

10 Note that the notion of "Discourse" is intended here not only in the foucaultian use of the term as a way of constituting knowledge, social practices and power relations (Foucault 1976), but also as the phallogocentric *logos* (Irigaray 1974), and the symbolic order (Kristeva 1974).

and Lesbians' Studies, Queer Theory, Critical Race Theory, Post-Colonial Studies, Intersectionality, Disability Studies, among others.

The genealogical trace between the posthuman and the postmodern is not only an epistemological and historical affiliation. The terms "posthuman" and "posthumanism" first appeared within postmodern literature. In particular, literary theorist Ihab Hassan, in "The Postmodern Turn" (1987), pointed out some crucial aspects within this specific linguistic asset:

> I see a pattern that many others have also seen: a vast, revisionary will in the Western world, unsettling/resettling codes, canons, procedures, beliefs – intimating a post-humanism? (XVI)

The pattern Hassan defines as a "post-humanism" resonates with the contemporary urgency to express something which seems to escape each and every singular "post", debated previously. Hassan thus foresaw how the postmodern investigation could turn into a Posthumanism. Referring to Postmodernism, he stated:

> On some deeper level of its transformations, it still reaches for something larger, something other, which some call posthumanism. (XVII)

Throughout the text, Hassan highlighted some key aspects of Posthumanism, such as investing in a post-dualistic approach:

> For the time being, we cannot, must not, choose between the One and the Many, Humanism and Deconstruction, Community and Dissemination. We can only reopen them to constant negotiations. (*Ibidem*)

He also called for an inclusive notion of the human, which would result in a "posthuman vision":

> The cardinal question of course remains: how in practice to found a human or posthuman vision – call it inclusively human – or an anxious order of knowledge? (82)

Hassan outlined some of the focal points of Posthumanism, such as the further deconstruction of the human; an openness through the possibilities of the "post"; an inclusiveness and a post-dualism which proceed through recognitions, instead of assimilations.

The posthuman turn was fully embraced and enacted within the field of Literary Theory and Cultural Studies in the Nineties, producing a specific take on the posthuman, which has been defined as Cultural Posthumanism[11]. A crucial contribution to it was given by Cyborg Theory, inaugurated by the success of "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s" (1985), where Donna Haraway problematized notions of human fixity and introduced the inquiry into the hybrid in positive and generative terms:

> By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs. The cyborg is our ontology; it gives us our politics. (50)

Haraway was also a main influence in the development of an academic field which became focal within Cultural Posthumanism, which is Animal Studies (for instance: Haraway 1989; 1991; 1996a; 2003; 2007). It has to be noted, though, that Animal Studies *per se* do not necessarily imply a posthumanist approach. As Cary Wolfe notices, in "What is Posthumanism?" (2010):

11 For a historical and theoretical account on Cultural Posthumanism, see Halberstam / Livingston 1995; Badmington 2000; Miah 2008, Section 2. "Posthumanism in Cultural Theory" (81-5).

> Just because we direct our attention to the study of nonhuman animals, and even if we do so with the aim of exposing how they have been misunderstood and exploited, that does not mean that we are not continuing to be humanist – and therefore, by definition, anthropocentric. Indeed, one of the hallmarks of humanism – and even more specifically that kind of humanism called liberalism – is its penchant for that kind of pluralism, in which the sphere of attention and consideration (intellectual or ethical) is broadened and extended to previously marginalized groups, but without in the least destabilizing or throwing into radical question the schema of the human who undertake such pluralization. In that event, pluralism becomes *incorporation.* (99)

Another key text which was crucial to the development of the posthuman as an academic praxis, was “How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics” (1999) by Katherine Hayles. Her criticism of disembodied narratives within cybernetic and informatic literature paved the way for a posthuman approach as rooted within feminist and postmodern practices. It has to be noted, though, that in Hayles's writing, the term “posthuman” refers to both a posthuman, as well as a transhuman position, as she states:

> If my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories rather than the ground of being, my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity. (5)

The term “posthuman” has been employed by different philosophical trends and movements, such as Posthumanism, Transhumanism, Antihumanism, Metahumanism, Posthumanities and Metahumanities, generating much confusion between experts and non-experts alike. In order to discuss a posthuman agenda, it is first necessary to reflect

on the significance of the posthuman, as it has been theoretically conceived by these different perspectives.

3. Posthumanism and Its Others

The most confused areas of signification are the ones shared by Transhumanism, Posthumanism and Antihumanism, while the most common misunderstandings are generated by the ways the term "posthuman" has been employed within posthuman and transhuman discourses[12]. Let's clarify their distinctiveness. Both Transhumanism and Posthumanism arose in the late Eighties / early Nineties, orientating their interests around similar topics, but they generally do not share the same roots nor perspectives, even if they do share a common perception of the human as a non-fixed and mutable condition. Transhumanism problematizes the current understanding of the human not necessarily through its past and present legacies, but through the possibilities inscribed within its biological evolution, and in particular, its physical and cognitive enhancement. The concept of Posthumanism itself is interpreted in a specific transhumanist way. In order to greatly enhance human abilities, Transhumanism opts for a radical transformation of the human condition by existing, emerging and speculative technologies (as in the case of regenerative medicine, radical life extension, mind uploading[13] and cryonics); and thus, suggests that diversity and multiplicity will replace the notion of existing within a single system, such as a biological body[14]. For transhumanists, human beings may eventually transform themselves so radically as to become "posthuman" (a condition which will follow the current transhuman era). I will now present this movement, focussing on its differences and similarities with Posthumanism; I will then present Antihumanism and, lastly, Philosophical Posthumanism.

12 On the differences between the two movements, see: Ranisch / Sorgner forthcoming.

13 Also defined as "whole brain emulation", mind uploading describes the hypothetical process of transferring or copying a conscious mind from a brain to a non-biological substrate (Moravec 1988), with the onto-epistemological risks of dualism and mechanism that such a view entails.

14 It is interesting to note that transhumanists value the human body and advocate self-responsibility in maintaining health and well-being, in order to live longer and keep the biological body alive until other options might become available – I thank Natasha Vita-More for her input and clarification on this point.

4. Transhumanism and Techno-Reductionism

Let's start our inquiry into Transhumanism[15] by examining the roots of the term itself. The verb "trasumanar", that is, going beyond the human, can be already traced in the "Comedìa" (1304-1321) – later known as "La Divina Commedia", written by Dante Alighieri (1265-1321). The way Dante employed the verb, though, is very different from its current use: the specific state of "trasumanar", that is, transcending the human, is experienced by Dante (as the subject of the Comedìa) in the presence of God[16]. In a similar way, T. S. Eliot (1888-1965) uses the term in his play "The Cocktail Party" (1950) to refer to the risks of the human journey in becoming illuminated[17]. The closest reference to Transhumanism as the current philosophical and ethical attitude can be found in the writings of Julian Huxley (1887-1975), the evolutionary biologist and the brother of Aldous Huxley (1894-1963). This is how his essay "Transhumanism" (1957) begins:

> As a result of a thousand million years of evolution, the universe is becoming conscious of itself, able to understand something of its past history and its possible future. *This cosmic self-awareness is being realized in one tiny fragment of the universe —in a few of us human beings* [Emphasis mine]. Perhaps it has been realized elsewhere too, through the evolution of conscious living creatures on the planets of other stars. But on this our planet, it has never happened before. (13)

15 For an historical overview on ideas which have contributed to the formation of Transhumanism, see: "A History of Transhumanist thought" (2005) by Nick Bostrom.

16 Specifically, Dante uses this verb in "Paradiso", Canto I, when he sees Beatrice and, through her eyes, perceives the divine:

> Trasumanar significar per verba
> non si poría; però l'esempio basti
> a cui esperienza grazia serba. (v. 70-73, 1896: 524)

Translated by Henry Cary as: "Words may not tell of that trans-human change; and therefore let the example serve" (1909: 289).

17 Specifically, in the dialogue between two secondary characters (Julia and Reilly), as the former states:

> You and I don't know the process by which the human is
> Transhumanized: what do we know
> Of the kind of suffering they must undergo
> On the way of illumination? (1978: 147)

Huxley's transhumanism is anthropocentric, based on human exceptionalism: in his vision, human specificity is unique: such an ontological primacy will be mostly left intact in the current developments of Transhumanism, as we will soon see. But there is a specific aspect of Huxley's proposal which distantiates it from contemporary transhumanists, as he stated:

> We need a name for this new belief. Perhaps transhumanism will serve; *man remaining man* [Emphasis mine], but transcending himself, by realizing new possibilities of and for his human nature. I believe in transhumanism: once there are enough people who can truly say that, the human species will be on the threshold of a new kind of existence, as different from ours as ours is from that of Pekin man. It will at last be consciously fulfilling its real destiny. (17)

One of the main points of contemporary Transhumanism is that humanity is undergoing an historical transcendence, which will lead them to the next step in evolutionary terms. Huxley shared this view ("the human species will be on the threshold of a new kind of existence"), but for him "man will remain man", while, for contemporary transhumanists, some human beings will turn into different species: transhumanists consider themselves transhuman, on the path to becoming posthumans through the advance of different types of technologies. Before entering, more specifically, into these ideas, it is important to clarify that, within Transhumanism, distinctive currents cohexist, such as: Libertarian Transhumanism, Democratic Transhumanism, and Extropianism. Technology is the main asset of interest for all these positions, with different takes. Libertarian Transhumanism advocates free market as the best guarantor of the right to human enhancement (see, amongst others: Bailey 2005). Democratic Transhumanism calls for an equal access to technological enhancements, which could otherwise be limited to certain socio-political classes and related to economic power, consequently encoding racial and sexual politics (Hughes 2004). The principles of Extropianism have been delineated by Max More, one of the main theorists of Transhumanism and the founder of Extropianism, as: perpetual

progress, self-transformation, practical optimism, intelligent technology, open society (information and democracy), self-direction, rational thinking (More 2003). The uncritical emphasis on notions such as rationality, progress and optimism should not be unexpected, given the fact that Transhumanism does not acknowledge the philosophical contribution of postmodernity, but it seeks its origins in science and technology, philosophically rooting itself in the Enlightenment[18], and so it does not expropriate rational humanism. In "Transhumanism: Towards A Futurist Philosophy" (1990), Max More states:

> Transhumanism shares many elements of humanism, including a respect for reason and science, a commitment to progress, and a valuing of human (or transhuman) existence in this life rather than in some supernatural "afterlife". Transhumanism differs from humanism in recognizing and anticipating the radical alterations in the nature and possibilities of our lives resulting from various sciences and technologies such as neuroscience and neuropharmacology, life extension, nanotechnology, artificial ultraintelligence, and space habitation, combined with a rational philosophy and value system. (n. pg.)

In "Extropian Principles: A Transhumanist Declaration" (1998), More further explains:

> Extropianism is a transhumanist philosophy. The Extropian Principles define a specific version or 'brand' of transhumanist thinking. Like humanists, transhumanists favor reason, progress, and values centered on our well being rather than on an external religious authority. Transhumanists take humanism further by challenging human limits by means of science and technology combined with critical and creative thinking. We challenge the inevitability of aging and death, and we seek continuing enhancements to our intellectual

18 James Hughes, for instance, sees in the Transhumanist Declaration (2002) the moment when the legacy with the Enlightenment was explicitly affirmed:

> With the Declaration transhumanists were embracing their continuity with the Enlightenment, with democracy and humanism. (2004: 178)

> abilities, our physical capacities, and our emotional development. (1)

By "taking humanism further", Transhumanism can be defined as an "ultra-humanism", as Bradley Onishi states in his article "Information, Bodies, and Heidegger: Tracing Visions of the Posthuman" (2011), in which he delineates the main difference between Posthumanism and Transhumanism precisely in their different take on the humanist understanding of the human:

> One can characterize the differing trajectories of posthumanism by placing them into two general camps: ultra-humanists, those who want to extend the humanist project to hyperbolic ends; post-humanists, those that want to overcome the humanist understanding of the human in favor of a revised model. (…) The ultra-humanist trajectory of the scientific posthuman is illustrated most vividly in the scientific movement called 'transhumanism,' which promotes the radical alteration of human minds and bodies in order to develop a new posthuman species with the potential to transcend current human capabilities. (102-3).

Another main point in common within the transhumanist discourse is technology, which is granted a central role in the drive towards the "next" stage of the human, mostly by re-accessing its biological outfit, which is perceived as the battlefield for progression. Max More, for instance, defines morphological freedom as "the ability to alter bodily form at will through technologies such as surgery, genetic engineering, nanotechnology, uploading" (1993: n. pag.). Natasha Vita-More, another leading voice within the transhuman movement, has been working on the design of a posthuman body for more than ten years; her project, called "Primo Posthuman" (1997 to present), is one of a visionary mind. And still, the way she presents "nature", "biology" and "technology" resonate with the dualistic paradigm nature/culture, as she states:

> Affected by this state of progress, human nature is at a crossroads. The bonds that tie us to nature's biological ancient, accidental design are rapidly dissolving. We

> are questioning our human biology and challenging what it means to be biological. (2004: n. pg.)

Note that nature is presented as an "accidental design", while "we" (as separated from nature) are challenging our own biology. In the table which represents some of the differences between the human body and the 21st century Primo Prototype, Primo prototype figures as "ageless", with "replaceable genes" and "upgrades" (2013: n. pag.)[19]. The Human Body, instead, is defined by "limited lifespan", "legacy genes", and by the fact that it "wears out", among other terms. Gender is marked as "restricted" (compared with Primo Posthuman's "changeability"). Race is not mentioned. Age must be overcome. But this human body doesn't seem to be situated, nor to belong to a genealogy. Talking of human embodiment as an outfit which can be conveniently reshaped reveals a reductionist approach, based on the Cartesian body/mind dualism. But the human body, as discussed within transhuman literature, does not seem to be situated, nor to belong to a genealogy. Most transhumanist accounts on the body lack in philosophical deconstructionism as a theoretical practice. Talking of human embodiment as an outfit which can be conveniently reshaped reveals a reductionist approach, based on the Cartesian body/mind dualism. My question to this seemingly "neutral" body being redesigned is: how are the histories and herstories of the historical human body going to affect our posthuman future?[20] The body, as a biological and figurative locus of socio-political interactions, is hardly neutral; reaffirming its discontinuities, emphasizing differences rather than erasing them when delivering phenomenological accounts of embodied humans, will set a more strategic *terminus a quo* to envision forthcoming posthumanities.

Here, I would also like to note how the transhuman overemphasis in technology often results in a techno-reductionism. For instance, Ray Kurzweil in "The Age of Spiritual

19 A considerable amount of transhuman literature is published online, and so, like in this case, the specific page number of the references cannot be listed.

20 I have elaborated on this question specifically in the article: "Do Posthumans Need Bodies? Gender, Race and the Dialectics of Human Embodiments" (in press).

Machines" (1999), states:

> The introduction of technology is not merely the private affair of one of the Earth's innumerable species. It is a pivotal event in the history of the planet. Evolution's grandest creation – human intelligence – is providing the means for the next stage of evolution, which is technology. (35)

I agree with the criticism that Elaine L. Graham, in "Representations of the Post/Human" (2002), offers to the last sentence of this specific passage, defining Kurzweil's vision as "a confusion of anthropocentric triumphalism and evolutionary determinism" (160). For instance, in "The Singularity is Near: When Humans Transcend Biology" (2005), Kurzweil predicts on human evolution:

> We will continue to have human bodies, but they will become morphable projections of our intelligence. (…) Ultimately software-based humans will be vastly extended beyond the severe limitations of humans as we know them today. (324-5).

Kurzweil's language reflects his dualistic perception: "we" (the mind) versus "they (the body); by de-fleshing human existence and becoming "morphable projections of our intelligence", "we" will have thus overcome "the severe limitations of humans as we know them today": such limitations are, more strictly talking, their fleshy body. On the transhuman devaluation of the human body, Bradley Onishi has stated:

> The transhuman ambition for technological advancement is undergirded by an ultra-humanist logic that understands material existence, including the human body, to be a hindrance to the goals of the human/post-human species. (2011: 104)

This is certainly the case, as most of the transhumanist reflection is directed in rethinking the human through technology, which is thus invested of an ontological primacy towards

the next step in human evolution. Within a discourse which is supposedly anchored on atheist assumptions[21] [22], technology becomes the drive to fulfill desires[23], a generic answer for hopes in the constitution of better individuals[24] and better social futures[25], as well as the golden key to access the forbidden fruit: immortality, later renamed, within transhumanist literature, as radical life extension[26]. There are many interesting parallels which can be drawn between the transhumanist take on technology, and religions. David Noble, in his book "The Religion of Technology: the divinity of Man and the Spirit of Invention" (1997), states:

> The present enchantment with things technological – the very measure of modern enlightenment – is rooted in religious myths and ancient imaginings. Although today's technologists, in their sober pursuit of utility, power, and profit, seem to set society's standard for rationality, they are driven also by distant dreams, spiritual yearnings for supernatural redemption. However dazzling and daunting their display of worldly wisdom, their true inspiration lies elsewhere, in an enduring, other-worldly quest for transcendence and salvation. (4)

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21 Max More, for instance, takes an explicit standpoint against normative religions in the name of science:
> Many people find it puzzling and frustrating that religion has persisted despite enormous advances in scientific understanding. (1990: n. pg.)

22 As James Hughes states: "Self-identified transhumanists today are mostly secular and atheist" (2010).

23 For a specific criticism of these aspects, see subchapter "Technochantment" by Elaine L. Graham (2002: 165-168).

24 Bioethicist John Harris, for instance, see human enhancements as morally good "because they make us better people" (2007: 2).

25 Utilitarian transhumanist philosopher David Pearce in "The Hedonistic Imperative" (1995) portrays a life's "happy ending" as a state of well-being offered by the intake of smart drugs. His proposal does not sound too different from the over-medicalization of the old, often practiced within Western medicine, with a hedonistic take. Such a scenario shares many similarities with Aldous Huxley's "Brave new World" (1932) and the use of "soma", even if Pearce's project is not conceived in a statalized form. In the subchapter "Could Life Really Have A Happy Ending?", he states:
> In fact with a combination of cognitive-enhancers ("smart drugs") and gentle euphoriants, there is no reason why the old age of the sympathetic reader shouldn't herald, not a slow, spirit-sapping decline, but a period of beautiful experiences and glorious self-fulfillment. Thus later life can be a time immeasurably richer than anything (s)he has enjoyed before. (1995: n. pag.)

Pearce is also a proponent of "Paradise engineering", that is "the complete abolition of suffering in *Homo sapiens*" (*ibidem*); note that "the circle of compassion" should be extended "to other animals via ecosystem redesign and genetic engineering" (*ibidem*), recognizing to human morals a primacy which is rooted in humanistic exceptionalism.

26 See, for instance, the use of this notion as employed by Ray Kurzweil in "The Singularity is Near" (2005).

Noble's description of the current techno-enchantment can be comfortably applied to transhumanist rhetorics. The specific tradition in which Transhumanism locates technology in order to give to it full credibility is the Enlightenment; the notions of progress and rationality are left untouched within the transhumanist technological paradigm. Technology becomes a hierarchical project, based on rational thought and driven towards complexity; the human notion of time, in this epistemological set, turns into the ontological nourishment of technology, which needs the chronological future in order to successfully develop its transcendental projects. If Posthumanism and Transhumanism share a common interest in technology, the ways in which they reflect upon this notion is structurally different. Let's see how.

5. Posthuman Technologies

The historical and ontological dimension of technology is a crucial issue, when it comes to a proper understanding of the posthuman agenda. Yet, the posthuman is a post-*centralizing*, in the sense that it does not recognize one specific center of interest (which would turn it into a form of essentialism). The posthuman sees technology as a trait of the human outfit, but not its main focus, which would reduce its own theoretical attempt to a form of techno-reductionism. Technology is neither the "other" to be feared and to rebel against, in a sort of neo-luddite attitude; nor does it sustain the God-like characteristics which some schools of thought in Transhumanism attributes to it, addressing technology as an external source which might guarantee humanity a place in post-biological futures. What Transhumanism and Posthumanism share is the notion of technogenesis, as Katherine Hayles, in "Wrestling with Transhumanism" (2008) points out:

> There are, of course, many visions of transhumanism, and they do not all depend on the assumption I critiqued. (…) Most versions share the assumption that technology is involved in a spiraling dynamic of coevolution with human development. This assumption, known as technogenesis, seems to me compelling

> and indeed virtually irrefutable, applying not only to contemporary humans but also to *Homo sapiens* across the eons, shaping the species biologically, psychologically, socially and economically. While I have serious disagreements with most transhumanist rhetoric, the transhumanist community is one that is fervently involved in trying to figure out where technogenesis is headed in the contemporary era and what it implies about our human future. This is its positive contribution, and from my point of view, why it is worth worrying about. (2011: 215-6)

The non-separateness between the human and the techno realm shall be investigated not only as an anthropological (Gehlen 1957) and paleontological issue (Leroi-Gourhan 1943; 1964), but also as an ontological one. The "techno" of tehnogenesis, within a posthuman frame, will be interpreted through the work of Martin Heidegger (1889-1976). In his essay "The Question Concerning Technology" (1953), Heidegger engaged in an ontological reflection on technology, which is crucial to the posthuman perspective. In Heidegger's view, the notion of technology cannot be reduced to mere means, nor to a reification:

> Modern technology too is a means to an end. That is why the instrumental conception of technology conditions every attempt to bring man into the right relation to technology. Everything depends on our manipulating technology in the proper manner as a means. We will, as we say "get" technology "spiritually in hand". We will master it. The will to mastery becomes all the more urgent the more technology threatens to slip from human control. / But suppose now that technology were no mere means, how would it stand with the will to master it? (1977: 5)

Heidegger addresses technology not only through its Greek etymology (*technē*), but through its semantic legacies, expanding it to encompass other related notions, such as *poiēsis* – "*Technē* belongs to bringing-forth, to *poiēsis*" (13) – and *epistēmē* – "From

earliest times until Plato the word *technē* is linked with the word *epistēmē"* (13). Through this relations, Heidegger presents technology as a mode of revealing:

> What has the essence of technology to do with revealing? The answer: everything. (…) Technology is therefore no mere means. Technology is a way of revealing. (12)

Moreover:

> *Technē* (...) reveals whatever does not bring itself forth and does not yet lie here before us (...). It is as revealing and not as manufacturing, that *technē* is a bringing-forth. (…) Technology is a mode of revealing. Technology comes to presence in the realm where revealing and unconcealment take place, where *alētheia*, truth, happens. (13)

Heidegger sees modern technology as a limitation of the potentials of its revealing, as he states:

> What is modern technology? Is too is a revealing. (…) And yet the revealing that holds swat throughout modern technology does not unfold into a bringing-forth in the sense of *poiēsis*. The revealing that rules in modern technology is a challenging, which puts to nature the unreasonable demand that it supply [*sic*] energy that can be extracted and stored as such. (…) The earth now reveals itself as a coal mining district, the soil as a mineral deposit. (14)

He specifically names modern technology as an "Enframing":

> We now name that challenging claim which gathers man thither to order the self-revealing as standing-reserve: "*Ge-stell*" [Enframing]. (19)

Further explaining:

> The essence of modern technology lies in Enframing. Enframing belongs within the destining of revealing. These sentences express something different from the talk that we hear more frequently, to the effect that technology is the fate of our age, where "fate" means the inevitableness of an unalterable course. But when we consider the essence of technology, then we experience Enframing as a destining of revealing (…), a destining that in no way confines us to a stultified compulsion to push on blindly with technology or, what comes to the same thing, to rebel helplessly against it and curse it as the work of the devil. Quite to the contrary, when we once open ourselves expressly to the *essence* of technology, we find ourselves unexpectedly taken into a freeing claim. (25-6)

I will conclude this series of quotes from Heidegger, emphasizing the danger that he sees when technology is reduced to an Enframing, and when such an Enframing becomes the destining of revealing:

> Yet, when destining reigns in the mode of Enframing, it is the supreme danger. This danger attests itself in two ways. As soon as what is unconcealed no longer concerns man even as object, but does so, rather, exclusively as standing-reserve, and man in the midst of objectlessness is nothing but the orderer of the standing-reserve, then he comes to the very brink of a precipitous fall; that is, he comes to the point where he himself will have to be taken as standing-reserve. Meanwhile man, precisely as the one so threatened, exalts himself to the posture of lord of the earth. In this way the impression comes to prevail that everything man encounters exists only insofar as it is his construct. This illusion gives rise in turn to one final delusion: It seems as though man everywhere and always encounters only himself. (…) But Enframing does not simply endanger man in his relationship to himself and to everything that is. As a destining, it banishes man into that kind of revealing which is an ordering. Where this ordering holds sway, it drives out

> every other possibility of revealing. (…) Thus the challenging Enframing not only conceals a former way of revealing, bringing-forth, but it conceals revealing itself and with it That wherein unconcealment, i.e., truth, comes to pass. (26-7)

Finally:

> What is dangerous is not technology. There is no demonry in technology, but rather there is the mystery of its essence. The essence of technology, as a destining of revealing, is the danger. (…) The threat to man does not come in the first instance from the potentially lethal machines and apparatus of technology. The actual threat has already affected man in his essence. The rule of Enframing threatens man with the possibility that it could be denied to him to enter into a more original revealing and hence to experience the call of a more primal truth. (28)

Modern technology has been systematized and "humanized" as an ordering regulated on human factual needs, in a reductionist approach which limits its possibilities as a mode of revealing. In "Technica and Time, 1: The Fault of Epimetheus" (1994), Bernard Stiegler thus comments on Heidegger's standpoint:

> Technics becomes modern when metaphysics expresses and completes itself as the project of calculative reason with a view to the mastery and possession of nature. (1998: 10)

If Transhumanism, with its emphasis on reason, progress, and mastery might be a suited example for Heidegger's criticism and Stiegler's reflection, the way Posthumanism engages in technology might leave space for other possibilities. More than a functional tool for "obtaining" (energy; more sophisticated technology; or even immortality), technology arrives to the posthuman debate through the mediation of feminism, in particular, as we will soon see, through Donna Haraway's cyborg (1985) and her

dismantling of dualisms and boundaries, in particular: the boundary between animal-human (organism) and machine; the boundary between the physical and nonphysical; and ultimately, the boundary between technology and the self, as we will see more in details in the course of this dissertation. Posthumanism investigates technology as a mode of revealing, thus re-accessing its ontological significations in a scenario where technology had been repeatedly reduced to its technical endeavors. One of the ways such a revealing has not been necessarily confined to an Enframing, can be found in the technologies of the self, a crucial concept Michel Foucault (1926-1984) reflected upon in its later production[27], introducing such a notion by stating:

> When I began to study the rules, duties, and prohibitions of sexuality, the interdictions and restrictions associated with it, I was concerned not simply with the acts that were permitted and forbidden but with the feelings represented, the thoughts, the desires one might experience, the drives to seek within the self any hidden feeling, any movement of the soul, any desire disguised under illusory forms. (1988: 16)

He then resumes technology by configuring it in four categories, which should not been perceived as independent from each other, but rather co-constituting each other:

> My objective for more than twenty-five years has been to sketch out a history of the different ways in our culture that humans develop knowledge about themselves: economics, biology, psychiatry, medicine, and penology. The main point is not to accept this knowledge at face value but to analyze these so-called sciences as very specific "truth games" related to specific techniques that human beings use to understand themselves. / As a context, we must understand that there are four major types of these "technologies", each a matrix of practical

27 Shortly before dying in 1984, Foucault mentioned his idea of working on a book on the technologies of the self. In 1988, the book "Technologies of the Self: A Seminar with Michel Foucault" was published *post-mortem*, based on a seminar Foucault had originally presented at the University of Vermont in 1982.

> reason: (1) technologies of production, which permit us to produce, transform, or manipulate things; (2) technologies of sign systems, which permit us to use signs, meanings, symbols, or signification; (3) technologies of power, which determine the conduct of individuals and submit them to certain ends or domination, an objectivizing of the subject; (4) technologies of the self, which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality. / These four types of technologies hardly ever function separately (…). Each implies certain modes of training and modification of individuals, not only in the obvious sense of acquiring certain skills but also in the sense of acquiring certain attitudes. (17-8)

The notion of the technologies of the self is crucial to the posthuman: since the dualism self/other has been re-accessed through a relational ontology, as we will see, the technologies of the self play a substantial role in the process of existential revealing. The technologies of the self allow for a reflection on a posthuman praxis which may transcend the written/spoken paradigm, impregnating modes of existing and relating, and opening the debate to posthuman ethics and applied philosophy. I will delve into these points in section 12. Let's now go back to our unraveling of the differences between the movements and standpoints which currently characterize the posthuman scenario, in order to further define and situate the perspective of Philosophical Posthumanism.

6. Antihumanism and The Übermensch

If modern rationality and progress are at the core of the transhuman postulation, a radical critique of those same notions is at the core of the antihuman reflection. As Mary Schnackenberg Cattani states, in her preface to “French Philosophies of the Sixties: An Essay on Antihumanism” (1985):

> This critique of modern rationality was absolutely inseparable from a critique of the subject (of man) defined as consciousness and as will, that is, as man as the author of his acts and ideas. In order to understand this, one must refer back to the considerable trauma represented by the Second World War for European intellectuals. Immediately after the war, in fact, it is no exaggeration to say that "civilized societies," that is the entire Western world, could legitimately be accused of having engendered, or at least of having been unable to stop, two of the greatest political catastrophes of this century: colonialist imperialism and Nazism. (1990: xii-xiii)

Let's then present Antihumanism[28], a philosophical position which, although sharing its roots in postmodernity with the posthuman, should not be assimilated to it. The deconstruction of the human, which is almost absent in the transhuman reflection, is crucial to Antihumanism. This is one of its main points in common with Posthumanism, while their main distinction is already embedded in their morphologies, and specifically, in their composition as a "post-", and as an "anti-". Antihumanism fully acknowledges the consequences of the "death of man", as delineated by some post-structuralist theorists, in particular Michel Foucault who, in "The Order of Things: An Archeology of the Human Sciences" (1966) stated:

> Man is neither the oldest nor the most constant problem that has been posed for human knowledge. (…) As the archeology of our thought easily shows, man is an invention of recent date. And one perhaps nearing its end. (1970: 386-7)

While Foucault traced the historical birth of this specific "man" in the Enlightenment – and not, as Béatrice Han-Pile points out, in "the revival and reinterpretation of the Ciceronian notion of *humanitates* during the Renaissance" (2010: 122) –, he identified

28 It is important to note that Antihumanism is not an homogeneous movement (Han-Pile 2010: 119). Here, I will mostly focus on the philosophical current developed out of the Nietzschean-Foucauldian legacies. For an account on the antihuman perspective rooted in Marxism and developed by philosophers such as Louis Althusser (1918-90) and György Lukàcs (1885-1971), see Davies 1997: 57-69.

his death with the philosophical occurrence of Friedrich Nietzsche's *Übermensch*[29]. I would like to open a parenthesis here, and note that the *Übermensch*[30] has been recognized has a source of inspiration by Transhumanism, Posthumanism and Antihumanism, for different reasons and with divergent interpretations. As far as Transhumanism is concerned, between 2009 and 2010 an interesting debate followed the publication of the article "Nietzsche, the Overhuman, and Transhumanism" (2009), by Stefan Lorenz Sorgner, in which Sorgner contested Nick Bostrom, who dismissed Nietzsche as a significant source of inspiration for Transhumanism[31]. Max More replied to Sorgner's article with the paper "The Overhuman in the Transhuman" (2010), where he shared Sorgner's position, and stated that "transhumanist ideas were directly influenced by Nietzsche" (1). As far as Antihumanism is concerned, in its specific Foucauldian terms, the death of God proclaimed by Zarathustra is followed by the death of Man. As previously stated, the "Man" Foucault is thinking of, can be found in the notion of man as historically shaped within the Enlightenment, which, ironically, is precisely the one to

29 On this regard, Foucault stated:

> Nietzsche rediscovered the point at which man and God belong to one another, at which the death of the second is synonymous with the disappearance of the first, and at which the promise of the superman signifies first and foremost the imminence of the death of man. (…) It is no longer possible to think in our day other than in the void left by man's disappearance. For this void does not create a deficiency; it does not constitute a lacuna that must be filled. It is nothing more, and nothing less, than the unfolding of a space in which it is once more possible to think. (1970: 342)

30 First found in "The Gay Science" (1882), the notion of the *Übermensch* was fully developed by Nietzsche in "Thus Spoke Zarathustra" (1883-85), and it can be epitomized in the notable words by Zarathustra:

> *I teach you the overman*(1). Human being is something that shall be overcome. What have you done to overcome him?
>
> (1) Just as *Mensch* means human, human being, *Übermensch* means superhuman, which I have rendered as overman, though I use human being, mankind, people and humankind to avoid the gendered and outmoded use of "man" (…) – *Translator's note* (2006: 5).

Note that, for a text's coherence, I will mostly rely on Walter Kaufmann's translation of Nietzsche's work, including some passages from "Thus Spoke Zarathustra" (original translation: 1954; referenced: 1976), where the generalized use of "man" does not change the significance of the original text, as in note 135. And still, in this specific case, I have quoted Del Caro / Pippin 2006 for their gendered sensitivity in rendering "*Mensch"*, which is absent in Kaufmann's translation.

31 For instance, in "A History of Transhumanist Thought", Nick Bostrom stated:

> What Nietzsche had in mind, however, was not technological transformation but rather a kind of soaring personal growth and cultural refinement in exceptional individuals (who he thought would have to overcome the life-sapping "slave-morality" of Christianity). Despite some surface-level similarities with the Nietzschean vision, transhumanism – with its Enlightenment roots, its emphasis on individual liberties, and its humanistic concern for the welfare of all humans (and other sentient beings) – probably has as much or more in common with Nietzsche's contemporary J.S. Mill, the English liberal thinker and utilitarian. (2005: 4)

which the transhuman philosophical tradition sees as its antecedent. Lastly, from a posthuman perspective, the *Übermensch* can be criticized for being posed through a hierarchical symbolism, displayed in the ape-human-overhuman compound[32], even though the way Nietzsche portrays the human being as a "a bridge and not a purpose"[33] is crucial to the posthuman shift[34].

Going back to our comparison, different from Antihumanism, Posthumanism does not necessary rely on the death of God nor, passing thorough Foucault's approach, on the death of Man, since the assumptions of a "death" are already based on the recognition of the symbolic dualism dead/alive, which has been challenged by the posthuman reflection, as we will see in section 16. Furthermore, if God or Man (note the masculine form) are dead, who killed them? This is a relevant question, for the simple fact that, if someone is talking about their deaths, it means that someone has survived: who is the survivor? The death of Man or God can be seen as a symbolic sacrifice of redemption, which is perceived as not necessary anymore within a posthuman frame. While Antihumanism is characterized by an oppositional attitude, pertaining to the social and cultural agenda in which it developed (the Sixties as a symbolic decade), Posthumanism is a philosophy of mediation which relocates hegemonic modes of thinking close to resistant ones[35]; none of them are fully dismissed, but they are recognized as functional acts of the philosophical drama, and, more in general, as contributors to the historical formation of the notion of the human. Posthumanism, after all, is aware of the fact that its own standpoints are

32 In "Thus Spoke Zarathustra", it is stated:

> What is the ape to a human? A laughing stock or a painful embarrassment. And this is exactly what the human should be to the overhuman: a laughing stock or a painful embarrassment. / You have made your way from worm to man, and much in you is still worm. Once you were apes, and even now, too, man is more ape than any ape. (2006: 6)

Also:

> All creatures so far created something beyond themselves; and you want to be the ebb of this great flood and would even rather go back to animals than overcome humans? (5)

33 Again, in "Thus Spoke Zarathustra", Nietzsche affirms:

> What is great about human beings is that they are a bridge and not a purpose: what is lovely about human beings is that they are a *crossing over* and a *going under.* (*Ibidem:* 7)

34 Such an interpretation of the human echoes particularly well with the notion of *frontera* (Anzaldúa 1987), developed within Chicana Studies, which represents one of the sources of inspiration of the posthuman in the theoretical and political frame of the Studies of the Differences.

35 See Appendix 1 for a full development of this crucial aspect of the posthuman.

formulated by human beings formed within a specific *episteme*[36], expressed in a historically-situated human language to other human readers, and that humanistic views and assumptions are structurally embedded within such a human-related scenario; consequently, they cannot be easily dismissed or erased. In this respect, more than with Foucault's death of Man, the posthuman is in tune with Derrida's deconstructive approach (1967). As Neil Badmington points out in his anthology "Posthumanism" (2000):

> While the anti-humanists were declaring a departure from the legacy of humanism, Derrida was patiently pointing out the difficulties of making such a break. Precisely because Western philosophy is steeped in humanist assumptions, he observed, the end of Man is bound to be written in the language of Man. (…) There is no pure outside to which 'we' can leap. To oppose humanism by claiming to have left it behind is to overlook the very way that opposition is articulated. / It does not follow, however, that poststructuralism is content to confirm the status quo, for Derrida's work repeatedly shows how systems are always self-contradictory, forever deconstructing themselves *from within*. (9)

Different from Antihumanism, Posthumanism, although not recognizing any onto-epistemological primacy to the human, actually resumes the possibility for human agency. Before focalizing our attention on Philosophical Posthumanism, let me briefly go through some other differential terms. Metahumanism is a recent approach attempting to mediate between the Post- and Trans- tendencies (Del Val / Sorgner 2010); it should not be confused with Metahumanity, a term which started to appear in the Eighties within comics narratives[37] and role-playing games, to refer to superheros and mutants, and has been since employed specifically in the context of Cultural Studies. One final remark: the

36 Here, *episteme* can be referred to the specific denotation suggested by Michel Foucault in "The Order of Things" (1966):

> What I am attempting to bring to light is the epistemological field, the *episteme* in which knowledge, envisaged apart from all criteria having reference to its rational value or to its objective forms, grounds its positivity and thereby manifests a history which is not that of its growing perfection, but rather that of its conditions of possibility. (1970, xxii).

37 The term "metahuman" was specifically utilized within the comic series released by the publisher DC Comics (New York).

notion of Posthumanities has been welcomed in academia to emphasize an internal shift (from the "Humanities" to the "Posthumanities"), extending the study of the human condition to the posthuman, but it also refers to future generations of beings related to the human species, as we will see in section 20. Overall, it can be stated that Posthumanism, by itself, has become an umbrella term to include different, even antithetical, perspectives, in an era where the symbolic and pragmatic boundaries of the "human" have been ultimately challenged.

7. Philosophical Posthumanism

Nurtured by Gender Studies, Cultural Studies and Literary Criticism, by the end of the Nineties, (Critical and Cultural) Posthumanism developed into a specific philosophical enquire. On one side, following the posthuman dismantling of traditional dualities such as alive and not alive, human and non human, physical and virtual, a specifically feminist approach, which has been defined as New Materialisms[38], engaged in a sophisticated inquiry into matter, directly investigating scientific fields such as Theoretical Physics, Quantum Physics and Cosmology. On the other, Posthumanism re-entered the historical "center" of the Western hegemonic discourse, in a comprehensive attempt to re-access each field of philosophical investigation through this gained awareness of the limits of previous anthropocentric and humanistic assumptions: from epistemology to ontology, from bioethics to existentialism[39]. A relevant source for such a take, which is also referred to as Philosophical Posthumanism, can be traced in the "Letter on Humanism" (1947), by Martin Heidegger, where it is stated:

> But in the claim upon man, in the attempt to make man ready for this claim, is there not implied a concern about man? Where else does 'care' tend but in the direction of bringing man back to his essence? What else does that in turn betoken but man (*homo*) become human (*humanus*)? Thus *humanitas* really does remain

38 I will present this specific take of Posthumanism in section 21.
39 I will reflect more specifically on these aspects in sections 20 and 23.

> the concern of such thinking. For this is humanism: meditating and caring, that man be human and not inhumane, 'inhuman' , that is, outside his essence. But in what does the humanity of man consist? It lies in his essence. (2001: 241)

Soon after, Heidegger traces the etymological roots of the human, delving into the Roman concept of *humanitas* (242), as well as into the historical significance of humanism, which is not reduced to the Renaissance Humanism, but it is located further back in Roman Humanism[40]. In so doing, Heidegger focusses our attention on the notion of the essence of man:

> The first humanism, Roman Humanism, and every kind that has emerged from that time to the present, has presupposed the most universal 'essence' of man to be obvious. Man is considered to be an *animal rationale*. This definition is not simply the Latin translation of the Greek *zōon logon echon* but rather a metaphysical interpretation of it. (…) Above and beyond everything else, however, it finally remains to ask whether the essence of man primordially and most decisively lies in the dimension of *animalitas* at all. Are we really on the right track toward the essence of man as long as we set him off as one living creature among others in contrast to plants, beasts, and God? (243)

In this passage, Heidegger has pointed out one of the main aspects of Posthumanism, which consists precisely in accessing the human through alternative strategies, rather than establishing *his*[41] essence through the traditional contrast or opposition with the "others" (not only plants, beasts and Gods, but also women, slaves and machines, among many others[42]). Let's delve into this aspect. Philosophical Posthumanism does not rely on oppositions, but can be appointed as an empirical philosophy of mediation, which offers a

40 As Heidegger states:

> We encounter the first humanism in Rome: it therefore remains in essence a specifically Roman phenomenon, which emerges from the encounter of Roman civilization with the culture of late Greek civilization. (2001: 242)

41 Such an essence has been historically set within an uncritical male frame.

42 I will come back to this point in different sections, both in Part 1 as in Part 2.

reconciliation of existence in its broadest significations. Posthumanism, which can be seen as both a *post-centrism*[43] and a *post-exclusivism*, does not employ any frontal dualism or antithesis, demystifying ontological polarizations through the postmodern practice of deconstruction. Posthumanism is not obsessed with proving the originality of its own proposal, and thus can be seen as a *post-exceptionalism* as well. It implies an assimilation of the "dissolution of the new", which philosopher Gianni Vattimo in "The End of Modernity: Nihilism and Hermeneutics in Postmodern Culture" (1985), identified as a specific trait of the postmodern:

> If it were simply a question of an awareness – or assumption – of representing an historical novelty which constitutes a new and different figure in the phenomenology of the spirit, then the post-modern would be positioned along the lines of modernity itself, since the latter is governed by the categories of the 'new' and of 'overcoming'. Things change, however, if we see the post-modern not only as something new in relation to the modern, but also as a dissolution of the category of the new – in other words, as an experience of 'the end of history' – rather than as the appearance of a different stage of history itself. (1991: 4)

In order to postulate the "new", the centre of the discourse has to be located, so that the question "new to what?" shall be answered. But the novelty of human thought is relative and situated: what is considered "new" in one society, might be common knowledge in another[44] [45]. Moreover, hegemonic perspectives do not explicitly acknowledge all the resistant standpoints which coexist within each specific cultural-historical paradigm, thus failing in recognizing the discontinuities embedded within any discursive formation.

43 Here, not to be intended in its political sense, but as a "centralizing", recurrent in forms such as anthropo-centrism, Euro-centrism, andro-centrism etc.

44 In every civilization, while "new" information is achieved, other information is lost, so that the lost information, once retrieved, becomes new again. Psychoanalyst Immanuel Velikovsky actually defined the human species as that species which constantly loses memory of its own origins, and thus called it: "Mankind in Amnesia" (1982).

45 Think, for instance, of the parallels drawn by physicist Fritjof Capra in his influential work "The Tao of Physics: An Exploration of the Parallels between Modern Physics and Eastern Mysticism" (1975), between what at the time where considered, within a Western frame, recent scientific discoveries, and ancient knowledges of Eastern spiritual traditions.

What Posthumanism puts at stake is not only the identity of the "centre" of the Western discourse – which has already been radically deconstructed by its own "peripheries" (Feminists, Black, Queer, Postcolonial theorists, to name a few). Posthumanism dismisses the centrality of the centre in its singular form, both in its hegemonic as in its resistant modes[46]. Posthumanism might recognize centers of interests; its centers, though, are mutable, nomadic, ephemeral. Its perspectives have to be pluralistic, multilayered, and as comprehensive and inclusive as possible in order to remain inclusive – including exclusivism, for instance, would preclude such a strategy.

Here, I shall open a parenthesis and notice that one of the problems with Philosophical Posthumanism re-entering the center of the traditional hegemonic discourse is evident in those thinkers who reflect and theorize on Posthumanism avoiding the studies developed from the human "margins", to quote bell hooks (1984), such as Feminism or Critical Race Studies, among others; they are looking to embrace the "exotic" difference, such as the robot, the alien, the biotechnological chimeras, without having to deal with the differences embedded within the human realm. Posthumanism does not stand on a hierarchical standpoint; there are no higher and lower degrees of alterity, when formulating a posthuman standpoint, so that the non-human differences are no more compelling than the human ones. For instance, Roberto Marchesini[47], in his book "Il Tramonto dell'Uomo. La Prospettiva Post-Umanista" (2009), states:

> L'umano non è più l'emanazione o l'espressione dell'uomo bensì il risultato dell' ibridazione dell'uomo con le alterità non umane (34)
>
> ("The human is no longer the emanation or the expression of man, but the result of man's hybridization with the non-human alterities" - *translation mine*)

46 For an excursus on this particular aspect of Posthumanism, see Appendix 1.

47 I would like to note that Marchesini's book "Post-human: Verso Nuovi Modelli di Esistenza" (2002) can be considered one of the most exhaustive studies on Posthumanism written within the Italian academic scenario.

I would rephrase his point this way: the human is no longer the expression of man, because "man", as a universal concept, has been deconstructed. It is only through such a deconstruction that the human will be able to access the non-human otherness. Let's now go back to the critique of the new.

From a metanarrative[48] perspective, such a critique manifests itself by defining itself as a "post" instead of coining a new term. Posthumanism does not present itself in opposition to the previous *episteme,* an act which would be based on the logics of the symbolic concave mirror[49]: "we are right, because they were wrong", or, "our philosophy is new, because their philosophy had become obsolete". This attitude results in the fact that what is supposed to be counteracted, turns into a necessary vehicle to the hermeneutics of the new paradigm: the notion of "post-modern" is posed through a rejection of some determining elements of Modernism[50], while Modernism can trace its own narratives by opposing elements related both to the Enlightenment as well as to Romanticism (Lewis 2007), and so on. On one side, presenting a history of ideas through rejections may sound like a simplification: a different history could be successfully assembled as an evolution or a metamorphosis from one movement to the other. Furthermore, it can be observed that none of the terms really fit, since "we have never been modern" (Latour 1987)[51]. And still, it is significant to observe that, within Western schemata, a recognition of a movement is often established through its oppositions to previous ones[52]. In the specific

48 Note that metanarratives here are not condoned of any metaphysical assumptions, but they are performing a functional role, in referring to the recorded history of human thought.

49 I will come back to this notion in section 9.

50 See, for instance, the table of differences delineated by Ihab Hassan in "The Postmodern Turn" (1987): some of the traits of Modernism are individuated in: " Purpose", "Design", Hierarchy", Mastery/Logos, Creation/Totalization, "Centering", "Genital/Phallic". The equivalent listed traits for Postmodernism are: "Play", "Chance", "Anarchy", "Exhaustion/Silence", "Decreation/Deconstruction", "Dispersal", Polymorphous/Androgynous" (91).

51 For a detailed presentation of Latour's point of view on the terms "modern" and "postmodern", see specifically Section 1.5 "What Does it Mean To Be a Modern?" (10-2).

52 For instance, Thomas Kuhn (1922-1996) in his influential book "The Structure of Scientific Revolutions" (1962), has thus characterized the epistemological shift from a scientific paradigm to another:

> A crisis may end with the emergence of a new paradigm and with the ensuing battle over its acceptance (2012: 84).

Note that, although Kuhn saw the characteristic of one reigning paradigm as specific of the sciences, the mechanism of the shift may apply to the social sciences as well.

case of Posthumanism, there is no need for a symbolic sacrifice. Posthumanism does not reject the previous *episteme*, but it actually follows on the track set upon by postmodern and post-structural practices, in a development which is in a constant dialogue with past, present and future acknowledgments and possibilities. Posthumanism has embedded feminist horizontal practices and approaches, thus it is able to manifest as a generation rather than a symbolic killing followed by a redemption. A reflection on its metanarratives is particularly significant since Posthumanism does not mark a separation between theory, *poiesis* and praxis[53]; the processes embedded in revealing knowledge, production and action are intrinsically and extrinsically cohabiting each other. In this sense, the metanarratives of Posthumanism are a recognition and a location: the ways the posthuman accesses the recorded histories and herstories of ideas are as significant as its theoretical formulations, thus moving beyond dualism from a meta-perspective as well.

53 This is a topic recurrently discussed within the field of Philosophy. Here, I will only offer two main historical references, which I find most significant in this context. On the *praxis/poiesis* distinction, see Aristotle's "Nicomachean Ethics" (c.a. 350 BC), Book VI. On the relation theory/practice, see Karl Marx's "Theses on Feuerbach" (1845), where he famously stated:

> Philosophers have only interpreted the world differently, but the point is to change it. (2009: 97)

8. The Semantics of the Post-Human

Let's now analyze the term itself, in its three main components of: "post", "-" (hyphen), and "human". Of the three, a major emphasis has been appointed to the "human", and so the posthuman has been mostly defined as a *post-humanism* and a *post-anthropocentrism*. Before focussing on the "human" (as related both to the human species, as well as to the humanistic tradition), we have stressed the relevance of the "post" in the configuration of the posthuman, as a marker of differentiation from other perspectives previously analyzed, such as Transhumanism and Antihumanism, each of them relying on their prefixes to define their own specificities. Different from the prefix "anti", for instance, "post" does not comply with oppositional ontologies, thus overcoming dualisms such as self/other, subject/object, animate/inanimate, human/animal, human/robot, male/female, physical/virtual, flesh/machine, citizen/alien, normal/pathological. "Post" in Latin means both "behind" (if related to space), and "after" (if related to time) – the latter denoting the acception in which "post" has been employed within the posthuman frame. As an "after", "post" does not mark a sharp break from which a blank page to be filled can be established, such as the elaboration of a new term might suggest. "Post" implies a continuity, a discontinuity, and a transcendence (in its literal meaning of exceeding), of the term of which it is a "post", and so it necessarily reconciles its own identity to it in a symbiotic relation. The emphasis, though, can be differently posed on the "post" as a reaction (such as "post-modern"), as a continuity (such as "post-feminist", as employed in contemporary feminist discourses and not in mainstream medias), or as a transcendence (such as "post-apocalyptic" could suggest). Locating the posthuman as one more "post" in a crowded scenario is crucial in order to contextualize it. On the other side, the risk of focussing excessively on the politics of the "post" consists in losing its referential terms. The "post" by itself eventually dismembers in the openness which it

postulates; it becomes a passage from somewhere to everywhere, in other words, a nowhere.

More appropriately, the "post" of the post-human has to be approached as a "post-". The hyphen is the term of mediation; it communicates the fact that there is another term, or other terms, which shall be acknowledged, and so it situates the "post" within a multiplicity of possibilities. The hyphen can be grammatically used in different ways: it can divide a single word in separate parts for the purpose of line-wrapping; it can serve as a "hanging" hyphen, with the second term omitted, and thus manifesting as a suspension. It can be employed to join different notions into a single one, when its manifestation occurs between terms; it is preceded and proceeded, emphasizing a relationality which, as we will see, is specific to the posthuman approach. The hyphen is a relation which can introduce any other term, including a repetition of the self, the mirror, that is, another "post", as in the term "post-postmodernism" (Jameson 1991; Nealon 2012), in a game of reflections which has virtually no end. The hyphen can manifest through its presence, as well as through its absence: sometimes it disappears. Specifically, when the use of a term becomes more common, it tends to be omitted: post-modern becomes postmodern, post-feminist turns into postfeminist, post-human into posthuman. Its relevance, though, should not be dismissed. The fact that its presence can be substituted with its absence without a significant loss, makes of it a suited mark for the post-dualistic approach of the posthuman; the hyphen does not have to be one or the other: it can be both, or neither.

9. Humanizing

After analyzing the "post" and the hyphen, let's now engage in a critical analysis of the third constituent of the posthuman: the human. First of all, it is important to emphasize the fact that, more than a noun, the human should be expressed as a verb: to humanize. In saying so, I am recalling feminist theorist Donna Haraway, who has stated, regarding gender:

> Gender is a verb, not a noun. Gender is always about the production of subjects in relation to other subjects, and in relation to artifacts. Gender is about material-semiotic production of these assemblages, these human-artifact assemblages that are people. [...] It is an obligatory distribution of subjects in unequal relationships, where some have property in others" (2004: 328-9).

There are a lot of parallels to be drawn between the ways gender and the human have been historically constituted, due to the fact that the same hegemonic subjectivities who had symbolic access to the normativization of ontological roles and social functions assigned to different genders, were also the ones who were granted access to a redefinition of the human *tout court*. In order to explain this point further, I will offer a brief summary of some key points within Feminist Theory, which may prove helpful to critically engage with the notion of the human as well. Let's start with Simone De Beauvoir (1908-1986) who, in her influential book "The Second Sex" (1949), famously stated:

> One is not born, but rather becomes a woman. No biological, psychological, or economic fate determines the figure that the human female presents in society; it is civilization as a whole that produces this creature, intermediate between male and eunuch, which is described as feminine. Only the intervention of someone else can establish an individual as an *Other*. (1974: 301)

De Beauvoir is describing the notion of the woman as a process, rather than an essence, which has been shaped to fit as the structural Other of the subject of Western accounts. She emphasizes the symbolic role of the woman as the Other in numerous passages. See for instance:

> She appears as *the privileged Other*, through whom the subject fulfills himself: one of the measures of man. (281)

And also:

> The ideal woman will be she who incarnates most exactly the *Other* capable of revealing him to himself. (284)

Moreover:

> To be a "true woman" she must accept herself as the Other. (295)

The "woman" is the Other through which the "man" is able to achieve his identity: man is man because the woman is not. In 1974, Luce Irigaray gave a specific twist to the concept of the woman as the Other. In "Speculum, of the Other Woman", the woman becomes not the difference, but the absence which can be filled with male projections: she is not just a mirror, but a "concave mirror":

> But which "subject" up till now has investigated the fact that a *concave mirror* concentrates the light and, specifically, that this is not wholly irrelevant to women's sexuality? (…) When the "it is" annuls them in the truth of a copula in which "he" still forever finds the resources of his identification as same. (…) If this mirror – which, however, makes a *hole* – sets itself up pompously as an authority in order to give shape to the imaginary orb of a "subject", it thereby defends itself phobically in/by this inner "center" from the fires of the desire of/for woman. Inhabiting a securing morphology, making of its very structure some comfortable sepulcher from whence it may, possibly, by some hypothetical survival, be able to look out. (Re)g(u)arding itself by all sorts of windows-on-wheels, optical apparatuses, glasses, and mirrors, from/in this burning glass, which enflames all that falls into its cups (1985: 144).

In Irigaray's perspective, the woman is not essentialized in her differences from the man, but it is designed *ad hoc*, as a vacuum to validate the existence of man through male

terms and projections[54].

Both de Beauvoir and Irigaray are explicit references in the work of postmodern feminist philosopher Judith Butler, who, in "Gender Trouble" (1990), sharply summarizes the two perspectives in these terms:

> In opposition to Beauvoir, for whom women are designated as the Other, Irigaray argues that both the subject and the Other are masculine mainstays of a closed phallogocentric signifying economy that achieves its totalizing goal through the exclusion of the feminine altogether. (1999: 14)

"Gender Trouble" has had a tremendous impact on Feminist Theory for its exhaustive representation of gender as performative and reiterative, as Butler explains it:

> The action of gender requires a performance that is *repeated*. This repetition is at once a reenactment and reexperiencing of a set of meanings already socially established; and it is the mundane and ritualized form of their legitimation. Although there are individual bodies that enact these significations by becoming stylized into gendered modes, this "action" is a public action. (…) The performance is effected with the strategic aim of maintaining gender within its binary frame – an aim that cannot be attributed to a subject, but, rather, must be understood to found and consolidate the subject. (178-9)

Such a reflection is significant for a revisitation of the human as well. Let's now go back to it, and revisit the human through the different perspectives on gender we have just presented. The human, in tune with de Beauvoir, is not an essence, but a process: one is

54 It is important to notice that Irigaray's work is rooted within psychoanalysis. To clarify her perspective, I will bring, as an example, her reading of Freud's penis-envy:

> If *she* envies it, then *he* must have it. If *she* envies what *he* has, then it must be valuable. (1985: 53)

The penis-envy, more than objectively portraying an aspect of the female psychology, reflects the need of the recognition of the value of the penis for the male psychology.

not born, but rather becomes a human through experience, socialization, reception and retention (or refusal) of human normative assets. Simultaneously, revisiting Irigaray, the human has been established through concave mirrors posed through the inhuman, the subhuman, the non human realms, in a praxis which has positively recognized the human by negatively reducing the others to what the human shall not be, as we will soon see. Finally, the performative and historical manifestation of the notion of the human can be interpreted, in accordance with Butler, as a repeated performance which establishes and consolidates the subject, that is, the human: as gender is gendering, human is humanizing. With this kind of premises, we are now ready to focus on the notion of the "anthropological machine".

10. The Anthropological Machine

The concept of the anthropological machine can be found in "The Open: Man and Animal" (2002), where philosopher Giorgio Agamben underlines how the human has been strategically produced through a separation from the animal:

> The anthropogenic (or – taking up Furio Jesi's expression – we might say anthropological) machine (…) is an optical machine constructed in a series of mirrors in which man, looking at himself, sees his own image always already deformed in the features of an ape. *Homo* is a constitutively "anthropomorphous" animal (…) who must recognize himself in a non-man in order to be human (2004: 26-7).

Agamben is engaging upon a subject of prime relevance to the posthuman, which is how the human has been historically constructed; and still, the way in which such an inquiry is enacted does not comply with a posthumanist comprehensive approach. I shall mention that Agamben is not trying to accommodate such a notion within a posthuman frame; still, since the anthropological machine has received significant attention in this field of studies, I would like to take a deeper look at it and offer a critical reflection. Specifically,

I will problematize three aspects of Agamben's proposal:

1. the animal as a binary (humanizing the animal / animalizing the human), instead of a gradient of a more complex pyramidal structure;

2. the assimilation of "man" and "human" (both linguistically as well as ontologically);

3. the risk of disembodiment in the notion of "machine".

Let's start with the first point. In the historical process of humanizing the human, the animal has been placed, more than as the antithesis of "man", as another gradient in a hierarchy which would pose a whole spectrum of human others between the animal and the human, so that women, non-whites, queers, "freaks", among others, would be placed accordingly. Agamben refers to this aspect when he states:

> [The anthropological machine] functions by excluding as not (yet) human an already human being from itself, that is, by animalizing the human, by isolating the nonhuman within the human. (37)

Soon after, he presents the Jew as "the non-human produced within the man" (37) to then refer to concentration camps as "an extreme and monstrous attempt to decide between the human and the inhuman" (22), but his critical account on the notion of "man" is far from exhaustive. For instance, throughout the text, the exclusion of women by the anthropological machine is not mentioned once; there is no reference to any feminist critique on alterity, especially considering the crucial contribution given by feminist theorists to the political and ontological reflection on the "Other", as previously pointed out. This complete lack of a feminist awareness is reflected in the uncritical use of a sexist language. Agamben does not appear informed on the problematics related to the indiscriminate use of "he" as a neutral subject, or "Man" to refer to humankind[55]; the fact

55 The English translation reflects the original text in Italian, where "Uomo" is used instead of "Essere

that the text was first published in 2002, eradicates any type of chronological justifications. Here, I wish to open a parenthesis which is particularly relevant to Agamben, as to other philosophers quoted in this dissertation. The unconditional use of the masculine form has been widely criticized by feminist linguistics since the Seventies. In 1980, Casey Miller and Kate Swift published their successful "Handbook of Nonsexist Writing"; by the Nineties, the policies of equal opportunities had internationally evolved into institutionalized attempts to create a non-discriminatory language, based on gender-neutrality, race-neutrality, ethnic-neutrality and so on, in an inclusive attempt which resonates with the posthuman effort. The use of a language which is aware of its own implications is even more crucial for philosophers. As Virginia L. Warren suggests, in her "Guidelines for Non-Sexist Use of Language" (1986)[56]:

> For several reasons we, as philosophers, should be particularly sensitive to the issue of nonsexist language (...). First, our profession has long focused on language. Accordingly, we are attuned to the emotive force of words and to the ways in which language influences thought and behavior. Second, we pride ourselves on our willingness to question assumptions. Yet the uncritical use of sexist language may blind us to our having adopted a particular value-laden perspective. Such blindness may systematically distort our theories (…). Third, as scholars and teachers we pursue truth wherever it leads: to the reform of our ordinary concepts and beliefs and, if necessary, of our everyday language. Our readers and listeners may have been receiving a message that we never intended to send. Rather than encouraging a superficial recasting of words, these guidelines are designed to foster a deeper appreciation of how easily bias slips into our thoughts and theories. (471)

Given that Agamben aims to reveal the privilege of the human, his lack of critique of the notion of "man" itself structurally weakens his attempt. Before moving forward from the

Umano", and the subject is strictly expressed in the masculine form.

56 Published by the American Philosophical Association in February 1986, this article is still referred by the APA as a suggested reading for their authors.

linguistic ground, I would like to problematize one more aspect of Agamben's reflection. His use of the term “machine” may create a dissociation between the enactment of humanizing, and the subjectivities who have had access to the defining terms of such a process, and who, historically, have been the same ones employing such an epistemological supremacy to safeguard their own privileged status. An “anthropological machine” may sound like a neutralized notion for external structures of power, a notion which has lost its human embodiment. Going back to our parallel with gender, Judith Butler, in “Undoing Gender” (2004), affirms:

> If gender is a kind of a doing, an incessant activity performed, in part, without one's knowing and without one's willing, it is not for that reason automatic or mechanical. (1)

On the contrary, the enacting of an anthropological machine may supposedly be mechanical and / or automatic: the risk of a disembodiment brought about by this notion, and the consequent loss of its biological legacies are not redeemable. For this reason, I rather use the term “humanizing”, which leaves its subjects intact, with its embedded question: “who” is humanizing “what”? Humanizing is an embodied process; moreover, the embodiment of such an act is strictly human: non-human animals or machines have had no agential access to such a redefinition, yet. Before proceeding further, I would like to make clear that, here, I am not trying to postulate a frontal antithesis between the subjects and objects of such a process, between the oppressors and the oppressed, since both pertain to the same cultural apparatus: power, as Michel Foucault pointed out in “Discipline and Punish: the Birth of the Prison” (1975), is not acquired, but is tactical and strategic[57]. Instead, I wish to mention that the notion of a “machine” itself can be

57 Foucault originally refers to the “micro-physics” of power:

> Now, the study of this micro-physics presupposes that the power exercised on the body is conceived not as a property, but as a strategy, that its effects of domination are attributed not to 'appropriation', but to dispositions, maneuvers, tactics, techniques, functionings; that one should decipher in it a network of relations, constantly in tension, in activity, rather than a privilege that one might possess; that one should take as its model a perpetual battle rather than a contract regulating a transaction or the conquest of a territory. In short this power is exercised rather than possessed; it is not the 'privilege,' acquired or preserved, of the dominant class, but the overall

misleading, on one side, by annihilating its embodied specificities; on the other, by de-humanizing the overall process by tapping into an old legacy based on the dualism human / machine, which evokes other ones, such as man / woman, white / black, Western / Eastern[58].

In summary, even though the notion of an anthropological machine may be useful to emphasize the human as a process, it intrinsically reaffirms humanistic assumptions, which destabilize the significance of the overall attempt, while, at the same time, erasing the particular embodied aspects of the process. By critically engaging in this notion, I also wished to demonstrate that the methods of a research are structural to its theoretical endeavors: although some works may be of posthuman interest, they cannot be accounted as posthumanist[59]. Posthumanism, as previously stated, is a praxis; its perspectives should be embedded in its methodologies. A posthumanist approach shall not focus its analysis merely on hegemonic traditions: such a choice would not be inclusive, but would merely activate a different light on the same spots, living the rest in the shade. For instance, in the case of the historical humanization of specific categories of humans, a posthumanist approach should add to its inquiry questions such as: how did the excluded subjectivities refer to themselves, if they were not explicitly included within the human paradigm? How did they perceive the notion of the human? Before delving into this aspect, I would like to offer a brief overview on whom I may be referring to by that generic "they", focussing on some of the categories of humans which have been repeatedly denied full recognition as human beings. Considering the vastness of the subject, it is not my intent

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effect of its strategic positions - an effect that is manifested and sometimes extended by the position of those who are dominated. (1995: 26)

58 In each of these cases, the positive connotations historically applied to the first element of the pair, which also represented the subject formulating the discourse, while the second element had been negatively recreated around the positive constitution of the first. Think, for instance, how the notion of the "Orient" has been constructed to feed Western prejudices and stereotypes. As Edward Said recalls, in his influential book "Orientalism" (1978):

> Orientalism is never far from what Denys Hay has called the idea of Europe, a collective notion identifying "us" Europeans as against all "those" non-Europeans, and indeed it can be argued that the major component in European culture is precisely what made that culture hegemonic both in and outside Europe: the idea of European identity as a superior one in comparison with all the non-European peoples and cultures. (7)

59 On the subtle difference between the terms "posthuman" and "posthumanist", see Appendix 2.1.

to present a comprehensive recollection. Therefore, I will reflect on a few specific cases, in order to make my point and will then come back to discuss the pursuit of a posthumanist approach.

11. More or Less, Human

Historically, the recognition of the human status has been regularly switched on and off. In order to clarify this point, I will present four significant trans-historical occurrences, and specifically: chattel slavery, genocides, freak shows and witch trials. For each, I will only offer one specific historical background, since all four cases have repeatedly and consistently emerged within the history of humanity. Let's start with slavery, and specifically, chattel slavery, a system where humans are reduced to property, chattels, commodities. In the American system of slavery, for instance, captives were considered property to the extent that, in some cases, owners had legal rights to kill them. In 1740 South Carolina passed the "Negro Act", which made it legal for slave owners to kill rebellious slaves[60]. As historian Mark Smith affirms:

> This 1740 'Negro Act' redefined slaves as personal chattels (they had been considered freehold property until then). (2005: 20)

In his book "How America's First Settlers Invented Chattel Slavery: Dehumanizing native Americans and Africans with Language, Laws, Guns, and Religion" (2005), David O'Rourke offers interesting insights on the ways settlers related to the natives's different cultures in the New World, through the human/less than human paradigm:

> It is common to see these cultural clashes as encounters with "the other". The

60 For instance, in the Provision V of the "Negro Act", it was stated:

> If any slave who shall be out of the house or plantation where such slave shall live, or shall be usually employed, or without some white person in company with such slave, shall refuse to submit or to undergo the examination of any white person, it shall be lawful for any such white person to pursue, apprehend, and moderately correct such slave; and if any such slave shall assault and strike such white person, such slave may be lawfully killed. (Smith 2005: 21)

> question of otherness is not simply a distinction between being human and being other. It is more complex. It begins with wondering whether these people are like us or not like us. And if they are not like us, if they are something else, or other, then what are they? Are they human – still a question whether, in some way at least, they are like us – or are they less than human? (…) in nearly all cases "not like us" meant "less than us". (15)

This fundamental division between "us" and "them", is at the base of any historical process of dehumanization. For instance, in his influential article "The Eight Stages of Genocide" (1998), Gregory Stanton has identified eight stages through which a genocide may develop. The first one, which is "classification", is precisely based on such a division:

> All cultures have categories to distinguish people into "us and them" by ethnicity, race, religion or nationality: German and Jew, Hutu and Tutsi. Bipolar societies that lack mixed categories, such as Rwanda and Burundi are the most likely to have genocide. (n. pag.)

I will continue on a reflection of the other seven stages which may lead towards a genocide, as accounted by Stanton, because they offer precious insights for our inquiry into the human. The second stage, in his view, is "symbolization"[61]; the third is "dehumanization":

> One group denies the humanity of the other group. Members of it are equated with animals, vermin, insects or diseases. Dehumanization overcomes the normal human revulsion against murder. (*Ibidem*)

After "organization", "polarization" and "preparation", we encounter the seventh stage,

61 Let my clarify this stage, which denomination can cause confusion, by employing Stanton's words:
> We give names or other symbols to the classification. (1998: n. pag)

which is “extermination”, while the eighth is “denial”. Let's focus on the seventh:

> Extermination begins, and quickly becomes the mass killing legally called “genocide”. It is “extermination” to the killers because they do not believe their victims to be fully human. (*Ibidem*)

Note how the process starts with the dualism “us/them” (stage 1), and how, through the stages 2, 3 and 5, the humanness of “them” is denied to the point that their extermination can be enacted in virtue of their not humanness (stage 7). The technics of a genocide are based upon a dehumanization of the victims. We can trace such a pattern in Nazi Germany (1933-1945), for instance. As historian Kathleen Kete has stated, in “Animals and Ideology: The Politics of Animal Protection in Europe” (2002):

> The Nazis worked within a new paradigm. Accepting the logics of modernism, they abolished the line separating human and animal and articulated a new hierarchy based on race, which placed certain species – races – of animals above “races” of humans – eagles and wolves and pigs in the new human hierarchy were placed above Poles and rats and Jews. (20)

The process of dehumanization of certain categories of humans, enacted through the dissolution of the animal/human divide (Sax 2002), among other types of ideological propaganda, was sealed in blood. The Nazis exterminated approximately six million[62] European Jews and millions of others, including: Germans with mental and physical disabilities[63], homosexuals, Roma (“Gypsies”), Poles, Jehovah’s Witnesses, and Soviet prisoners of war. More in general, it can be claimed that, both in the case of slavery as well as in the case of a genocide, some categories of humans are subjected to a symbolic

62 Although it is impossible to determine the exact number of Jewish victims, six million is the round figure accepted by most authorities.

63 For an account on how the rise of racist and eugenic ideologies developed into the “final solution”, see, among others, Friedlander 1995 – this text is particularly interesting because it describes how the so-called euthanasia of the people with disabilities provided a practical model for, and thus initiated, the Holocaust.

dehumanization through the division us/them. But in the historical process of humanizing, not every human category excluded from the hegemonic notion of the human can be accounted under this type of dualistic procedure. Leslie Fiedler, in his classic study "Freaks: Myths and Images of the Secret Self" (1978), notes how the freak has historically challenged the us/them paradigm:

> He is one of us, the human child of human parents, however altered by forces we do not quite understand into something mythic and mysterious. (24)

For instance, dwarfs "were considered beast/human hybrids" (*ibidem*: 72), and thus frequently "portrayed side by side with monkeys and dogs" (*ibidem*). Fiedler importantly underlines the symbolic significance of the "freak" in Western culture, as that human which cannot be reduced to a fixed entity, but represents the bridge, the dissolution of strict binaries:

> Only the true Freak challenges the conventional boundaries between male and female, sexed and sexless, animal and human, large and small, self and other, and consequently between reality and illusion, experience and fantasy, fact and myth. (24)

Fiedler also notes how freaks have been functional to the human definition of the "normal"[64]:

> We live at a moment when the name "Freaks" is being rejected by the kinds of physiologically deviant humans to whom it has traditionally been applied: Giants, Dwarfs, Siamese Twins, Hermaphrodites, Fat Ladies, and Living Skeletons. To them it seems a badge of shame, a reminder of their long exclusion and exploitation by other humans, who defining them thus have by the same token

64 For an extensive inquiry into the meaning of "normal" and "pathological" in medicine and biology, see Canguilhem 1943.

> defined themselves as “normal”. (13)

In “Signs of Wonder and Traces of Doubt: On Teratology and Embodied Differences” (1996a) Rosi Braidotti redefines the figure of the human “monster” as “a process without a stable object” (150), pointing out the superstitious roots of teratology, which often attributed the manifestation of these not normalized embodiments to supernatural causes, such as women's power to create – and consequently deform – life (136). As Braidotti states:

> Teratology conveys a set of surprisingly continuous discourses which organize scientifically and socially the perception of embodied differences. (…) Forms of genderization and racialization of differences play an important role in this process. (136)

The feminization of magic is one of the key elements in the European witch trials of the Late Middle Ages / Early Modern period, which ended in an estimation of sixty thousand[65] executions, a large majority of women[66]. The witch hunt proved superstition[67] as one of the hidden forces behind law making apparatuses, next to biological determinism, scientific racism and ethnocentrism, proving another discontinuity within the human frame: not only the lives of those humans considered inferior should be taken, but also the ones of those who were believed to have supernatural powers shall be sacrificed, in order to keep the human realm safe. Geo-historically situated, the human body can be perceived as a symbolic text of cognitive and social processes. The establishment of a discourse of perversion (Foucault 1976) and the consequent practices of normalization of the perverse, such as the Nazi genocide, the freak shows and the

65 This estimate is problematic. Since the murders were not systematically recorded and many of the archives which existed have been lost, the number of deaths could be much higher. Consequently, historians have not settled on a figure. For a reflection on different estimates, see, among others, Gaskill 2010: 61-77.

66 On the constitution of the specific gendered nature of witchcraft accusations and convictions, see Bailey 2002.

67 On the role of superstition in the European with trials, see specifically Chapter 4: “The Medieval Condemnation of Magic, 1000-1500” (Bailey 2007: 107-140).

witch hunt, are embedded to its genealogy, in a recurring paradigm of human abjection[68]. While the monster and the supernatural stand as social and mythical archetypes delimiting the domain of the comprehensible body, it can be argued that human identity *tout court* has formed, historically and theoretically, through the construction of the "Other": animals, automata, children, women, freaks, people of color other than white[69], queers[70] etc. marking the shifting borders of what would become "the human" through processes of performative rejections.

12. Technologies of the Self as Posthuman (Re)Sources

The posthuman perspective aims to attain a comprehensive notion of the human, but, as we have seen, not every embodied human being has been historically granted such a recognition. One necessary question which needs to be posed in order to achieve a more inclusive approach is: how have the (categories of) humans who have been repeatedly dehumanized, dealt with their humanness? How have they re-configured such a denied status? Accounting for the techniques of the self developed by the outsiders of different historical configurations of the human in order to deal with their own dehumanization, is necessary to the posthuman, which otherwise would be still entrapped in redemption practices. Let me explain this point further. Even though postulated as a radical critique, the act of revisiting hegemonic traditions to demonstrate the way the human has been performed through exclusions is necessary, but not finalizing. Actually, such an approach, on the long run, proves instrumental to the survival of those same traditions, which achieve their own redemptions through the radical critiques enacted from within: usually, by their rebel "biological" sons[71]. Limiting the analysis to the critique of hegemonic

68 On the notion of the abjection as preceding the symbolic order, see Kristeva 1980.

69 For an extensive reflection on the "racial Other", see Goldberg 1993.

70 For a critical reading of the human rooted in Queer theory, see Judith Butler's "Undoing Gender" (2004), where she sharply asks: "If I am a certain gender, will I still be regarded as part of the 'human'?" (2).

71 The critiques enacted by their "daughters", or by their "adoptive offsprings" (for instance, feminist or postcolonial theorists, who first had to assimilate Western androcentric modes of constructing knowledge, in order to deconstruct them), is not validated the same way within philosophical Western traditions; the attempts to annihilate their recognition (if any) will be much more effective. Karen J. Warren, in her "recovery project", clearly portrays the results of such an attitude in her essay "2,600

traditions is a centralized type of approach, in the sense that it has successfully recognized a specific centre of the discourse to be criticized, and so it does not fit the nomadicity and decentralization of the posthuman. The next step towards a posthumanist analysis should be extending the focus of interest to the subjectivities excluded from such a centralized perspective. Here, though, I should clarify that the point is not inclusion *per se* either. Inclusion should be viewed as a necessary strategy in order to attain a relational epistemology: accounting for a plurality of standpoints draws a multilayered picture, which reflects more faithfully the ways being manifests, as we will see in section 23.

Going back to the posthuman configuration of the human, the technologies of the self employed by the outsiders of the hegemonic human outfits, might be traceable in the ways such technologies affected their individual existences. From a methodological standpoint, though, they might be hard to access, since their own resistance / acceptance / reconfiguration of such exclusivist delimitations of the human might have left no official records behind. There are ways to deal with such a challenge in retrieving sources. The posthuman, in its attempt to recollect a comprehensive notion of the human, can rely on the pioneer work developed within the frame of the Studies of the Differences. Aware of the difficulties related to historically documenting non-hegemonic perspectives, Feminist Studies, African-American Studies and Postcolonial Studies, among others, have posed increasing interest in alternative sources, such as oral history, performative practice and folk art. As Joan Sangster affirms, in her article "Telling our Stories: Feminist Debates and the Use of Oral History" (1994):

> The feminist embrace of oral history emerged from a recognition that traditional sources have often neglected the lives of women, and that oral history offered a means of integrating women into historical scholarship, even contesting the reigning definitions of social, economic and political importance that obscured women's lives. (5)

Years of the History of Western Philosophy Without Women" (2009). See also: Tuana 1998.

If oral history has been recognized by Women Studies and African-American Studies as a valid source to retrieve information on non hegemonic standpoints, the significance of practices such as satire and parody in identity formation has been investigated within Queer Theory. In particular, the performative aspects of the masquerade[72], cross-dressing and transvestitism have been acknowledged as "subversive bodily acts" to hetero-normative scenarios, as Judith Butler puts it:

> In my view, the normative focus for gay and lesbian practice ought to be on the subversive and parodic redeployment of power rather than on the impossible fantasy of its full-scale transcendence (1999: 158).

Moreover, a posthuman approach should revisit the subversive value of social modes such as the carnivalesque (Bakhtin 1941), and the sacrilegious laughter, as employed within anarchist traditions and their "ironic praxis"[73]. Such attitudes, which can be explored both in socio-political, as well as in existential terms, can be perceived as ways to demystify hegemonic dynamics of social discourses, including normative connotations of the human. Choreutic and musical traditions should also count as alternative sources to be investigated. In the case of American slavery, for instance, slaves, in order to deal with the dehumanization they were experiencing, developed techniques of the self in modes of day-to-day resistance (Bauer / Bauer 1942); they also expressed their feelings through songs characterized by the recurring theme of a trusting faith in the life after, as attested in the specific tradition of slave spirituals[74].

Ultimately, the resisting side of spirituality, which can be silently expressed during the

72 It is important to note that psychoanalyst Joan Riviere delineated "womanliness" as a masquerade as early as 1929, in her article specifically entitled: "Womanliness as a masquerade", where she presented femininity as a mask used by women in their everyday lives to meet male expectations.

73 Patrick Gun Cuninghame (2007) thus defines the cultural and political attitude developed within the 1977 Italian anarchist movements, especially by the *Indiani Metropolitani,* whose "ironic praxis" could be exemplified in their slogan: "Una risata vi seppellirá" (translated by Cuninghame as: "A laughter will bury you all'', 153).

74 In "Veiled testimony: Negro Spirituals and the Slave Experience", John White offers a reflection on the significance of the development of Negro spirituals by slaves, as a "distinctive culture which, to a large (but indeterminate) extent protected them from the dehumanizing effects of servitude" (1983: 251).

most challenging circumstances, should not be underestimated either. A history of beliefs, visions, prayers and rituals have accompanied the historical outcomes of the most oppressed categories of human beings, and can be recollected during the most challenging times (during slavery, for instance, as well as by women during high patriarchal eras[75]). Spiritual practices can be viewed, from a posthuman perspective, as techniques which offer hybridization in contexts where essentialism has been employed to configure fixed categories and hierarchies, and may silently destabilize such a state of things through an existential attitude which moves beyond historical conventions. Here, I shall clarify that the history of spiritual practices shall not be assimilated to the history of the religions displaying them[76]. Religions are characterized by a set of principles (dogmas) which define its specificities in respect to other religions, and are empirically sustained by hierarchical structures based on acquired knowledges, which are needed in order to preserve those same teachings through historical changes. Spirituality, on the other side, refers to a human tendency to conceive existence more extensively than the ordinarily perception of individual beings. Spirituality contemplates a non-separation between the inner and the outer worlds, and may culminate in mystical experiences, which offer non-mediated perceptions of transcending. While religions, in their hierarchical outfits, do not necessarily comply with a posthuman approach, spirituality and some of the spiritual trends and practices present in different religions, do. The realm of spirituality should be eventually investigated as one of the genealogies of the posthuman. Currently, there are few texts which have been published on it[77]; I believe

75 Note, for instance, what Francesca Brezzi writes on female mysticism:

> Considerando che la mistica in certi periodi storici e culturali è stata l'unico accesso delle donne ad una "parola ascoltata", nonostante la teologia del tempo ritenesse le donne come uomini mancati, vorremmo mostrare come tale parola, esercitata in modalità molteplici (…), possa essere espressione di una relazionalità nuova tra finito e infinito. (2005: 127)
>
> ("Considering that, in certain historical and cultural eras, mysticism was the only access for women to "words which would be heard", despite the theology of the time considered women as incomplete men, we would like to show how such words, exercised in multiple ways (...), may express a new relationality between finite and infinite" – *Trans. mine*)

76 On the difference between religion and spirituality, see for instance: Zinnbauer et al. 1997.

77 One attempt to rethink Posthumanism through the Indian spiritual tradition of Tantra can be found in "Avatar Bodies: A Tantra for Posthumanism" (2004) by Ann Weinstone; while some of the essays contained in the anthology "Building Better Humans? Refocusing the Debate on Transhumanism" (2012), edited by Hava Tirosh-Samuelson and Kenneth L. Mossman, propose interesting parallels and comparisons between Transhumanism and different religious and spiritual traditions, such as: Judaism,

that a more exhaustive approach on the contribution of spiritual practices to the constitution of the post-anthropocentric, post-dualistic approach of the posthuman still needs to be undertaken.

13. When and how did humans become human?

By presenting the human as a verb, humanizing, I wished to emphasize its performative side, which may provoke different effects. On one hand, humanizing can be experienced as an act of self-identity by the subjectivities engaging in it (in other terms: "I am human, because the others are not"), and developed through the "us/them" paradigm. Such an attitude carries the related risk of developing into a fetishism of existential primacy, which may consequently justify social discrepancies sustained by historical exclusivism, as we have seen. On the other hand, the act of humanizing *per se* may work as a connector ("I am human, because I can recognize *you* as another human"). In this sense, the recognition of the alterity of the Other may bring along ethical responsibilities and deontic significations, described by the French philosopher Emmanuel Lévinas (1906-1995) as a face-to-face epiphany, which he fully elaborated in "Totality and Infinity: An Essay on Exteriority" (1961), and which can be epitomized in this sentence to be found in the essay "Diachrony and Representation" (1985):

> Responsibility for the Other – the face signifying to me 'thou shalt not kill,' and consequently also 'you are responsible for the life of this absolutely other Other'– is responsibility for the unique one" (1994: 107-8).

It has to be noticed that, to Lévinas, the face of the Other is strictly human; consequently, within the field of Animal Studies, his perspective has been criticized by Matthew Calarco[78] as "unabashedly and dogmatically anthropocentric" (2008: 55). Here, I would like to open a parenthesis and mention another type of epiphany, which could be

Sufism and Orthodox Christianity.

78 In "Zoographies: The Question of the Animal from Heidegger to Derrida" (2008), Calarco entirely dedicates Chapter 2, entitled "Facing the Other Animal: Lévinas" (55-78), to this reflection.

epitomized as the encounter of the human with the "face" of the planet. I am referring to what has been defined as the overview effect, consisting of a series of epiphanies experienced by astronauts looking at the Earth from outer space. In his book "The Overview Effect: Space Exploration and Human Evolution" (1998), Frank White relates such a shift in consciousness to that specific geographical perspective[79], stating: "Mental processes and views of life cannot be separated from physical location" (3). To White, the overview effect is so significant, that he affirms:

> It is possible to grasp the true implications of this evolutionary process only by seeing it from the viewpoint of the universe as a whole, and from that perspective, the Overview Effect may point to humankind's purpose as a species. (5)

Before proceeding further in our reflection on the possible evolutionary, as well as ethical, outcomes of space migration, we first need to proceed in our investigation on the third constituent of the "post-human", which is, the human. White brings to the table the notion of humankind as a species with a purpose, but neither the notion of the species nor the one of humankind should be taken for granted[80]. Here, I wish to focus on the path which brought humans to self-identify themselves as such. In other words: when and how did humans become "human"? As we have seen, the historical outcomes of such a notion have not been inclusive for all the beings who should count as humans, and thus I am wondering if the historical exclusivism which has characterized the humanizing process is interconnected to the linguistic, semantic and etymological mechanisms which have sustained the notion of the "human". I see this reflection as crucial to the posthuman in order to understand if its configuration as a "post" is only a strategic one, which, once reaffirmed an inclusive and non-hierarchical approach on existence of the "human",

79 White further asserts this point by emphasizing the fact that the astronauts in Earth orbits and the lunar astronauts have different types of epiphanies:

> The orbital astronaut sees the Earth as huge and himself or herself as less significant. The lunar astronaut sees the Earth as small and feels the awesome grandeur of the entire universe. (…) Both programs change the astronaut's perception of the Earth and of his or her own identity, but in quite different ways. (1998: 36)

80 I will approach the biological meaning of the species in section 19, while in section 20, I will introduce an overview on possible evolutionary developments of humankind.

could be erased again; or if such a linguistic move is necessary in order to proceed to reveal different *episteme(s)*, which could not be sustained if placed within a frame denoted and connoted by the notion of the human. The only way to achieve an answer to this question is by accessing the term archeologically. Let's start by reviewing its vocabulary definitions. For instance, the Oxford English Dictionary describes the adjective "human", as "relating to or characteristic of humankind"[81], further defining it as:

1. of or characteristic of people as opposed to God or animals or machines, especially in being susceptible to weaknesses;
2. showing the better qualities of humankind, such as kindness;
3. *Zoology* of or belonging to the genus *Homo*[82].

The first denotation poses the human through three consecutive oppositions ("I am human because I am not God / animal / machine"), and so it relies on the technique of the concave mirror, and does not answer our question. The second one defines it through moral characteristics; by choosing to affiliate it with "the better qualities" of humankind, it reflects its anthropophilic standpoint, and thus it cannot be accounted scientifically. The third one defines the human through its taxonomical classification, and it may operate as the closest apparatus of significance to our archeological goal. In order to delve into it, I will start by offering a brief overview of the etymology of "human", which also covers the etymology of its taxonomical classification as *Homo*.

14. *Humanitas*

The word "human" is derived from Latin *humanus/a/um*, an adjective cognate to *humus*[83]

81 Entry: "Human". From the *Oxford Dictionaries Online*.

82 *Ibidem*.

83 This etymology has been contested for different reasons. From a linguistic perspective, it has been noted the change of the vowel "u", which in "humus" is long (ū), while in "humanus" becomes short (ŭ) – see for instance: Romaniello 2004: 188-90. On the other, it has also been challenged for its semantics. As early as the 1st Century AC, Marcus Fabius Quintilianus (c. 35 – c. 100) stated:

> Etiamne *hominem* appellari, quia sit *humo* natus (quasi vero non omnibus animalibus eadem

meaning "earth[84], ground, soil", on notion of "earthly beings" whose symbolic realm was marked through its oppositions to the divine, the bestial and the barbarian. *Humanus* closely relates both to *homo* as to *humanitas*. In his "Letter on Humanism" (1947), Martin Heidegger stated:

> *Humanitas*, explicitly so called, was first considered and striven for in the age of the Roman Republic. *Homo humanus* was opposed to *homo barbarus*. *Homo humanu*s here means the Romans, who exalted and honored Roman *virtu*s through the "embodiment" of the *paideia* [education] taken over from the Greeks. (2001: 242)

So far, we have successfully identified one of the possible starting points of our inquiry: humans began to refer to themselves as *homo humanus* in Ancient Rome. The next question I would like to address is: how and when Romans started to employ this notion? The term can already be found in early Latin comedy, by playwrights such as Titus Maccius Plautus (c. 250 BC - 184 BC), Statius Caecilius (c. 230 BC - c. 168 BC), and Publius Terentius Afer (c. 185 BC - 159 BC). For instance, in the play "Asinaria" (c. 211 BC), Plautus famously wrote: "Lupus est homo homini, non homo, quom qualis sit non novit" (a. II, sc. IV, v. 495)[85]; while Caecilius, probably in direct response, stated: "Homo homini deus est si suum officium sciat" (Fragment VI)[86]. In his comedies, Terentius relocated the notion of the human from the abstract modes of the intellectual debate to the practical domain of everyday's life. He emphasized the human realm as self-defining itself, in a comprehensive approach which did not need the mechanisms of exclusion in

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origo, aut illi primi mortales ante nomen imposuerint terrae quam sibi)? (Institutio Oratoria I, 6, 34).

Translation by H. E. Butler:

Are we to assent to the view that *homo* is derived from *humus*, because man sprang from the earth, as though all other living things had not the same origin (...)? (Quintilian / Butler 1920, 127).

84 Not to be confused with *Terra*, the Latin translation for the Earth – which at the time was not conceived as a planet yet.

85 BTL 2009: n. pag. Translation by John R. Stone:

Man is a wolf to man, not a man, when he has not yet found out what he is like. (2005: 273)

86 BTL 2009: n. pag. Translation by J.R. Stone:

Man is to man a God when he recognizes his duty. (39)

order to function. His take could be summarized in the famous phrase to be found in his play "Heauton Timorumenos" (163 B.C.): "Homo sum: humani nihil a me alienum puto" (v.77)[87]. It is interesting to note that Terentius, born in Carthage (North Africa), was brought to Rome as a slave by Terentius Lucanus, who later educated and freed by him. His life experience might have had a direct influence on his comprehensive take on *humanitas*, as Richard Bauman pointed out: Terentius "was well placed to preach the message of universalism, of the essential unity of the human race" (2000: 1).

If Terentius was one of the first authors to introduce the term, Marcus Tullius Cicero (106 BC - 43 BC) was the intellectual who engaged in developing it more than anyone else[88], and whose legacy has been most influential. It is not my goal to offer an exhaustive overview on his reflection[89], but I would like to note that, on one side, Cicero's *humanitas* emphasized the interrelation between being moral, educated and actively involved in public life, in a Latin revisitation of the Greek notion of *paideia*; his articulation of the concept will be crucial in the development of Renaissance Humanism (Nybakken 1939; Davies 1997: 15-20). On the other, Cicero, in conformity with the views of his time, never challenged the institution of slavery, for instance, nor the subordinate condition of Roman women (Fraschetti 1999; Bauman 2000). Our goal was to spot and contextualize the birth of the term "human". Before proceeding with our inquiry, we should acknowledge that the Latin notion of *humanitas* was delimited not only through its explicit borders (the divine, the beasts and the *homo barbarus*), but also through its implicit ones, that is: the categories of humans who did not belong to the discussion (for instance: women, children and slaves). The roots of the word "humanity" have been traced by free adult male intellectuals implicitly referring to other free adult male intellectuals; the shift introduced by such a notion, if compared to the *mos maiorum* (that is, the traditional Roman values), should not be underestimated, but the limits posed by

87 BTL 2009: n. pag. Translation by J.R. Stone:
I am a man; nothing that relates to man do I consider foreign to me. (40)

88 Note that, of the 463 times that the term *humanitas* is found in the entire corpus of Classic Latin authors, 229 are detected in Cicero's writings (BTL 2009: n. pag.).

89 There is a large range of references which could be listed for this purpose, among others: Rieks 1967; Schadewaldt 1973; Giustiniani 1985.

its explicit elitism, and its implicit sexism and classism, among other -isms, should be equally accounted. From a posthuman perspective, exclusion may be perceived as a defining technique, which is traceable in the ways the notion of the human has been delineated and performed since the very origins of the coining of the term itself.

15. *Homo sapiens*

Let's now go back to the third definition of the "human" by the dictionary, and delve into its scientific classification. The current biological understanding of the term refers to the *Homo* genus, which includes not only modern humans (*Homo sapiens*), but other species closely related and now extinct[90]. It is important to notice that such a classification has considerably changed over time, and its exact makeup is constantly under debate. First, I would like to answer the question: when and how were humans first classified as *Homo sapiens*? Once this point is filled, I will engage in a critical reflection on the constitution of such a definition, to see if the exclusivist techniques which characterized the linguistic birth of the human, can also be traced in its scientific outfit. Let's start by pointing out a notable date in this genealogy, which is 1758[91], when Swedish botanist Carl Linnaeus (1707-1778) coined the binomial name *Homo sapiens* (Latin for "Knowing Man"), referring to the only living species in the *Homo* genus. In order to properly understand such an event, it is important to take a step back and reflect on the religious and ideological coordinates in which science was located at the time.

Before the development of evolutionary studies, Western biology consisted primarily of taxonomy, the discipline of classifying and naming organisms, which, considered to be creations of God, were thought to have remained unchanged since their genesis. Linnaeus also shared those beliefs. A deeply religious man and the son of a Lutheran pastor, he thought of himself as a second Adam. God charged Adam with the task of naming all

90 For example, *Homo neanderthalensis,* which is also considered to be one of the last species to die out (on the possible causes of their extinction, see Finlayson 2009).

91 1758 is the date of the tenth edition of *Systema Naturae* (first edition: 1735), which is considered the starting point of modern botanical and zoological taxonomy.

living beings (Genesis 2: 19-20), and so the cover of Linnaeus' *magnum opus* "Systema Naturae" (1758) featured a man in the Garden of Eden completing his predecessor's task. On the frontispiece of his book, he placed the motto: "Deus creavit, Linnaeus disposuit"[92]. In "Systema Naturae" Linnaeus outlined his system for classifying all known and yet to be discovered organisms, according to the greater or lesser extent of their similarities, in a ranked hierarchy; life, considered the superdomain, was divided in three kingdoms (plant, animal and mineral), subsequently branched into: phyla, classes, orders, families, genera (plural for "genus"), and species. His classification strictly applied a binomial nomenclature, formed by two Latin names reflecting the categories of genus and species of the organism – for instance, in *Homo sapiens*, "Homo" refers to the genus, "sapiens" to the family. By arranging organisms according to physical characteristics, Linnaeus placed humans along with monkeys and apes into the order of *Primates*. His work scandalized religious authorities: for the first time in Western history, humans were located in a system of biological classification like any other animal or plant species. Linnaeus' system indirectly posed into question the accuracy of the Great Chain of Beings (*Scala Naturae*)[93] and, although it did not imply evolutionary traits[94], it laid the groundwork for the theory of evolution as developed by Charles Darwin (1809-1882). Yet, innovative on many levels, Linnaeus' classification clearly reflected the social exclusions of his time. I will offer some insights on the racist, ethnocentric and sexist assumptions engaged upon in his work, in order to contextualize the scientific birth of the *Homo*, and so offer a comprehensive perspective on the legacies of the human.

Let's start with the racial connotations of his work. In the tenth edition of "Systema Naturae", Linnaeus established five taxa for a further classification of the *Homo sapiens*,

92 Translation by R. Dunn:
God created, Linnaeus organized. (2009: 37)

93 Rooted in Plato, Aristotle and the Old Testament, the Great Chain of Being depicted a hierarchical structure of all matter and life (even in its hypothetical forms, such as angels and demons), starting from God. This model, with contextual differences and specificities, passed on, in its Christian interpretation, through the Middle Ages, the Renaissance, until the 18th century. One classic study on this subject is: Lovejoy 1936.

94 Although his earlier belief in the fixity of the species was later abandoned, in Linnaeus' view the original species were to be found in the Garden of Eden.

based on continent, skin color and specific characteristics, plus the taxon *Homo monstrosus*, which embraced a variety of cases, such as dwarves, giants and people with congenital abnormalities[95]. His system of racial taxonomy described Europeans as white (*Europaeus albus*), Indian-Americans as red (*Americanus rubescens*), Asians as yellow[96] (*Asiaticus luridus*), Africans as black (*Africanus niger*). Characteristics were placed according to a Eurocentric perspective, so that Europeans were described, among other things, as "sanguine, brawny, gentle, and inventive"[97] (Vaughan 1982: 945); (Indian-)Americans as "choleric, obstinate, content, and free" (*ibidem*); Asians as "melancholy, rigid, haughty, and covetous" (*ibidem*)*;* Africans as "phlegmatic, crafty, indolent, and negligent" (946); African women, "without shame" (Curran 2011: 158). Furthermore, while Europeans were considered to be "governed by laws" (Fluehr-Lobban 2006: 11), Africans were "governed by caprice" (*ibidem*), Asians were "ruled by opinion" (*ibidem*), and Americans "by customs" (*ibidem*), in a hierarchy which, in tune with the ideological paradigm of the Enlightenment, emphasized reason in contrast with tradition, superstition or opinion, and so accorded the moral primacy to the government by law, characteristic of the Europeans.

Linnaeus' taxonomical classification has had an enormous impact on the construction of racial theories till today[98]. It is worth noticing that his Eurocentric standards also motivated a privilege for Latin nomenclature[99], so that, from a contemporary perspective, he has been accused of "linguistic imperialism" (Schiebinger 2004: 194-225; Cook 2010: 121-138). His racist and ethnocentric biases were combined with sexist assumptions. In

95 For a detailed account on the progression of Linnaeus' human classification through the different editions of "Systema Naturae", see the subchapter "Defining the Human" in Douthwaite 2002: 14-21.

96 Linnaeus described Asians as *Asiaticus fuscus* from the second (1740) till the tenth edition of "Systema Naturae", when he changed it with *luridus*. For a detailed account of the different uses of *fuscus* and *luridus* in his work, see Keevak 2011: 51-55.

97 This next series of quotes are direct translations from Linnaeus, reported in recent articles and texts which are of relevance to our discussion.

98 Fluehr-Lobban, for instance, see in Linnaeus' classification one of the main reasons why race is still today mostly constructed around phenotype, that is, physical characteristics (2006*:* 10).

99 For instance, Londa Schiebinger, here specifically referring to Linnaeus' botanical classification, affirms:

> He explicitly chose as the 'Fathers of Botany' in this regard the ancient Greeks and Romans, not the "Asiatics or Arabians" whose knowledge of plants even Linnaeus would have recognized as ancient and extensive but whose languages he considered "barbarous". (2004: 200)

"Systema Naturae", paralleling to *Homo Sapiens*, Linnaeus coined the term *Mammalia*[100], as one of the six classes into which he divided animals, naming this specific group after their mammary glands; but this preference does not necessarily seem to be grounded in scientific motivations. As Londa Schiebinger pointed out, in her detailed article "Taxonomy for Human Beings" (2000):

> The mammae are "functional" in only half of this group of animals (the females) and, among those, for a relatively short period of time (during lactation) or not at all. As we shall see, Linnaeus could indeed have chosen a more gender-neutral term, such as *Aurecaviga* (the hollow-eared ones) or *Pilosa* (the hairy ones). (11-2)

While the term "mammal", which is related to female biology and stresses human specificities[101], is employed by Linnaeus to place the human species into the larger natural system; the term *Homo sapiens* emphasizes the human cognitive functions within a male frame[102], and is applied to mark the distinction between humans and other primates[103], revealing the inner sexism and speciesism of both notions. Here, I would like to open a parenthesis and notice that, if taken not as an objective denotation, but as an autopoietic[104] connotation, *Homo sapiens* appears like an interesting definition of the human, which is the "wise" or "knowledgable" species, being precisely the species postulating this specific kind of knowledge: in a self-referential way, the knowledge related to *Homo sapiens* is created to be comprehended and of use to its own specimens. This interpretation is somehow in tune with Linneaus' motivations for choosing the term

100 The term *Mammalia* only appears in the tenth edition of "Systema Naturae" (1758), where it substituted the traditional term *Quadrupedia*, present since the first edition (1735). For an account on the reasons of this change, see Schiebinger (1993: 385-8),

101 Human children have the longest infancy in the animal kingdom.

102 In Latin *homo* means "man" as "person" or "human being", whereas *vir* indicates "man" as opposed to woman or child. Still, it is grammatically expressed strictly in the masculine form, exposing the sexist outline of the Latin language itself.

103 In the words of Schiebinger:

> In the same volume in which Linnaeus introduced the term *Mammalia,* he also introduced the name *Homo Sapiens.* This term, man of wisdom, was used to distinguish humans from other primates (ape, lemurs, and bats, for example). (2000: 15)

104 I will develop on this concept in section 17.

sapiens. In fact, from the first to the tenth edition of "Systema Naturae", the human is simply described with the maxim "Nosce te ipsum". On this regard, Agamben has stated:

> An analysis of the *Introitus* that opens the *Systema* leaves no doubts about the sense Linnaeus attributed to his maxim: man has no specific identity other than the *ability* to recognize himself. Yet to define the human not through any *nota characteristica*, but rather through his self-knowledge, means that *man is the animal that must recognize itself as human to be human*. (2004: 25-6)

Going back to our archeological inquiry into the human, it can be said that the taxonomical classification of *Homo sapiens*, although it interestingly defined the human through a self-recognition, kept the discriminatory connotations of its Latin etymology intact: such a self-recognition was still relying upon sexist, racist and ethnocentric schemata. In this investigation, I wished to enquire whether the notion of the human could be accounted, by itself, as a carrier for the exclusivism which historically developed through it. A recollection of its etymological as well as its taxonomical roots, revealed that the ideological constraints embedded within such a term, may partially account for its historical exclusivist legacies. This information is functional in order to reflect upon the relevance of postulating a "post" to the notion of the human. On one side, the posthuman must be aware of its genealogical relation to the human, and fully investigate what that might entail, acknowledging its own limits and inferences. On the other, the posthuman successfully manifests its critical engagement and establishes its shift and theoretical outfit through the conditions of the "post", in a more inclusive attitude which might better fit the human, in its significances and in its potentials.

16. Posthuman Life

The posthuman destabilizes the limits and symbolic borders posed by the notion of the human. Dualisms such as human/animal, human/machine and, more in general, human/non-human, are re-investigated through a perception which does not work on oppositional schemata. In the same way, the posthuman deconstructs the clear division between life and death, which, more than strict categories, are seen as intra-acting processes. Let's then focus on the notion of life, and see what an investigation from a posthuman perspective may unravel. I will divide this section in three sub-sections. In the first sub-section, I will focus on the fact that both the biological domain, as well as ancient beliefs, such as animism, do not contemplate a fixed separation between what can be considered animate and inanimate. In the second sub-section, I will focus on the Western sub-categorization of the notion of life itself, which follows the Greek separation between *bios* and *zoē*. In the third sub-section, I will present the notion of "artificial life", which, within the current scenario, is included in the comprehensive realm of the posthuman life.

a. Animate / Inanimate

In taxonomy, life is considered the highest rank comprehending all living beings; and still, as we will see, this notion is not precise nor clearly delineated. The current understanding of life is merely descriptive, not definitive. In biology, life has been traditionally attributed to organisms which present most, or all, of these seven characteristics: Organization, Homeostasis, Metabolism, Reproduction, Growth, Adaptation / Evolution, Sensitivity[105]. Yet, the border between animate/inanimate is

105 For a critical revision of these categories from the perspective of biochemical adaption (that is, how

difficult to mark and is often transgressed[106]. Viruses, for instance, exhibit some of the characteristics which are common to organic life, while they are missing others (for instance, metabolism, which is the reason why they depend on their host cell[107]); viruses are thus considered neither inanimate nor living, challenging the biological concept of life itself[108]. More in general, it can be stated that life is not a clearly defined notion. As Michel Foucault noted in "The Order of Things: An Archaeology of the Human Sciences" (1966):

> Life does not constitute an obvious threshold beyond which entirely new forms of knowledge are required. It is a category of classification, relative, like all the other categories, to the criteria one adopts. And also, like them, subject to certain imprecisions as soon as the question of deciding its frontiers arises. (…) the dividing-line between the living and the non-living is never a decisive problem. (1970: 161)

And still, even though this "dividing-line between the living and the non-living" is not decisive, when asked, most human adults living today in a glocalized[109] community, would confidently refer to a cat, for instance, as a living being; to a book, as an inanimate object. I made it a point to emphasize the specificity of the given example (characterizing

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organisms physiologically behave and evolve under different environmental conditions), see Hochachka / Somero 2002.

106 On their comprehensive book "The Tree of Knowledge: The Biological Roots of Human Understanding" (1987a), biologists Humberto Maturana and Francisco Varela stated:

> Throughout the history of biology many criteria have been proposed. They all have drawbacks. For instance, some have proposed as a criterion chemical composition, or the capacity to move, or reproduction, or even some combination of those criteria, that is, a list of properties. But how do we know when the list is complete? For instance, if we build a machine capable of reproducing itself, but it is made of iron and plastic and not of molecules, is it living? (42)

107 On the exchange between the virus and their host cells, biologist Luis P. Villarreal have argued:

> Viruses represent a major creative force in the evolution of the host, driving the host to acquire new, and accumulate ever more complex, molecular identities (2004a: 296).

Villarreal has consequently directed his reflection towards "the possible role of viruses in the evolution of complexity, including the evolution of human-specific attributes" (*ibidem*).

108 In this article "Are Viruses Alive?" (2004b), Villarreal has stated:

> Viruses today are thought of as being in a gray area between living and nonliving. (97)

109 I would rather use this geo-political characterization – instead of the ethnocentric "Westernized", or the universalistic "globalized" – in order to indulge into the survival of local specificities in different areas of planet Earth, areas which are connected through globalized policies and/or practices.

it with terms such as "adults", "today", "glocalized"), so as not to fall into a misleading generalization. For instance, animism[110], which is still practiced today, refers to the vision of an animistic nature of matter, or to the presence of a soul or spirit in every entity, including objects, tracing no separation between the alive and the non alive[111]. On the other side, the perception of human infants on what to count as animate / inanimate is significant: children often refer to objects as living entities, tendency which has thus been defined as "child animism" (Klingensmith 1953). We can state, more generally, that, on one side, the notion of "life" exceeds the notion of the "human" (humans are included in it, but do not extinguish it); on the other, the notion of the human precedes the notion of life: "life" is a human notion, created by humans for the purpose of self-locating themselves in the larger picture; it is based on human canons, and thus such a concept radically varies in different cultures and epochs.

b. Bios and Zoe

Within the Western scientific context, the discipline which is specifically devolved to the study of life is biology. The recurrence of the prefix "bio" in Western disciplines related to life, further emphasized by the development of contemporary *bio*technologies and *bio*ethics, needs a closer inspection from a posthuman perspective, since it stands on a hierarchical dualism. As Giorgio Agamben reminds us in "Homo Sacer: Soverign Power and Bare Life" (1995), *bios*, in its Greek etymology, is ontologically posed through its opposition with *zoē*:

> The Greeks had no single term to express what we mean by the word "life". They used two terms that, although traceable to a common etymological root, are

110 Sir Edward Burnett Tylor (1832-1917) provided the first comprehensive academic overview on Animism, which he considered as one of the oldest human beliefs.

111 This lack of primacy for the living marks, for Tylor, one of the most significant points of departures in the history of religions. In the Volume I of his "Primitive Culture: Researches Into the Development of Mythology, Philosophy, Religion, Language, Art and Custom" (1871), he affirmed:

> The divisions which have separated the great religions of the world into intolerant and hostile sects are for the most part superficial, in comparison with the deepest of all religious schisms, that which divides Animism with Materialism. (453)

> semantically and morphologically distinct: *zoē*, which expressed the simple fact of living common to all living beings (animals, men, or gods), and *bios*, which indicated the form or way of living proper to an individual or a group (1).

Zoē, which is common to all living beings, can be defined as "bare life"; *bios*, on the other end, is particular to the human because is also the life that gives life meaning, that recognizes humans as "human". In fact, *bios*, as Agamben notices, is related to *logos*:

> The question "In what way does the living being have language?" corresponds exactly to the question "In what way does bare life dwell in the *polis*?" The living being has *logos* by taking away and conserving its own voice in it, even as it dwells in the *polis* by letting its own bare life be excluded, as an exception, within it. Politics therefore appears as the truly fundamental structure of Western metaphysics insofar as it occupies the threshold on which the relation between the living being and the *logos* is realized. (…) The fundamental categorial pair of Western politics is not that of friend/enemy but that of bare life/political existence, *zoē/bios*, exclusion/inclusion. There is politics because man is the living being who, in language, separates and opposes himself to his own bare life and, at the same time, maintains himself in relation to the bare life in an inclusive exclusion. (8)

Rosi Braidotti underlines the political and social implications of the *zoē/bios* dualism, echoing the hierarchies enacted by other structural pairs, such as female/male, nature/culture, black/white. As she notes in "Transpositions: On Nomadic Ethics" (2006):

> Life is half-animal, nonhuman (*zoe*) and half political and discursive (*bios*). *Zoe* is the poor half of a couple that foregrounds *bios* as the intelligent half; the relationship between them constitutes one of those qualitative distinctions on which Western culture built its discursive empire. (37)

The anthropocentric choice of privileging *bios*, instead of *zoē*, is related to hierarchical assumptions which do not fit the inclusive approach of the posthuman. On a similar way, other dualisms which have been traditionally sustained through the Western nature/culture divide, such as organic/artificial, biological/machinic, physical/virtual, has been challenged by the possibilities currently opened in fields such as artificial intelligence, robotics, bioengineering, cloning, cryonics, space exploration, and virtual reality, among others, which have consistently hybridized an already confused scenario.

c. Artificial Life

The extensive redefinition of the notion of life developed within the field of Cyborg Studies is of key importance to the posthuman. As stated by Chris Hables Gray, Steven Mentor and Heidi J. Figueroa-Sarriera in "The Cyborg Handbook" (1995):

> This marks a major transition from a world where distinctions between human and tool, human and machine, living and dead, organic and inorganic, present and distant, natural and artificial seemed clear (even if they really weren't) to the present, where all of these distinctions seem plastic, if not ludicrous. (…) From artificial life programs to "living dead" cadaver-organ donors the line between the organic and the machinic is becoming very blurred, indeed. (5)

Life, within Cyborg Studies and the posthuman, includes "artificial life"[112], a notion which, in a circular way, invites for a revision of the concept of life itself, as Christopher Langton, the computer scientist who coined the term in his article "Studying Artificial

112 Note that, in the article "Open Problems in Artificial Life" (2000), Mark A. Bedau et al. extend the notion of "artificial life" to other types of life, which could include alien life and life resulted through bioengineering technologies:

> Although artificial life is fundamentally directed towards both the origins of biology and its future, the scope and complexity of its subject require interdisciplinary cooperation and collaboration. This broadly based area of study embraces the possibility of discovering lifelike behavior in unfamiliar settings and creating new and unfamiliar forms of life, and its major aim is to develop a coherent theory of life in all its manifestations, rather than an historically contingent documentation bifurcated by discipline. (363)

Life with Cellular Automata" (1986), remarked:

> Although the study of artificial life can be seen as the study of artificial systems that exhibit behaviors characteristic of natural living systems, it should not be seen solely as an attempt to simulate living systems as they occur in 'nature' as we know it. Rather, it should be seen as an attempt to '*abstract from natural living systems their logical form'*. In this sense, it should be seen as the study of not just organic life, but of life in principle. (147-8)

Following such an attempt to "abstract" a "logical form" from natural living systems, the notion of life, within virtual reality, has been gradually reduced to an information pattern disjunct from an embodiment. Sarah Kember, in her exhaustive book "Cyberfeminism and Artificial Life" (2003), reestablishes the association of life with matter, and discredits a reductionist approach of life as disembodied information:

> At the heart of Alife is the concept of life as information, and this is derived from molecular biology's notion of the genetic code, and its fetishisation of the gene as the fundamental unit of life. (…) No stuff, no matter, no fleshy bodies, no experiences associated with physicality and nothing beyond the one-dimensional functionality of information processing. (3)

Kember is right in pointing out such a "fetishisation", as she calls it. Langton's direct reference, in the creation of the notion of "artificial life" (later shortened as "alife"), was indeed biochemistry and molecular structures[113]. In tune with this type of assumptions, a

113 In Langton's words:

> Biochemistry studies the way in which life emerges from the interaction of inanimate molecules. In this paper we look into the possibility that life could emerge from the interaction of inanimate artificial molecules. Cellular automata provide us with the logical universes within which we can embed artificial molecules in the form of propagating, virtual automata. We suggest that since virtual automata have the computational capacity to fill many of the functional roles played by the primary biomolecules, there is a strong possibility that the 'molecular logic' of life can be embedded within cellular automata and that, therefore, artificial life is a distinct possibility within these highly parallel computer structures. (1986: 120)

It shall also be noted that Langton specifically reflected on DNA in the section titled "Information"

specific approach characterized by a disembodied perception of life developed within the field of Cybernetics, mainly between the Seventies and the Nineties[114]. As we have previously noted, the critique of disembodiment[115] is at the core of Hayles' influential work "How We Became Posthuman" (1999), and became one of the key points of debate in the feminist literature of the Nineties till today. Such a criticism touched upon a crucial deficiency in the development of AI and, directly or indirectly, had an impact on it: by the late Nineties, the notion of embodiment slowly regained centrality in the production of AI. As cyberneticists Kevin Warwick and Slawomir J. Nasuto state, in their article "Historical and Current Machine Intelligence" (2006):

> In the 1990s, researchers started to realize that pure, disembodied information processing is inadequate (…). The area of embodied cognition has been born from a realization that a satisfactory theory of intelligence must entail a physically embodied agent, interacting in real time with its environment via sensory motor contingencies. An equally important property, however, is autonomy. For an agent to be able to understand its actions it is necessary that it should be autonomous and hence should arrive at an intelligent behavior via its own interaction with the environment rather than having this feature built in a priory by the external designer. (24)

Within this renewed interest for embodiment, the current development of biological AI – that is, artificial intelligence constituted by a machinic body containing biological neurons (Warwick 2012) – further problematizes the notion of life. From a Western standpoint, the ontological impact of biological AI is fundamentally disruptive. Let me explain this point further. David Channell, in "The Vital Machine" (1991) articulates the distinction between organic life and machines through the dualistic world-view which has defined Western civilization, and which has developed in two specific attitudes: the

(121-2).

114 The two main theoretic references of such a tendency can be found in Marvin Minsky's "The Society of Mind" (1985) and Hans Moravec's "Mind Children" (1988).

115 For a philosophical perspective on this notion, see Bray / Colebrook 1998.

mechanical and the organic. While the mechanical view sees the universe itself as a machine, and so attempts to access it through a reductionist approach, the organic view is sustained through a vitalist approach, and claims that the sum cannot be reduced to its smallest components: in this sense, machines should be considered organisms as well. Both the reductionist and the vitalist approach are problematic: as we will see, the field of Quantum Physics has demonstrated the non-reducibility of matter, while a vital approach is based on the assumption of a vital principle which, sustained by the notion of life (*vita* in Latin) is hardly definable[116]. The creation of an artificial organism based on both biological as well as machinic components, such as biological AI, undermines the Western dualistic mechanical / organic world-view. Due to the cultural limitations of the Western notion of life, which do not necessarily allow for a comprehension of the set of epistemological as well as ontological possibilities opened by the current developments in the fields of AI and Alife, some scientists have felt compelled to employ alternative concepts to the one of "life". A notion which has received considerable attention, in this regard, is autopoiesis[117], on which I will now reflect more fully, since it bears special relevance to the posthuman approach for different reasons.

17. Autopoiesis

Autopoiesis, a notion developed in the Seventies by biologists Humberto Maturana and Francisco Varela (1946-2001), can be more generally seen as a theory of how an organism maintains itself as a process, and it can be interpreted both from a biological and from a cognitive standpoint. As Francisco Varela pointed out:

> Humberto Maturana and I invented the idea of autopoiesis in 1970. (...) The idea was the result of suspecting that biological cognition in general was not to be

116 I will come back to vitalism in section 20.

117 The "MIT Encyclopedia of Cognitive Science", under the entry "artificial life" (Wilson / Keil 1999), thus explains:

> Whether life does require material embodiment, and whether it is a matter of degree, are philosophically controversial questions. Proponents of autopoiesis (the continual self-production of an autonomous entity) for example, answer "Yes" to the first and "No" to the second (Maturana and Varela 1980). (37)

> understood as a representation of the world out there but rather as an ongoing bringing-forth of a world, through the very process of living itself. (1995: 211)

Autopoiesis not only offers a different light on the notion of life, but it proves crucial to the formulation of a posthuman epistemological approach. Let me underline Varela's words: "biological cognition" "was not to be understood as a representation of the world out there but rather as an ongoing bringing-forth of a world, through the very process of living itself". Biology, in this sense, becomes a technology of revealing. Let's take a step back. The concept of "autopoietic machines" first appeared in Maturana and Varela's influential article "Autopoiesis and Cognition: The Realization of the Living" (1972), where an autopoietic machine[118] is described as:

> A machine organized (defined as a unity) as a network of processes of production, transformation and destruction of components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in space in which they (the components) exist by specifying the topological domain of its realization as such a network. (1980: 135)

By the time they developed their work "The Tree of Knowledge: The Biological Roots of Human Understanding" (1987a), their take on the notion of autopoiesis had become more explicitly cognitive[119]. Here, they interrogated the notion of life by demonstrating how life self-produces itself both on a cognitive as well as on a biological level:

> When we speak of living beings, we presuppose something in common between them; otherwise, we wouldn't put them in the same class we designate with the name "living". What has not been said, however, is: what is that proposition that

118 Note that the use of the notion of machine, here, is intended to overlook the biocentric assumption for which life has to be organic.

119 In their words:

> We will propose a way of seeing cognition not as a representation of the world 'out there', but rather as an ongoing bringing forth of a world through the process of the living itself. (1987a: 11)

> defines them as a class? Our proposition is that living beings are characterized in that, literally, they are continually self-producing[120]. We indicate this process when we call the organization that defines them as *autopoietic organization.* Basically, this organization comes from certain relations that we shall outline and view more easily on the cellular level. (1987a: 43)

I will not rely on autopoiesis as the ultimate way to define life, since its emphasis on the autonomy of the organism does not seem to take enough into account all the necessary relations and exchanges that occur between the organism and the environment[121], for instance, in the processes of self-maintenance, such as food providing[122] and waste releasing. I will focus, though, on its cognitive value. In order to do this, I have to take a further step back and refer to the origins of Maturana and Varela's reflection, which shall be found in physiology, and specifically, in the experiment described in the article "What the Frog's Eye Tells the Frog's Brain" (Lettvin et al. 1959). The experiment was set to observe how the frog's eye communicates information to the frog's brain. Maturana was one of the contributors, along with other scientists connected to the Macy Conferences[123]

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120 Note that, in another article, Maturana wrote:

> I do not think I should ever use the notion of self-organization, because that cannot be the case. Operationally it is impossible. (1987b: 71) – *Note Ours*.

121 George Canguilhem (1904-1995) offered a philosophical reflection on the biological significance of the environment, developed through the French notion of *milieu*, in his work "Knowledge of Life" (1952), specifically in Part Three, Section Five "The Living and Its Milieu" (2008: 98-120), which starts with this statement:

> The notion of milieu is becoming a universal and obligatory mode of apprehending the experience and existence of living beings; one could almost say it is now being constituted as a category of contemporary thought. (98)

It is interesting to notice that, throughout the text, the milieu itself assumes a cognitive outfit which can be regarded as autopoietic:

> Despite finding his ordinary perceptual experience contradicted and corrected by scientific research, living man [*l'homme vivant*] draws from his relation to the scientist [*l'homme savant*] a sort of unconscious self-conceit, which makes him prefer his own milieu over the milieus of other living beings, as having more reality and not just a different value. In fact, as a proper milieu for comportment and life, the milieu of man's sensory and technical values does not in itself have more reality than the milieus proper to the woodlouse or the gray mouse. (119)

122 As cognitive scientist Marvin Minsky recalls in "The Society of Mind" (1985):

> Each of the cells of which we're made, including those inside the brain, requires some chemical energy in the form of food or oxygen. (283)

123 The Macy Conferences were a set of interdisciplinary meetings held between 1946 and 1953, which led to the emergence of the field of cognitive science.

[124], such as Warren McCulloch (1898-1969) and Walter Pitts (1923-1969). Their findings were astounding:

> The frog does not seem to see or, at any rate, is not concerned with the detail of stationary parts of the world around him. He will starve to death surrounded by food if it is not moving. His choice of food is determined only by size and movement. He will leap to capture any object the size of an insect or worm, providing it moves like one. (1968: 234)

In other words: the frog perceives "food" as something which is moving. If, close to the frog, there is suitable food which is not moving, the frog will not recognize it as such, not even at the stake of its own survival, and will starve to death. Such results carried significant cognitive as well as epistemological consequences, pointing out the species-specific language through which one species (in particular: frogs) processes information. In the voice of the authors:

> Fundamentally, it shows that the eye speaks to the brain in a language already highly organized and interpreted, instead of transmitting some more or less accurate copy of the distribution of light on the receptors. (254-5)

Extending the significance of these results, life itself can be viewed as a self-produced notion, related to the ways humans physiologically perceive existence[125]. I will come back to this point. First, though, I would like to open a parenthesis about the frog experiment itself, since its results are often quoted within posthuman literature[126] in order to address a posthuman epistemological scenario. Specifically, I wish to focus on its methodology, due to the fact that, as we have noted previously, posthumanism, as a post-

124 I wish to note, here, that Jerome Lettvin (1920-2011), co-author of the article, was not involved with the Macy Conferences.

125 Here, I prefer to use this notion instead of "reality", to avoid questions such as: what is real? What is subjective?

126 For instance, in "How We Became Posthuman", Katherine Hayles dedicated long sections of Chapter six (1999: 131-59) to this subject, contributing to a renewed attention on Maturana and Varela's work by the academic community.

dualism, is a praxis: its methodology needs to be in tune with its onto-epistemological endeavors. In this respect, it is significant to note that, although the frog experiment carried valuable information on cognition, its premises were still based on a fundamental speciest assumption, which inherently justified the use of animals in labs. Rather than objecting on the specific practices employed in the frog's experiment by the researches, who were actually careful in trying not to be invasive to the frog body[127], the foundational ethical issue I wish to comment on exceeds the one of the animal's pain, and refers directly to the use of animals in labs. As philosopher Raymond G. Frey (1941-2012) remarked:

> What may we do to animals in the course of scientific inquiry, whether the primary aim of that enquiry is for our own or their benefit? All too often this question is taken to be about the infliction of pain and suffering upon animals in the course of using them in research. In fact, it raises a deeper issue, not about what justifies the painful use of animals in science, whether for our own or for their benefit, but about what justifies their use at all, painful or otherwise. This issue is a deep one, well beyond any simple concern about pain and suffering, however important these may be, and moves us toward undertaking to justify using animals as means to the ends of scientific inquiry (and so, advancement). The question of using animals as means to the end of scientific inquiry applies to both applied and pure research, to both invasive and noninvasive techniques, and to both painful and painless uses of animals. What needs to be justified is using animals at all. (2002: 13-4)

127 The authors explicitly stated:

> We used *Rana pipiens* in these experiments. We opened a small flap of bone either just behind the eye to expose the optic nerve, or over the brain to expose the superior colliculus. No further surgery was done except to open the membranes or connective tissue overlying the nervous structure. The frog was held in extension to a cork platform and covered with moist cloth. An animal in such a position, having most of his body surface in physical contact with something, goes into a still reaction, i.e., he will not even attempt to move save to react to pain, and except for the quick small incision of the skin at the start of the operation, our procedure seems to be painless to him. (1968: 240)

By pointing out this rather obvious problem in the field of applied ethics in animal research, I am trying to offer an inclusive reflection on Lettvin's experiment, displaying not only its explicit, but also its implicit legacies, in tune with a posthuman methodology which does not take any assumptions for granted. This type of reflection is not based on ahistorical presumptions. The contrast between the view of science as a self-affirming context which elicits the use of animals under the purpose of scientific advancement, had long been under scrutiny before Lettvin's experiment. For instance, the Brown Dog Affair – a political controversy over vivisection in England (1903-1910) – was based on the publishing of the book "The Shambles of Science: Extracts from the Diary of Two Students of Physiology" (1903), where animal rights advocates Lizzy Lind af Hageby (1878-1963) and Leisa Katherina Schartau (1876-1962) recalled the animal experiments they had witnessed at the medical lectures held at the University of London. Their motivations were not only ethical, but epistemological. In Lind af Hageby and Schartau's perspective, methodology could not be separated from the knowledge it produced, as they phrased it:

> Our object in taking up the study of physiology has been twofold: first, to investigate the *modus operandi* of experiments on animals, and then to study deeply the principle and theories which underlie modern physiology. / The two are closely related, for the rapid strides on the way of progress, which physiology claims to have made within the last fifty years, have passed over the bodies of uncountable long-suffering animals. (1903: vii-iii)

The operational modes of the scientific enquiry are not considered separately from the significance of their results, in tune with the notion of a posthuman praxis[128]. Going back to the frog experiment, its speciesist assumptions became obvious in the language utilized in the article. As Katherine Hayles has subtly noticed:

> The frog's brain became part of a cybernetic circuit, a bioapparatus reconfigured

128 For a specific reflection on this notion, see Appendix 2.

> to produce scientific knowledge. Strictly speaking, the frog's brain had ceased to belong to the frog alone. I will therefore drop the possessive and follow the authors by referring to the frog's brain simply as "the brain". (1999: 134)

Speciesism was paired with sexist and human-centric assumptions as well. Sexism, for instance, could be spotted in the grammar used throughout their article, where the frog is strictly referred to in the male gender. Nowhere is it specified that the frogs experimented upon were specifically males; thus, we might imply that the universalized male form was a result of an uncritical use of sexist language, a linguistic habit which was common at the time. Again, my linguistic reflection is not intended as a direct criticism towards Lettvin et al., but as a posthuman invitation towards a comprehensive perception of the article, in all of its significations, both written and implied. The fact that a use of sexist language was generalized at the time it was published, does not mean we should simply ignore it. Already hierarchical, sexist language can be an easy carrier for other types of biases. In "What the Frog's Eye Tells the Frog's Brain", for instance, the description of a frog is established in the very first paragraph of the article, through a sexist and anthropocentric standpoint:

> A frog hunts on land by vision. He escapes enemies mainly by seeing them. His eyes do not move, as do ours. (1968: 233)

The frog, which is referred to grammatically as a "he", is epistemologically presented through an anthropocentric dualism: "ours" refers to the human eyes, while the frog's implicitly becomes the eye of the "other". Such premises are followed by humanistic assumptions throughout the text, in which some ways to perceive "reality" are portrayed as more objective than others[129]. Maturana later realized the conflicting framework of his

129 For instance, in a passage previously quoted, we can read:

> The eye speaks to the brain in a language already highly organized (...), instead of transmitting some more or less accurate copy of the distribution of light. (1968: 255)

The fact that the frog elaborates reality differently from the human, does not necessarily mean that one is closer than the other to the "real" perception of an "objective" reality; but so it appears in the article, where a "more accurate" copy, for instance, would apply to the human representation.

previous work, stating on the frog experiment:

> The epistemology that guided our thinking and writing was that of an objective reality independent of the observer. (1980: xiv)

By then, Maturana and Varela were directly addressing the question: how is knowledge constructed? They concluded, on an epistemological ground:

> No description of an absolute reality is possible. Such a description would require an interaction with the absolute to be described, but the representation which would arise from such an interaction would necessarily be determined by the autopoietic organization of the observer, not by the deforming agent; hence, the cognitive reality that it would generate would unavoidably be relative to the knower. (1980: 121)

Maturana and Varela's theories have been regarded as relativist[130] and radical constructivist[131], which is a possible way to investigate them. Here, though, I would rather develop the notion of autopoiesis within the frame of perspectivism, which better emphasizes the significance of the embodiment. In so doing, I will bring the notion of autopoiesis to the posthuman arena and, through it, present Posthumanism as a perspectivism, instead of a relativism.

18. Posthumanism is a Perspectivism

The Oxford English Dictionary defines “relative” as “considered in relation or in proportion to something else”; the second definition is: “existing or possessing a

130 As Hayles recalls:

> Although the observer's perceptions construct reality rather than passively perceive it, for Maturana this construction depends on *positionality* rather than *personality*. In autopoietic theory, the opposite of objectivism is not subjectivism but relativism. (1999: 143)

131 For instance, in his genealogical effort to trace the sources of radical constructivism, Ernst von Glasersfeld (1995) places Maturana close to Giambattista Vico (1668-1744) and Immanuel Kant (1724-1804), amongst others.

specified characteristic only in comparison to something else; not absolute"[132]. But what is that "something else" which is presupposed by the notion of "relative"? Semantically, "relative" presupposes another term of comparison; its counterpart is the notion of "absolute"[133]. "Relative", in other words, is part of a dualism, so that a Western paradigmatic shift towards relativism, structurally, can be seen as the reverse side of the coin of what is trying to relativize: the dichotomy absolute/relative can be successfully switched through its oppositional poles, but one pole cannot be accounted without the other, since they sustain one another. Furthermore, the classic criticism that the statement that there is no absolute truth, is an absolute truth *per se*, can be emphasized in the inextricable coexistence of the dichotomy absolute/relative. Instead of partaking for one side or the other, I would rather dismiss such a dualism itself, and consider perspectivism as a more suited notion to depict what is at stake in Maturana and Varela's work, not to mention Posthumanism itself. The roots of Perspectivism shall be found in the thought of Friedrich Nietzsche. As we can read in the "On the Genealogy of Morals" (1887), Third Essay, section 12:

> Let us be on guard against the dangerous old conceptual fiction that posited a "pure, will-less, painless, timeless knowing subject"; let us guard against the snares of such contradictory concepts as "pure reason", "absolute spirituality", "knowledge in itself": these always demand that we should think of an eye that is completely unthinkable, an eye turned in no particular direction, in which the active and interpreting forces, through which alone seeing becomes seeing *something*, are supposed to be lacking; these always demand of the eye an absurdity and a nonsense. There is *only* a perspective seeing, *only* a perspective "knowing"; and the *more* affects we allow to speak about one thing, the *more* eyes, different eyes, we can use to observe one thing, the more complete will our "concept" of this thing, our "objectivity", be. (2000: 555)

132 Entry "relative". Entry: "Human". From the *Oxford Dictionaries Online*.

133 For an historical account on the relativist/absolutist dichotomized positions, see Gairdner 2008. For the differences between absolute relativism and cultural relativism, see Latour 1993: 103-14, among others.

In this passage, Nietzsche on one side, stressed the importance of situating the act of knowing in a specific perspective[134]; on the other, he valued the plurality of gazes, as offering a more complete picture. Nietzsche's perspectivism, and his whole philosophy, is corporeal[135]; the gaze which allows for an act of knowing is not a disembodied one. It is important to note that the term "perspectivism" etymologically bears a phenomenological, embodied legacy, coming from Latin, in the formula: *per* (prefix meaning "through") plus the verb *specere* ("look at")[136]; and still, the gaze should not be reduced to the physical sight. In "Metaphysics without Truths" (2007), Stefan Lorenz Sorgner states:

> Whenever he talks about "eyes" Nietzsche is referring to individual perspectives - either of a power-quantum or of a power-constellation[137]. Each of these perspectives represents an interpretation of the world. (89)

I will come back to this point. First, though, I would like to stress that Nietzsche does not consider perspectivism as a theory of knowledge, rather, as Sorgner points out, as "a theory which describes how everyone achieves their own apparent truths" (*ibidem*: 83); for Nietzsche, there are no absolute truths which can be attained, but only situated perspectives. For these reasons, I consider it a more suited theoretical reference to Maturana and Varela's theories, than relativism. Maturana and Varela's emphasis on phenomenology and immanence characterizes their entire theoretical and scientific production. As Maturana recalls in the article "Autopoiesis, Structural Coupling and

134 In this sense, perspectivism is an important antecedent for Feminist Epistemology, which will be presented in Part 2, section 7.

135 Nietzsche's view on the body can be found, for instance, in "Thus Spoke Zarathustra", Part 1, chapter "On the Despisers of the Body", where he stated:

> But the awakened and knowing say: body am I entirely, and nothing else; and soul is only a word for something about the body. / The body is a great reason, a plurality with one sense, a war and a peace, a herd and a shepherd. An instrument of your body is also your little reason, my brother, which you call "spirit" - a little instrument and toy of your great reason. (...) Behind your thoughts and feelings, my brother, there stands a mighty ruler, an unknown sage - whose name is self. In your body he dwells; he is your body. / There is more reason in your body than in your best wisdom. (...) O despisers of the body! You are no bridge to the overman! (1976: 146-7)

136 It is interesting to note that the Latin words *species* and *speculum* (mirror) also derive from *specere*.

137 For a specific reflection on perspectivism and the quantum of power, see Sorgner 2007 (47-52; 79) – *Note Mine*.

Cognition: A history of These and Other Notions in the Biology of Cognition" (2002):

> I wish to insist in that the epistemological shift that I have made with the notion of autopoiesis and the biology of cognition that I have developed together with it, lies in abandoning the question of reality for the question of cognition while turning to explain the experience of the observer with the experience of the observer. This is a fundamental move away from a domain of transcendental ontologies to a domain of constitutive ontologies. (34)

In Maturana's constitutive ontology, the species-specific autopoietic perception defines what is experienced by the observer: an ontology based on the cognitive perspective which is enquiring. In this sense, I have to add that Nietzsche's perspectivism does not have to be human; let me explain this point further. Nietzsche is aware of the fact that his own investigation stands on specific human standpoints, is communicated in human terms, and it may better fit the gaze of future humans, more than his contemporaries, as affirmed in his work posthumously published as "The Will to Power" (1906[138])[139]. In this crucial text, Nietzsche also develops the hermeneutical significance of his perspectivism; in Book Three, section 481 (1883-1888), he states:

> Against positivism, which halts at phenomena – "There are only facts" – I would say: No, facts is precisely what there is not, only interpretations. We cannot establish any fact "in itself": perhaps it is folly to want to do such a thing. / "Everything is subjective", you say; but even this is interpretation. The "subject" is not something given, it is something added and invented and projected behind what there is. – Finally, is it necessary to posit an interpreter behind the interpretation? Even this is invention, hypothesis. / In so far as the word "knowledge" has any meaning, the world is knowable; but it is *interpretable*

138 The first German edition was published in 1901 and contained 483 sections; in 1906 an expanded second edition was published, containing 1067 sections.

139 In Book Four, section 958 (1884), for instance, it is written:

> I write for a species of man that does not yet exist: for the "masters of the earth. (1967: 503)

> otherwise, it has no meaning behind it, but countless meanings – "Perspectivism". / It is our needs that interpret the world; our drives and their For and Against. Every drive is a kind of lust to rule; each one has its perspective that it would like to compel all other drives to accept as a norm. (1967: 267)

In using the first-person plural pronoun ("it is *our* needs that interpret the world"), and in comparing his proposal to two specific philosophical approaches, positivism and subjectivism, Nietzsche is implying that the eyes behind his own approach are human. But this is not always the case, as he states in section 540 (1885):

> There are many kinds of eye. Even the sphinx has eyes – and consequently there are many kinds of "truths", and consequently there is no truth. (291)

Here, I would like to note that, although his perspectivism is necessarily embodied[140], such embodiments do not have to be strictly physical, as Sorgner puts it:

> Nietzsche later in his work did reject the thesis that the body was physical, because then he held that everything is the will to power. (2007: 34)

Before going back to the perspectivist character of the posthuman approach, I would like to stress the non-reducibility of the will to power, emphasized in Book Three, sections 553-569 (1967: 300-7), as well as in other sections, such as 715 (November 1887-March 1888), where it is stated:

> There is no will: there are treaty drafts of will (1) that are constantly increasing or losing their power.

140 As stated by Nietzsche in section 636 (March-June 1888):

> Perspectivism is only a complex form of specificity. My idea is that every specific body strives to become master over all space and to extend its force (its will to power) and to thrust back all that resists its extension. But it continually encounters similar efforts on the part of other bodies and ends by coming to an arrangement ("union") with those of them that are sufficiently related to it: thus they can even conspire together for power. And the process goes on. (*Ibidem:* 340)

(1) *Willens-Punktationen*: meaning unclear; perhaps the point is that the will is not a single entity but more like a constantly shifting federation or alliance of drives – *Translator's Note* (1967: 381)

This non-reducibility of the will to power – which was influenced by Nietzsche's reading of Ruđer Josip Bošković (1711-1787) and his theory of forces[141] – resonates with the posthuman relational ontology proposed by Karen Barad (2007), for which there are not fixed and established points of departure: relata do not precede relations; the subject and the object are interchangeable cognitive positions reciprocally constituting one another[142]. The embodied specificity of perspectivism allows for an agential turn, while alliances of gazes may be constitutive for specific assets of existence. On one side, such embodiments should not be confined to biological autopoietic organisms, but shall be extended to the inorganic[143] realm, as well as to social bodies and systems (Luhmann 2002[144]); on the other, these embodiments cannot be considered independently from their environments, which are crucial to the developed perspectives. Going back to our initial point, it can be stated that a posthuman perspectivism, situated in an embodied multiplicity of possible perspectives, does not fall into the dualistic relative/absolute paradigm, and sets the conditions for a development of Posthumanism as a process ontology. Before delving into this aspect, we first need to go back to our archeological inquiry on life.

19. Evolving Species

After acknowledging both the living as a notion which fits specific human canons, and the human as an autopoietic cognitive organization, let's now offer an overview of life[145]

141 For a further reflection on Bošković's influence on Nietzsche, see Whitlock 1999; Pearson 2000.

142 I will fully present such an approach in section 21.

143 In "The Will to Power", section 637 (1885), Nietzsche stated:

> Even in the domain of the inorganic an atom of force is concerned only with its neighborhood: distant forces balance one another. Here is the kernel of the perspective view and why a living creature is "egoistic" through and through. (1967: 340)

144 Sociologist Niklas Luhmann (1927-1998) developed his systems theory from Maturana and Varela's notion of autopoiesis.

145 By re-entering our inquiry, we shall notice that the scientific theories debating the origins of life are not immune from the slippery discussion over the dividing line between animate and inanimate, as seen in

and of species from an evolutionary point of view. To date, evidence suggests that life on planet Earth has existed for about 3.7 billion years[146]. There is no scientific consensus on how it originated, but the most credited hypothesis refers to this process as an abiogenesis, that is: biological life would have arisen from inorganic matter through natural processes[147]. Other hypotheses, such as exogenesis and panspermia[148], claim that life did not originate on Earth, but somewhere else in space, and so they do not directly address the inquiry into the origins of life: the question of where life began does not answer the question of how it originated[149]. From a biological standpoint, all known life forms share fundamental molecular mechanisms, supporting the hypothesis of the last universal ancestor (LUA), a primordial single cell organism from which all life forms would have descended. Even though the hypothesis of one progenitor holds an older pedigree[150], the first to formulate it within a satisfactory theory of evolution was Charles Darwin (1809-1882). In "On the Origin of Species by Means of Natural Selection" (1859), he stated:

> Therefore I should infer from analogy that probably all the organic beings which have ever lived on this earth have descended from some one primordial form, into which life was first breathed. (484)

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section 16a. For instance, biochemist Alexander Oparin, in his influential work "The Origin of Life" (1924), noted:

> However, this need not lead us to the conclusion that there is an absolute and fundamental difference between a living organism and lifeless matter. Everyday experience enables us to differentiate living things from their non-living environment. But the numerous attempts to discover some specific "vital energies" resident only in organisms invariably ended in total failure, as the history of biology in the nineteenth and twentieth centuries teaches us. (1953: 246)

146 Approximately, this is the commonly accepted estimate. For a paleontological access to specific fossil data, see among others: Milsom / Rigby 2010.

147 Alexander Oparin, for instance, famously developed the hypothesis of the "primordial soup" (1924).

148 Such a gender-unneutral nomenclature is first to be found in the writings of Anaxagoras (c. 510 – 428 BC). Its Greek etymology of *pan* ("all") and *sperma*, which in ancient Greek referred to both "origin, source" and to "(human) seed" (translation by Slater 1969: n. pag.), reflects the sexist, and scientifically false, vision which identified the active principle of life in the male reproductive fluid, while the female was considered to contribute passive matter. This view influenced the ways model of conceptions were described in standard Western science, until as late as the 1980s (Cordrick Haely 2008, 69-70).

149 For further investigation on the origins of life, see among others: Hazen 2005; Seckbach: 2012.

150 This idea had already been suggested by scientists such as: Pierre-Louis Moreau de Maupertuis (1698-1759), Erasmus Darwin (1731-1802), and Jean-Baptiste Lamarck (1744 – 1829). For an history on the idea of evolution, see for instance: Bowler 2003; Larson 2004.

The idea that all the living and extinct forms of life on Earth share the same point of departure is a key point from a posthuman perspective, because it poses a biological inextricability between the Self and the Others. Paradoxically, though, we could come to the same point by validating the hypothesis of a non-unitarian origin, which is gaining growing attention in the scientific community. Let's see how. One of its proponents, Carl Woese, in his article "The Universal Ancestor" (1998), states:

> The universal ancestor is not a discrete entity. It is, rather, a diverse community of cells that survives and evolves as a biological unit. This communal ancestor has a physical history but not a genealogical one. (6854)

In Woese's hypothesis, the genetic heritage of all modern organisms would have not derived through a vertical genetic transfer[151], but through an horizontal gene transfer within a community of organisms. In Woese's words:

> The universal ancestor is not an entity, not a thing. It is a process characteristic of a particular evolutionary stage. (6858)

Both if we assume a single cell as the origin of an extremely diversified variety of life, as if we think of a community of cells evolving into a biological unit, we are witnessing the disruption of fundamental dichotomies: the one between the single and the multiple, the inner and the outer. In the evolutionary history of life, which focuses on the evolution of living and fossil organisms, life has evolved from LUA – whether that be an entity or a process –, to which every form of life on Earth, living or extinct, is related. All known species have diverged through processes of evolution, and so: what does the notion of species itself infer? From a posthuman perspective, I shall first mention that such a notion does not necessarily imply a speciesist engagement. Posthumanism has to situate its own

151 While a vertical genetic exchange occurs from the parental generation to the offspring through reproduction, "horizontal gene transfer is defined – in the words of biologist Jeffrey G. Lawrence – as the transfer of genetic material between bacterial cells uncoupled with cell division" (2005: 255).

embodied location. The fact that the hegemonic history of Western thought has been articulated through speciesist accounts, assuring the human species (generally essentialized as white, male, heterosexual, able, propertied and so on) at the top of a hierarchical construct, should not hold as a consequence that the notion of the species becomes inherently useless. As Vandana Shiva reminds us:

> Boundaries have been an important construct for ecological restraint. 'Removing boundaries' has been an important metaphor for removing restraints on human actions, and allowing limitless exploitation of natural resources. (1995b: 281).

Remarking on the significance of the species with no hidden human-centric agenda, may actually facilitate a posthumanist perspectivist standpoint. As we have seen in the previous subchapter, humans share a species-specific access to existence through their autopoietic organization: even though each and every human being has a different and unique way to form their own phenomenological experience, their cognitive apparatuses are similar, while they structurally differ from the ones characterizing other animals, as demonstrated by the frog experiment[152]. When reflecting upon the notion of species from a genetic point of view, a kinship can be recognized, but not an assimilation. Let's take the example of modern humans. On one side, as author Victor K. McElheny notes: “any two human beings on this earth are 99.9 percent identical at the DNA level” (2010: 196). On the other side, no two human beings are genetically identical to each other, due to human genetic variation. Another definition which is often proposed is that species may be described as a group of organisms that are capable of interbreeding; this generalization, though, may not apply to every species either (as in the case of organisms that reproduce asexually, among other cases). The notion of “species” is as challenging as the notion of life; biological classification contemplates the “species problem”, referring to the difficulties implied in defining such a term. For biologist Michael Ghiselin:

> Much of the species problem has been the result of equivocal uses of species

152 See section 17.

names as universal and proper (1975: 537).

In a mediation between the realist and the nominalist debate, we can affirm that species exist as long as none of their traits are essentialized: "species", in other words, is an immanent concept. Species are constantly changing and have no fixed boundaries. Modern humans, for instance, are still evolving, but the long-term dynamics of evolution take place over time periods which are inaccessible to human standards, such as one million years (Uyeda et al. 2011). Only short-term changes can be detected, as in the case of the genetic mutation which have resulted in lactose persistence in some human populations[153]. Specifically, a genetic mutation allowing lactose assimilation in adult humans, developed out of the consumption of non-human milk and dairy products beyond infancy, a cultural practice related to animal domestication and dairying (Gerbault / Liebert, 2011: 863). This case is of particular interest from a posthuman perspective because, rather than sustaining the Western dichotomy nature/culture, it emphasizes evolution as a natural-cultural[154] process, through the continuity of biological adaptation and cultural practices. More in general, it can be stated that evolution is constitutive of the notion of species. Changes occur over time; populations may split into different branches, hybridize together, or terminate by extinction, so that no essentialism can be attributed to species in terms of fixity or purity. Evolutionary processes generate diversity at every level of biological organization; at the same time, diversity facilitates evolution. I would like to end this section by stressing, once again, the fact that evolution is not driven towards an increase in complexity, but towards diversification (Gould 1996). Evolution does not imply any type of hierarchy nor progression from inferior to superior organisms, nor does it support any essentialism or strict dualism; rather, it complies with an hybrid, processual perception of existence, which is in tune with the posthuman approach.

153 This example also represents an interesting case of convergent evolution, that is, the genetic event of two or more populations independently acquiring the same trait.

154 Note that the term nature-culture as an hybrid of both natural and cultural characteristics, can be already found in: Latour 1991. Here, I am using this neologism as specifically developed by Donna Haraway (2003), to express that nature is already cultural, and *vice versa*, thus avoiding the simplification or essentialization of each term.

20. Posthumanities

One of the main techniques of evolution has been defined by Charles Darwin (1859) as "natural selection", in opposition to "artificial selection". While the latter refers to the processes by which certain traits are systematically favored by humans in breeding animals or plants, and which have been practiced since ancient times, natural selection recognizes a generative power to the environment, which represents a key element in the processes by which biological traits become either more or less common in a population, disrupting once again the inner/outer dichotomy. The environment is not an external entity in which organisms exist, but it is a constitutive element of their biological outfit. In this context, I would like to touch upon space migration[155] and the consequences such a scenario might conceal, from an evolutionary perspective. If humans proceed to inhabit other planets (such as the Moon or Mars), or other habitats (such as asteroids), generation after generation their DNA may mutate, in order to adapt to those specific environments; at that point, if reproduction occurs in isolation, different human species may eventually evolve: such species might be referred to as "posthumanities". Here, I shall open a parenthesis on this notion – which, in section 6, I have also attributed to a shift within the field of Humanities. The term "posthumanities" exceeds the notion of the human, and it turns into an open framework, which is invoked to inclusively address future developments of humankind. The current reflection on this subject – which is undertaken both by transhumanist and posthumanist thinkers, with some differences – focusses (but it should not be limited to) the increasing use of bio-technologies and genetic engineering, which can be revisited as forms of artificial selection. Let's delve more specifically into this scenario, starting by quoting roboticist Rodney Brooks, who, in his book "Flesh and Machine: How Robots Will Change Us" (2002), stated:

155 Note that this notion is mostly referred to as "space colonization" within transhumanist literature, with no acknowledgment of the radical criticisms offered by post-colonial theorists to the institution of colonization and its historical praxis. This is also a good example which shows how often Transhumanism and Posthumanism engage upon the same issues from different standpoints.

> Our technology has been under development for thousands of years. It is just now getting to the point where we can incorporate it inside our bodies. And we will. We will change ourselves from being purely the product of our genetic heritage to a more Lamarckian sort of species wherein we will be the product of our own technology. (232)

Brooks is referring to Lamarckism, a set of theories named after the biologist Jean-Baptiste de Lamarck (1744-1829), who believed in the inheritance of the acquired characteristics from an organism to its offspring; within the field of evolutionary studies, his theories had been mostly dismissed until the development of epigenetics[156]. Brooks, in tune with Transhumanism, is advocating for a switch in the evolution of the species for a direct and deliberate control; such a shift, which is a common theme within transhumanist literature, has also been individuated by philosophers and thinkers who do not necessarily endorse it. For instance, Jürgen Habermas, in "The Future of Human Nature" (2001), has stated:

> The human species might soon be able to take its biological evolution into his own hands. "Partner in evolution" or even "playing God" are the metaphors for an *auto-transformation of the species* which it seems will soon be within reach. (2003: 21)

Habermas then develops a critical reflection on the role of law in a social scenario in which genetic manipulation will bear increasing significance:

> Genetic manipulation could change the self-understanding of the species in so fundamental a way that the attack on modern conceptions of law and morality might at the same time affect the inalienable normative foundations of social integration. (26)

156 Epigenetics refers to the study of heritable changes in gene expression caused by mechanisms which are external to the underlying DNA sequence. For a comprehensive view on evolution with an up-to-date revisitation of Lamarckism in the light of epigenetics, see Jablonka et al. 2005.

And thus, he stresses the urgency to develop legal strategies in order to protect personal identity:

> This focuses the topic on the question of whether the protection of the integrity of an unmanipulated genetic inheritance can be justified by understanding the biological foundations of personal identity as something not to be disposed of. Legal protection might come to be expressed in a "right to a genetic inheritance immune from artificial intervention". (7)

Such a switch in the evolution of the species is to be evaluated in ethical terms, as Habermas suggests; but it should also be considered in biological ones, due to the fact that the consequences of such manipulations, on the long run, are unknown. For instance, author Carl Zimmer, on germ line modification[157], has remarked:

> It's an open question whether its effects would amount to short-lived ripples or major waves. The most likely to use germ line modification at first – wealthy people – also tend to have small families. By definition then, their genes would not be favored by natural selection. What's more, genetic modification could turn out to have hidden dangers that emerge only after several generations, which would also make these genes grow rare. On the other hand, engineered genes could spread if natural selection strongly favors them (Zimmer 2005: 157).

Let's now go back to our distinction between the posthuman and the transhuman perspectives. One of the main similarities between their standpoints on the future is a non-essentialism, in the sense that neither movement recognizes a human essence which should be safeguarded. Even though the posthuman attitude is not necessarily bio-conservative, it is generally characterized by a more cautious attitude, highlighting social

157 Germline genetic modification is a form of inheritable genetic engineering which involves replacing genes in eggs, sperm, or at the very beginning of the embryonic stage.

disparities based on biological primacies which may be reinforced and dramatized by such technologies, leading to the "Gattaca argument"[158] and the consequent consideration on the risks of genetic discrimination (Lemke 2013). As Stefan Lorenz Sorgner puts it:

> There is the risk that beings with different capacities will receive a different moral status, which is the reason why we have to take the *Gattaca* argument serious. This does not mean that I regard genetic enhancement as morally highly problematic. However, it does mean that one has to progress with great care, so that both human beings, as well as trans- and posthumans can be judged on the basis of the same dignity. (2013: 154)

If the posthuman approach is more inclined to proceed in these paths according to the precautionary principle, the transhuman approach can be related to the "proactionary principle", which, formulated by Max More (2004) in opposition to the precautionary principle, emphasizes people's freedom in actively innovating technology. More has recently published a new text on it, entitled "The Proactionary Principle: Optimizing Technological Outcomes" (2013), where he states:

> The Proactionary Principle is motivated by the need to make wise decisions about the development and deployment of new technologies *and* by the crucial need to protect technological experimentation and progress. (258)

More in general, it can be stated that, with the exception of Democratic Transhumanism, which particularly stresses the relevance of a democratic access to these technologies, the critical side of such future scenarios is not deeply engaged upon by transhuman thinkers. As noted in section 4, most transhumanist accounts on the evolution of the human species lack in deconstructionism, and are often limited by techno-reductionist and mostly anthropocentric approaches. And still, precisely because of its enthusiastic and fervid

158 Based on the movie "Gattaca" (1997) by Andrew Niccol, it portrays a dystopian society based on genetic manipulation, selection and profiling.

debate on the subject, Transhumanism interestingly expands the horizon of reflection on possible future scenarios[159].

Let's now go back to Posthumanism. The debate on posthumanities is taken in consideration from a bioethical[160] [161] perspective, here to be intended in an extensive way. In her influential text "Bioethics in the Age of New Media" (2009), Joanna Zylinska proposes bioethics as an ethics of life, revisiting the notion of life itself through "the new understanding of the relationship between humans, animals, and machines that new technologies and new media prompt us to develop" (vii). Although posthuman bioethics are at ease with processes of hybridization, they do not necessary imply a speculative approach. Envisioning forthcoming posthumanities is a subject which not every area of thought related to Posthumanism is willing to engage upon. For instance, Karen Barad (whose influential perspectives on the posthuman will be presented in the next subchapter), has stated:

> My interest is in thinking about the limits of humanism, and hence I use the term 'posthumanism' to indicate this critical engagement; this should not be taken to mean that I advocate positions that use the notion of the posthuman as the next stage of the human, as if it no longer makes sense to talk about the human (2007; 428).

I think that one position does not have to exclude the other, and that the deconstructive approach on the human, as well as its redefinition through the non-human realm, are not in conflict with a posthuman reflection on future evolutions of the human species. In his

159 For a comprehensive account on these subjects, see the anthology edited by Max More and Natasha Vita-More: "The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology, and Philosophy of the Human Future" (2013). See also: Birnbacher 2009.

160 Note that Francis Fukuyama's "Our Posthuman Future: Consequences of the Biotechnology Revolution" (2002), which gained mainstream attention because of its emphatic critique of what he called a "posthuman future", is based on the assimilation of Transhumanism and Posthumanism, and so Fukuyama's use of the term "posthuman" mostly refers to the transhuman perspective.

161 On the differences between Posthumanism and Transhumanism on a bioethical ground, see Gordijn / Chadwick 2009.

article “Deconstruction and Excision in Philosophical Posthumanism” (2010), David Roden has defined this specific area of Posthumanism, which does engage upon such a reflection, as “Speculative Posthumanism”:

> Speculative posthumanists claim *that descendants of current humans could cease to be human by virtue of a history of technical alteration*. The notion of descent is “wide” insofar as the entities that might qualify could include our biological descendants or beings resulting from purely technological activities (e.g., artificial intelligences, synthetic life-forms, or uploaded minds). / Speculative posthumanism claims that an augmentation history of this kind is metaphysically and technically possible. It does not imply that the posthuman would improve upon the human state or that there would exist a scale of values by which the human and posthuman lives could be compared (28).

Note the non-hierarchical way in which Roden locates human and posthuman evolutionary possibilities (“It does not imply that the posthuman would improve upon the human state”), as well as its non-essentialist standpoint, which include, within the descendents of the human, “beings resulting from purely technological activities”. The emphasis on human technologies and augmentation, though, does not exhaust the possible fields of posthumanist reflection on posthumanities either. Let me explain this point further. In our research on the posthuman, we have first presented the deconstructive project, relating it to its necessary inquiry into the notion of the human; we then have moved towards the “bio” realm, investigating life, biology and bioethics, including future evolutions of posthumanities. Now, we have to access the third level of reflection, which is more specifically ontological, connected to, but exceeding, both the notion of the human, as the notion of life; in this type of inquiry, evolution will be investigated as a technology of existence. I will start by delving into the realm of matter, to then access the final boundary, the one between the Self and the Others, taking the posthuman non-dualistic approach to the domain of ontological existentialism.

20. The Posthuman as New Materialisms

Let's now go back to our archeological investigation. If life cannot be fully described without a self-referential starting point, matter, on some level, precedes such a notion: anything which is considered alive within Western scientific canons, is constituted of matter. Here, I am not trying to reduce biology to physics (Canguilhem 1952), nor do I wish to attribute any primacy to matter. What I wish to do is offer a complete overview on the posthuman. In order to do so, I will investigate matter and the ways through which matter materializes; I will approach such a reflection through the New Materialisms[162] [163], another specific movement, within the posthuman theoretical scenario[164], which I have not presented yet. First of all, let's clarify that, as Diana Coole and Samantha Frost point out, "the renewed critical materialisms are not synonyms with a revival of Marxism" (2010: 30), but, more literary, they reinscribe matter as a process of materialization, in the feminist critical debate. Already traceable in the focus given to the body by corporeal feminism (Grosz 1994; Braidotti 1994; Kirby 1997), which developed in the mid-to-late Nineties, such a rediscovered feminist interest became more extensively matter-oriented by the first decade of the 21st century. New Materialisms philosophically arose as a reaction to the representationalist and constructivist radicalizations of late Postmodernity, which somehow lost track of the material, with the consequent risks of postulating an inner dualism between what was perceived as manipulated by the act of observing and describing pursued by the observers, and an external "reality" which thus would become unapproachable[165]. Even though the roots of New Materialisms can be located within Postmodernism, New Materialisms point out that the postmodern annihilation of the dualism nature / culture resulted in a clear preference for the nurtural aspects of it, in a multiplication of genealogical accounts investigating the constructivist implications of

162 The term was coined independently by Rosi Braidotti and Manuel De Landa in the mid Nineties (Dolphijn / van der Tuin 2010: 48).

163 For the problematization related to the use of the adjective "new" in this context, see Lykke 2012.

164 For a specific account on such an affiliation, see for instance Coole / Frost 2010: 7-15.

165 One of the proponents of this type of radical constructivism was philosopher Ernst von Glasersfeld (1917-2010), who elaborated on his theory of knowing in "Radical Constructivism: A way of Knowing and Learning" (1995), among other texts.

any natural presumptions[166], in what can be seen as a wave of radical constructivist feminist literature related to the success and major influence of Judith Butler's works[167] (1990; 1993). Such a literature exhibited an unbalanced result: if "culture" did not need to be bracketed, "nature" for sure did. In an ironic tone, Karen Barad, one of the main theorists of New Materialisms, implicitly referring to Butler's book "Bodies that Matter" (1993), has stated:

> Language matters. Discourse matters. Culture matters. There is an important sense in which the only thing that does not seem to matter anymore is matter (2003: 801)

New Materialisms pose no division between language and matter: biology is culturally mediated as much as culture is materialistically constructed. New materialisms perceive matter as an ongoing process of materialization, elegantly reconciling science and critical theories: quantum physics with a post-structural and postmodern sensitivity. Matter is not viewed in any way as something static, fixed or passive, awaiting to be molded by some external force; rather, it is emphasized as "*a process of materialization*" (Butler 1993: 9). But such a process (which is dynamic, shifting, inherently entangled, diffractional and performative), does not have any primacy over the materialization, nor can the materialization be reduced to its processual terms. Karen Barad has stated:

> If performativity is linked not only to the formation of the subject but also to the production of the matter of bodies, as Butler's account of 'materialization' and Haraway's notion of 'materialized refiguration' suggest, then it is all the more

166 For a critique of constructivism and representationalism from a posthumanist perspective, see Smith / Jenks 2006: 47-60.

167 In her article "Butler's Sophisticated Constructivism: A Critical Assessment" (1999), Veronica Vasterling stated:

> During the last decade, a new paradigm has emerged in feminist theory: radical constructivism. Judith Butler's work is most closely linked to the new paradigm. On the basis of a creative appropriation of poststructuralist and psychoanalytical theory, Butler elaborates a new perspective on sex, gender and sexuality. A well-known expression of this new perspective is Butler's thesis, in *Bodies that Matter* (1993) that not only gender but also the materiality of the (sexed) body is discursively constructed. (17)

> important that we understand the nature of this production. (2003: 808)

In her influential book "Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning" (2007), Barad, combining her expertize in theoretical physics with feminist theory, proposes an agential realism, which can be summarized as an extension of agency to the non-human realm, reworking the concept of phenomena as "the ontological inseparability of intra-acting agencies" (206), and basing it on a relational ontology[168], as she states:

> This relational ontology is the basis for my posthumanist performative account of material bodies (both human and nonhuman). This account refuses the representationalist fixation on words and things and the problematic of the nature of their relationship, advocating instead *a relationality between specific (re)configurings of the world through which boundaries, properties, and meanings are differentially enacted* (i.e., discursive practices, in my posthumanist sense) *and specific material phenomena* (i.e., differentiating patterns of mattering). (139)

I would like to stress the fact that Barad locates her agential realism within a posthuman frame, instead of an antihuman or a transhuman[169] one, even though she keeps a critical stand from Posthumanism as well:

> By invoking this contested term, I want to be clear that I am not interested in postmodernist celebrations (or demonizations) of the posthuman as living testimonies to the death of the human, nor as the next stage of Man. (…) Posthumanism, as I intend it here, is not calibrated to the human; on the contrary, it is about taking issue with human exceptionalism. (136)

168 I will come back to this notion in section 22.

169 Specifically, Barad explains her views on the differences between Post-Trans-and Anti-Humanism in note 6 (2007: 428). More generally on this subject, see the subchapter "Humanist Orbits" (134-7).

What Barad opts for, is:

> a *posthumanist performative* approach to understanding technoscientific and other naturalcultural practices that specifically acknowledges and takes account of matter's dynamism. (135)

I will follow Barad's suggestion, and investigate matter from a scientific perspective, to address the relevance of contemporary physics to the posthuman debate. First, though, I would like to note that one of the risks run by some of the new materialists thinkers (risk in which Barad herself does not fall, due to her deep understanding of physics) is vitalism[170]. Let's consider, for instance, this quotation from Diane Coole and Samantha Frost:

> Perhaps most significant here is the way new materialist ontologies are abandoning the terminology of matter as an inert substance subject to predictable causal forces. According to the new materialisms, if everything is material inasmuch as it is composed of physicochemical processes, nothing is reducible to such processes, at least as conventionally understood. For materiality is always something more than "mere" matter: an excess, force, vitality, relationality, or difference that renders matter active, self-creative, productive, unpredictable. (Coole / Frost 2010: 9)

On one side, Coole and Frost are emphasizing a comprehensive perspective which destabilizes the view of matter as "inert substance". On the other, they are reintroducing a hierarchy: materiality, which now becomes a "vitality" among other terms, turns into "something *more* than 'mere' matter". The consequent risk is creating a dualism between materiality and matter, where materiality constitutes the positive pole due to that indescribable element which, under a deeper scrutiny, can be identified in the principle of

170 For a comprehensive account on vitalism – both historically, as theoretically –, see Canguilhem's "Knowledge of life" (1952), specifically Part Three, Section 3 "Aspects of Vitalism" (2008: 59-74).

life itself. The reference to vitalism is explicit in Jane Bennett's "Vibrant Matter: A Political Ecology of Things" (2010). Here, Bennett proposes her notion of "vital materiality", which aims to emphasize nonhuman matter over the ontological privilege of the human. She states:

> Vital materialists will thus try to linger in those moments during which they find themselves fascinated by objects, taking them as clues to the material vitality that they share with them. This sense of a strange and incomplete commonality with the outside may induce vital materialists to treat nonhumans – animals, plants, earth, even artifacts and commodities – more carefully, more strategically, more ecologically. But how to develop this capacity for naiveté? One tactic might be to revisit and become temporarily infected by discredited philosophies of nature, risking "the taint of superstition, animism, vitalism, anthropomorphism, and other premodern attitudes". (17-8)

Although her tactics might prove successful on an ecological and ethical level, from a philosophical posthuman perspective, they are problematic, as I will soon explain. Bennett concludes her book with what she defines as a "Nicene Creed for would-be vital materialists" (122):

> I believe in one matter-energy, the maker of things seen and unseen. I believe that this pluriverse is traversed by heterogeneities that are continually *doing things*. I believe it is wrong to deny vitality to nonhuman bodies, forces, and forms, and that a careful course of anthropomorphization can help reveal that vitality, even though it resists full translation and exceeds my comprehensive grasp. I believe that encounters with lively matter can chasten my fantasies of human mastery, highlight the common materiality of all that is, expose a wider distribution of agency, and reshape the self and its interests. (122)

Bennett's proposal of a strategic anthropomorphization and a recognition of vitality to

nonhuman agents runs the risk of turning their existence into a humanistic assimilation, which dissolves the original encounter with alterity, in a homogenization and reduction of the difference to the same. Bennett's profession of vital materialism results in a *mea culpa* of the humanistic subject, echoing religious and moral rhetorics. The "one matter-energy, the maker of things seen and unseen" sounds like a reformulation of the Abrahamic God; the Christian notion of the original sin is redesigned as human-centrism and its "fantasies of human mastery"; a right and a "wrong" are empirically located in self-imposed hermeneutical practices. Bennett's subject is the human, more specifically, the good willing human, portrayed in their effort to engage with an existence which, to use Bennett's words, "exceeds" their "comprehensive grasp". What is missing is the reciprocal constitution of agents, the intra-acting of material forces, and, from a posthuman perspective, the perception of the human as one of those forces: Bennett's proposal can be seen as the reverse side of that humanistic ontological privilege she is trying to destabilize. Note the difference from Barad's elaborate notion of agential realism, which emphasizes the intra-constitution of existence without employing mediated terms:

> Rather than giving humans privileged status in the theory, agential realism calls on the theory to account for the intra-active emergence of "humans" as a specifically differentiated phenomena, that is, as specific configurations of the differentiated phenomena, that is, as specific configurations of the differential becoming of the world, among other physical systems. Intra-actions are not the result of human interventions; rather, "humans" themselves emerge through specific intra-actions. (2007: 352)

Barad's theoretical investigation on matter is beyond good and evil. Humans, in her perspective, "emerge through specific intra-actions", which are not "the result of human interventions", but are not separated from the human either. Barad does not fall into the illusion of the origins: humans themselves are intra-actions, and so they cannot be reduced to a material nor a moral foundation. On the contrary, Bennett, such as Coole and

Frost, individuate their ontological starting point, as well as their ethical strategies, in an undefined vital principle, and commit (implicitly or explicitly) to vitalism. From a posthuman perspective, vitalism is a problematic approach because it relies upon the notion of life (*vita* in Latin), which, as we have seen, carries a series of pre-scientific assumptions. Let's then proceed in our investigation, inquiring into the realm of matter and analyzing how processes of materialization are materially constituted.

21. Vibrating Matter

From a physics perspective, anything which has mass and volume is considered matter: humans, for instance, are made out of matter, as well as robots. The way matter appears on the large scale might be misleading, if taken as its ultimate state. Matter, on a subatomic level, is not static or fixed, but is constantly vibrating. Matter is relational and irreducible to a single determined entity: any reductionist approach has historically and scientifically failed[171]. According to the String Theory[172] [173], an active research framework in Quantum Physics, matter, at a subatomic level, may be composed by tiny vibrating loops of energy, defined as strings. I will delve into this theory more in details, because it offers valuable insights for an ontological development of Posthumanism. Before focussing on it, I would like to reflect on how the materialization of matter occurs, according to String Theory. I will start by offering a vivid example, which is commonly employed to clarify such a complex scenario. Let's compare these strings to the strings of a musical instrument: while the musical strings, depending on how they vibrate, produce

171 Atoms were thought to be the building blocks of matter until early 20th century, when, passing from the Bohr model (1913) to James Chadwick's atomic one (1932), it was discovered that they were also composite, made of electrons, protons and neutrons. Then again, these models were discovered to be composed of still smaller particles, named "quarks", which were independently proposed in 1964 by two American physicists: Murray Gell-Mann and George Zweig. In the late Sixties, this model was again redefined by String Theory. On the history of modern physics, see, amongst others: Segrè 1980; Heilbron 2005.

172 Between the late Sixties, early Seventies, many physicists independently contributed to this theory, including: Gabriele Veneziano, Yoichiro Nambu, Holger Bech Nielsen and Leonard Susskind. For a comprehensive account on String Theory, see for instance: Greene 1999.

173 It is important to note that, currently, String Theory is a mathematical model not supported by experimental evidence yet, and so it has been criticized for its lack of falsifiability (Woit 2007; Smolin 2006).

different sounds, the vibrations of these strings of energy would be responsible for matter to exhibit different properties, consequently producing different kinds of particles, and eventually, different modes of existence. Theoretical physicist Lisa Randall explains it so:

> String theory's view of the fundamental nature of matter differs significantly from that of traditional particle physics. According to string theory, the most basic indivisible objects underlying all matter are strings – vibrating, one dimensional loops or segments of energy. These strings (...) are not made up of atoms which are in turn made up of electrons and nucleons which are in turn made up of quarks. In fact, exactly the opposite is true. These are fundamental strings, which means that everything, including electrons and quarks, consists of their oscillations. (…) String theory's radical hypothesis is that particles arise from the resonant oscillation modes of strings. Each and every particle corresponds to the vibrations of an underlying string, and the character of those vibrations determines the particle's properties. Because of the many ways in which strings can vibrate, a single string can give rise to many types of particle. (2005: 283)

The ontological agential relationality postulated by string theory is non-redeemable: matter is in relation to, and, at the same time, manifesting as, its vibrations. The strings (that is: matter at a subatomic level) are, in relation to these oscillations, being (they are vibrating), and also, being with (the vibration constitutes them in their specific and differential characteristics). Such a scenario is in line with Karen Barad's relational ontology, which she considers the *conditio sine qua non* of her agential realism[174]. Barad thus explains her ontological approach:

> *Thingification* – the turning of relations into "things", "entities", "relata" – infects much of the way we understand the world and our relationship to it. Why do we

174 In Barad's words:

> Agential realism resolves these issues in a way that is consistent with recent theoretical and experimental developments. Like other recent interpretations of the quantum theory, it is based on a relational ontology. (2007: 352)

> think that the existence of relations requires relata? (…) I present a relational ontology that rejects the metaphysics of relata, of "words" and "things". On an agential realist account, it is once again possible to acknowledge nature, the body, and materiality in the fullness of their becoming. (2003: 812)

Quantum physics leads to a relational ontology. An interesting example of such a relationality from an epistemological perspective, can be seen in the observer effect, also known as the measurement problem[175], which refers to the changes that the act of observing produces on a phenomenon, and which has demonstrated the inextricable relation between the subject and the object, as well as the dynamic and pluralistic natureculture of matter. In the words of physicist Alastair Rae:

> Quantum physics leads to a rejection of determinism (…) so that we have to come to terms with a universe whose present state is not simply 'the effect of its past' or 'the cause of its future'. Quantum theory tells us that nothing can be measured or observed without disturbing it, so that the role of the observer is crucial in understanding any physical process. (1986: 3)

Quantum physics annihilates the possibility of a strict dualism between the subject and the object, presenting them as relational and reciprocally constituting one another. The intrinsic relationality of matter delegitimates any reductionist approach. When dealing with matter at a subatomic level, asking if these strings are its final foundational bits is not a feasible point, given that such a question is formulated on the assumption that matter can be actually reduced to a single entity. Theoretical physicist Leonard Susskind, one of the main proponents of String Theory, has stated:

> We seem to be dealing with a new kind of mathematical theory in which the

175 The concept of the observer effect can be first traced in the writings of Niels Bohr (1885-1962), and specifically, in a reply he wrote to Einstein, Podolsky, and Rosen, where he stated:

> The procedure of measurement has an essential influence on the conditions on which the very definition of the physical quantities in question rests. (1935: 1025)

For an extensive reflection on this notion, see for instance: Stapp 2007.

> traditional ideas of fundamental versus derived concepts is maddeningly elusive. (2005: 379)

Such a view offers an alternative perspective on ancient human dilemmas, such as the search for the origins, or the terms of causality: the fundamental and the derived can be reversed, in a materialist undoing of any fixed identity. String Theory, on one side, fully resonates with the posthuman non-dualistic approach; on the other, it offers even more challenging inputs for a posthuman ontological reflection, as we will see in the next section. Let's start by saying that Susskind locates such a non-derivable scenario in what is defined as the "Landscape":

> The Landscape is a dreamscape in which, as we move about, bricks and houses gradually exchange their role. *Everything is fundamental, and nothing is fundamental.* The answer depends on the region of the Landscape we are momentarily interested in. (*Ibidem*)

The notion of "Landscape" refers to the large number of possible configurations of existence entailed by the physics hypothesis of the String Theory. Susskind explains it so:

> The Landscape is not a real place. Think of it as a list of all the possible designs of hypothetical universes. (381)

Ultimately, String Theory asserts the hypothesis of a multiverse[176] [177] [178]. On one side, the math of String Theory, in order to function, requires a distinct feature, which is extra-dimensions of space (Randall 2005; Bars et al. 2010), consequently advancing the hypothesis that this specific dimension is only one of the many occurring. On the other,

176 To be more precise, as physicist Max Tegmark remarks, the multiverse "is not a theory, but a prediction of certain theories" (2010: 558).

177 For a comprehensive scientific account on the notion of the multiverse, see: Greene 2011; Kaku 2005.

178 In "The Hidden Reality" (2011), theoretical physicist Brian Greene recognizes nine different types of multiverse, one of which being precisely the Landscape Multiverse. The other eight are: the Quilted Multiverse; the Inflationary Multiverse; the Brane Multiverse; the Cyclic Multiverse; the Landscape Multiverse; the Quantum Multiverse; the Holographic Multiverse; the Ultimate Multiverse.

scientific investigations on matter from the micro to the macro level of materialization, from Quantum Physics to the fields of Cosmology and Astrophysics, have recently arrived to the same hypothetical conclusion: this universe might be one of many. The hypothesis of the multiverse is inherently posthuman; it not only stretches any universe-centric perspective (problematizing the inclusive, but still centric, notion of a universe), but it materializes the dissolution of strict binaries, dualistic modes and exclusivist approaches. This is why I wish to conclude this historical and theoretical recollection on the posthuman with a reflection on the multiverse, which invites for a renegotiation of the border between the possible and the inconceivable: a posthumanist perspective, to fully comply with a comprehensive approach, shall include the possibility of the impossible[179] within its epistemological and ontological realm of inquiry.

23. The Posthuman Ontological Multiverse

The multiverse is one of the most challenging notions formulated by cosmologists and physicists in the last decade; it is the next step in the human revision of the cosmos, which historically first posed the Earth at its center, then the Sun, to later realize that our solar system is part of a galaxy, and such a galaxy is one among millions of other galaxies. The multiverse represents both the ultimate decentralization of the human, as well as the final deconstruction on any strict dualisms. Before delving into the philosophical and posthuman implications of the multiverse, I wish to offer a scientific overview on it. First of all, it should be clarified that the multiverse is not a homogeneous hypothesis, and it may apply to different types of proposals. To be more precise, as cosmologist Max Tegmark stated in the article "Many Worlds in Context" (2010), the multiverse "is not a theory, but a prediction of certain theories" (558). In this influential

179 Consider how many crucial scientific theories and discoveries were considered impossible, and thus rejected, at the time they were first proposed. In a general and ironic way, we can say, in the words of Robert Shea (1933-1994) and Robert Anton Wilson (1932-2007):

> Every fact of science was once damned. Every invention was considered impossible. Every discovery was a nervous shock to some orthodoxy. Every artistic innovation was denounced as fraud and folly. (1975: 793)

This type of reflection relates to the widespread motto of the counterculture of the 1960s: "Be realistic: demand the impossible".

text, Tegmark incorporated the different views on the multiverse in four main levels[180]. I am going to present each of them (including Tegmark's original definitions, in notes: 181, 183, 184, 187), to then provide my own philosophical argument.

Level I: Regions Beyond Cosmic Horizon[181]

This level refers to the scientific evidence for the expansion of the universe, based on Edwin Hubble' s discovery (1929)[182], for which distant galaxies are moving away from ours at very high speeds. If this universe is infinitely expanding, there may exist another portion of it where, for instance, an exact duplicate of this world might have formed. (These types of multiverses would be characterized by the same laws of physics sustaining our world).

Level II: Other Post-Inflation Bubbles[183]

This second level is based on the inflationary theory (Guth / Steinhardt 1984; Linde 1994), and specifically on eternal inflation (Linde 1986), for which our Big Bang would be one of many: separate universes may spring up as bubbles of spacetime in an infinite and random formation of "bubble universes". (These types of multiverses could be characterized by very different laws of physics from the ones sustaining our universe, as by different manifestations of the same laws).

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180 Here, I decided to present Tegmark's classification, instead of Greene's (as depicted in note 178): both are scientifically exhaustive, but Tegmark's is less analytic and more synthetic.

181 This is how Tegmark describes it:

> If space is infinite and the distribution of matter is sufficiently uniform on large scales, then even the most unlikely events must take place somewhere. In particular, there are infinitely many other inhabited planets, including not just one but infinitely many with people with the same appearance, name and memories as you. Indeed, there are infinitely many other regions the size of our observable universe, where every possible cosmic history is played out. (2010: 559)

182 It is important to note that Georges Lemaître (1894-1966), in an article published in 1927, was actually the first to propose the theory of the expansion of the universe; nevertheless, this theory was later defined as the "Hubble's law".

183 In Tegmark's words:

> Try imagining an infinite set of distinct [universes] (...), some perhaps with different dimensionality and different physical constants. This is what is predicted by most currently popular models of inflation, and we will refer to it as the Level II multiverse. These other domains are more than infinitely far away in the sense that you would never get there even if you traveled at the speed of light forever. The reason is that the space between our Level I multiverse and its neighbors is still undergoing inflation, which keeps stretching it out and creating more volume faster than you can travel through it. (2010: 564)

Level III: The Many Worlds of Quantum Physics[184]

Within the field of quantum physics, the hypothesis of many-worlds[185] interpretation was first proposed by Hugh Everett (1930-1982), in his PhD dissertation "Theory of the Universal Wave Function" (1956). In this scenario, every event is a branch point, and reality itself is seen as a branched tree; every possible quantum outcome is realized in parallel worlds, in a reinterpretation of Schrödinger's cat[186] thought experiment. (These types of multiverses would be characterized by the same laws of physics sustaining our world).

Level IV: Other Mathematical Structures[187]

This type of multiverse includes all the mathematical structures which can be conceived, but not observed as physical realities, in our universe. (These types of multiverses would be characterized by entirely different sets of laws of physics than the ones sustaining our universe).

Even if the notion of the multiverse is inherently posthuman, all four levels in which Tegmark correctly presents the current scientific perceptions of the multiverse, are conceived through the Self/Others, here/there paradigm, in an approach which resonates with humanistic dualisms, based on the necessity of the Others as reverse mirrors of the Self. Let's analyze such aspects more in detail. On one side, these other universes are

184 Tegmark thus explains this level:

> If Everett was correct and physics is unitary, then there is a third type of parallel worlds that are not far away but in a sense right here. The universe keeps branch- ing into parallel universes (…): whenever a quantum event appears to have a random outcome, all outcomes in fact occur, one in each branch. This is the Level III multiverse. (*Ibidem:* 568)

185 Note that the term "many-worlds" was only later attributed to Everett's theory by Bryce Seligman DeWitt (1973).

186 Austrian physicist Erwin Schrödinger (1887-1961) illustrated with this thought experiment (1935a) what he saw as the problematic application of quantum mechanics to everyday scenarios, presenting the case of an imaginary cat which may be both alive and dead, depending on a random event.

187 As Tegmark defines it:

> If there is a particular mathematical structure that is our universe, and its properties correspond to our physical laws, then each mathematical structure with different properties is its own universe with different laws. The Level IV multiverse is compulsory, since mathematical structures are not "created" and don't exist "somewhere" — they just exist. (2010: 575)

depicted to be so far that they will never be reached; on the other, they are investigated through the anthropocentric desire of postulating different worlds with "people with the same appearance, name and memories as you", to use Tegmark's words when describing Level I (as reported in note 181). Of all the possibilities which may be investigated, and among all the possible evolutionary outcomes which might take place in other universes, why focus on the narcissistic projection that the human realm is flourishing somewhere? This type of hope seems to resonate with the humanistic fascination for the uncanny, defined by Sigmund Freud (1856-1939) in his essay "The Uncanny" (1919), as "something which is secretly familiar" (245); in this text, he also reflects upon the notion of the double as "an insurance against the destruction of the ego" (235). The double is often contemplated as a possibility within the scientific literature related to the multiverse, and is at the very core of Everett's proposal (Level III), which focusses on the human-centric fascination with the idea of universes in which there might be other versions of "me", in a reinscription of the multiverse within the frame of assimilation, instead of the difference. Furthermore, Everett's branch-tree quantum scenario results in a overabundance of universes in which every single event which could have possibly happened, did happen in some universe. Such an approach introduces what I will define as the problem of overabundance, which is present in many scientific, as well as philosophical, views on the multiverse. Tegmark, in his article, does address such a problem, which he defines as "the wastefulness worry". His answers, though, are not exhaustive in my opinion, as he states:

> Why should nature be so wasteful and indulge in such opulence as an infinity of different worlds? Yet this argument can be turned around to argue for a multiverse. What precisely would nature be wasting? Certainly not space, mass or atoms – the uncontroversial Level I multiverse already contains an infinite amount of all three, so who cares if nature wastes some more? The real issue here is the apparent reduction in simplicity. A skeptic worries about all the information necessary to specify all those unseen worlds. But an entire ensemble is often much simpler than one of its members. (2010: 576)

There are different problems with this kind of approach. First of all, Tegmark refers to "nature" as something separate and unrelated ("*who cares* if *nature* wastes some more [space/mass/atoms]"), while, as we have previously seen, precisely the opposite is accurate. Such an unlimited overabundance of matter, energy, and spacetime resonates with a capital accumulation and over-production of worlds, and with the wasteful approach of capitalistic societies towards goods and products, located in a socio-political perspective which does not perceive nature as relational and integrated, but as something external and endlessly resourceful, no matter what. This type of attitude, on a practical level, sustains the current unlimited use of non-sustainable resources by some economically advantaged human societies, leading planet Earth to an ecological collapse. Going back to our critical reading of Tegmark's classification, both the problem of overabundance, as well as the ego-driven desire for the double, are present in Level IV, according to which any conceivable mathematical structure would be related to an actual universe, as Tegmark states:

> The level IV universes are completely disconnected and need to be considered together only for predicting your future, since "you" may exist in more than one of them. (576)

The peculiarity of Level II, for instance, is characterized by the impossibility of any type of relation between the other universes and this universe: they would be located so far that, in Tegmark's words: "you would never get there even if you traveled at the speed of light forever" (the full passage is reported in note 183). Even if this level may describe actual modes of existence, it stands as an unreachable domain. More in general, we can state that all four levels of the multiverse re-propose the dualisms: this world / the other worlds; this universe / the other universes; here / there, where "there" is usually considered as far as we can imagine, and so ultimately unreachable. I will now present a philosophical overview on the notion of the multiverse[188], which will show how, on many

188 Here, I would like to note that, within this frame, the multiverse includes, but it is not limited to,

levels, this set of reflections share many points in common with the scientific perspective previously presented, such as the tendency to fall into humanistic assimilations. Let's start by saying that the term "multiverse" itself was coined by philosopher William James (1842-1910), in his essay "Is Life Worth Living?" (1896), where he stated:

> Visible nature is all plasticity and indifference, a moral *multiverse* [Italics mine], as one might call it, and not a moral universe. (26)

Within the philosophical domain, the notion of possible worlds is traceable in the work of Gottfried Wilhelm von Leibniz (1646-1716), and specifically in his "Essays of Theodicy on the Goodness of God, the Freedom of Man and the Origin of Evil" (1710), where he claimed that the actual world is the best of all possible worlds[189]. Such a view, which does not necessarily imply the actual existence of other worlds, has antecedents in the reflection on possible worlds found in medieval[190] theories of modality (Knuuttila 1993): within this frame, the idea of possible worlds can be found in the works of Al-Ghazali[191] (1058-1111), Averroes[192] (1126-1198), Fakhr al-Din al-Razi[193] (1149-1209) and John Duns Scotus[194] (1267-1308). Within contemporary philosophy, the first thinker to fully revisit such a subject was David Lewis (1941-2001) who, in "On the Plurality of Worlds" (1986), advocated for a modal realism, as he claimed:

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notions such as "parallel dimensions", "parallel worlds", and "alternative realities".

189 Such an optimist view will be famously satirized by Voltaire (1694-1778) in his "Candide: or, The Optimist" (1759).

190 For instance, Tim Wilkinson, in his article "The Multiverse Conundrum" (2012), notes that during medieval times the question whether God had created many worlds it was as relevant as for the Bishop of Paris, Étienne Tempier, to issue a series of condemnations in 1277 "to explicitly denounce Aristotle's view of there being only one possible world, which he thought to be at odds with God's omnipotence" (n. pg.).

191 On the notion of possible worlds in Al-Ghazali's work "The Incoherence of the Philosophers", see Kukkonen 2000a.

192 On the notion of possible worlds in Averroes' work "The Incoherence of the Incoherence", see Kukkonen 2000b.

193 Note that, referring to Fakhr al-Din al-Razi's articulate reflection on the notion of possible worlds in his work "Matalib al-'Aliya", scholar Adi Setia uses the term "multiverse" (Setia 2004).

194 For a reflection on Duns Scotus' view on possible worlds, see Langston 1990; for Scotus' reflection on the possible, see King 2001; for the differences between Scotus and Leibniz on possible worlds, see Knuuttila 1996: 131-4.

> I advocate a thesis of plurality of worlds, or *modal realism*, which holds that our world is but one world among many. (…) There are so many other worlds, in fact, that absolutely *every* way that a world could possibly be is a way that some world *is*. (2)

In Lewis' view, not only "*every* way that a world could possibly be is a way that some world *is*" – I will come back to this point – but these different worlds have no relation with each other, neither spatial, temporal, nor causal:

> The worlds are something like remote planets; except that most of them are much bigger than mere planets, and they are not remote. Neither are they nearby. They are not at any spatial distance whatever from here. They are not at any temporal distance whatever from now. They are isolated: there are no spatiotemporal relations at all between things that belong to different worlds. Nor does anything that happens in one world cause anything to happen at another. Nor do they overlap; they have no parts in common, with the exception, perhaps, of immanent universals exercising their characteristic privilege of repeated occurrence. (*Ibidem*)

Lewis' proposition of a series of unrelated worlds which have no influence on each other whatsoever may be seen as a modal essentialism. Instead, I will propose a posthuman interpretation of the multiverse which does not see any possible world as an actual one, simply because any "possible" world means, more specifically, any possible world which humans can postulate (through their imagination, mathematics and so on), and it would resolve into a form of ontological anthropocentric solipsism. The main differences I am stressing from Lewis' are:

1. An *indefinite number* of possible words does not imply *any* possible worlds.

2. All these possible worlds are not completely separated from each other, but are in a

material relation with each other.

I have already argued on point 1, in what I have previously defined as the problem of overabundance. Let me now delve into point 2. Strictly speaking, what I am proposing is the hypothesis of a multiverse where the same energy / matter constituting our dimension would be constituting many others. A specific vibration would be what keeps each dimension intact: like a radio, where there are many channels to reach, our dimension would be related to a specific tuning. Here, I would like to open a parenthesis and explain why I felt compelled to re-elaborate on such a notion: the multiverse, although intrinsically non human-centric, is often reduced to another arena where one projects human-centric wishes and assumptions. Instead, I asked myself what would a posthuman approach to the multiverse bring to the discussion; I thus reflected on it not by counting on any essentialism, polarity or strict dualism, but relying on a hybrid, mediated and process-ontological perspective. I will now present such an interpretation both as a thought experiment, which may expand a speculative perception of the self, as well as a material hypothesis, which may conceal a possible physics outfit of the multiverse. Within Tegmark's classification, what I am proposing shares some aspects with Level III but with some crucial differences. I will call it a posthuman multiverse, by referring to the philosophical inputs which inspired such a reflection. A posthuman multiverse is based on the deconstruction of the Self/Others paradigm. It entails that matter, while constituting this universe, it would also be actualizing an indefinite number of other universes, in a process of both relationality and autonomy. What I am suggesting is that if we radically deconstruct the separation of the Self and the Others, we can think of the multiverse as happening right now, here, through our own bodies, through the same matter which is composing this universe. The difference which would allow us, for instance, to perceive a similar mode of existence, could be seen, in physics terms, as a specific type of vibration.

More than parallel dimensions, ontically separated from each other, the posthuman understanding of a multiverse would be envisioned as generative nets of material

possibilities simultaneously happening and coexisting, corresponding to specific vibrations of the strings[195], in a material understanding of the dissolution of the strict dualism one/many. The identity of one dimension would be maintained under the condition of a specific vibration, in a multiplication of material possibilities. What I am speculating about is a multiverse in which these strings would be simultaneously establishing different universes related to specific vibrational properties. In such a multiverse, the self would be constituting the self by constituting (and by being constituted by) infinite others. If quantum strings can manifest different properties depending on different vibrations, according to the theory of General Relativity (Einstein 1916), they could manifest different properties "simultaneously", given that time cannot be accounted independently, but as a dimension of spacetime[196].

Different from many of the scientific and philosophical proposals previously presented, such a view does not support the hypothesis of many versions of "you" existing in different dimensions, since "you" would be a distinct combination of this specific vibrational domain. This type of scenario does not entail a dualism between the strings and their vibrations; the two terms are inseparable: the strings are manifesting in a specific mode because they are tuned to a definite vibration, as much as definite vibrations are manifesting through the specific tuning of the strings. In ontological terms, such a view, would imply a pluralistic monism, or a monistic pluralism. Neither monism nor pluralism by themselves could be feasible to sustain an ontology of the posthuman multiverse; both should be listed in order to disrupt the dualism one/many, and thus avoid turning this discussion into the problem of the origins (is it a monism before being a pluralism, or a pluralism before being a monism?). The one is necessarily and constantly differentiating, and so it (they) is (are), at the same time, many. In this specific interpretation of the multiverse, quantum notions such as the wave–particle duality[197] and

195 I am referring to String Theory, as presented in section 22.

196 In physics, spacetime refers to a continuum of the three dimensions of space plus time as a fourth dimension.

197 First proposed by Louis de Broglie (1892-1987) in 1924, it can be defined, in the words of physicist Lee Smolin, as "a principle of quantum theory according to which one can describe elementary particles as both particles and waves, depending on the context" (2001: 234). For an historical account on the wave-particle duality, see for instance: Wheaton 1983.

the quantum entanglement[198] may be of help. Every dimension can be seen as an autopoietic mode of existence which, even though it may perceive itself as autonomous, is intrinsically connected to many other modes of existences (but again, not necessarily directly related to all modes, since, within a rhizomatic perspective, such a relationality may be established indirectly).

Matter is relational; we can think of different modes of existence as relating through specific nodes – to use a terminology developed within the Network Theory[199], and to refer, more in general, to the Actor/Network Theory (Latour 1987; 2005) (Law / Hassard 1999). In order to do this, I find the notion of the rhizome useful, as delineated by Gilles Deleuze (1925-1995) and Félix Guattari (1930-1992), which also offers me the chance to stress the relevance of these philosophers when tracing a genealogical recollection of Philosophical Posthumanism. In particular, "A Thousand Plateaus: Capitalism and Schizophrenia" (1987) offers numerous insights for a posthuman development of the multiverse. I will only focus on a couple of points, even though many more notions could be investigated throughout this text, such as, just to mention a few: multiplicity[200],

198 The term was coined by Schrödinger (1935b) to describe a specific connection between quantum systems, which occurs when particles which were interacting become separated, resulting in a pair which has to be described with reference to each other, as manifesting the same quantum mechanical description. In his words:

> When two systems, of which we know the states by their respective representatives, enter into temporary physical interaction due to known forces between them, and when after a time of mutual influence the systems separate again, then they can no longer be described in the same way as before, viz. by endowing each of them with a representative of its own. I would not call that one but rather the characteristic trait of quantum mechanics, the one that enforces its entire departure from classical lines of thought. By the interaction the two representatives have become entangled. (555)

For a detailed reflection on this subject from a posthuman perspective, see Barad 2007: 247-352.

199 The Network Theory is an area of studies related to computer sciences and graph theories, which has developed a specific reflection on the significance of the notion of links and of nodes (see for instance: Barabasi 2003) within representational, logistical, but also social and biological networks.

200 Here, I would like to bring to mind Nietzsche's hypothesis on the subject as a multiplicity, which is exposed in "The Will to Power", Book Three, section 490 (1885):

> The assumption of one single subject is perhaps unnecessary; perhaps it is just as permissible to assume a multiplicity of subjects, whose interaction and struggle is the basis of our thought and our consciousness in general? A kind of aristocracy of "cells" in which dominion resides? To be sure, an aristocracy of equals, used to ruling jointly and understanding how to command? *My hypotheses*: the subject as multiplicity. (1967: 270)

The perception of the subject as a multiplicity offers interesting insights for a materialistic view of the Self as many, within the frame of a posthuman multiverse.

assemblage, connection, nomadicity and heterogeneity[201]. One passage which I find particularly inspiring in this respect, can be found in Section 8 “1874: Three Novellas, or 'What Happened?' ”, where it is stated:

> Individual or group, we are traversed by lines, meridians, geodesics, tropics, and zones marching to different beats and differing in nature. We said that we are composed of lines, three kinds of lines. Or rather, of bundles of lines, for each kind is multiple. (…) For some of these lines are imposed on us from outside, at least in part. Others sprout up somewhat by chance, from a trifle, why we will never know. Others can be invented, drawn, without a model and without chance: we must invent our lines of flight. (…) There are different animal lines of flight: each species, each individual, has its own. (…) The lines are constantly crossing, intersecting for a moment, following one another. (…) It is an affair of cartography. They compose us, as they compose our map. They transform themselves and may even cross over into one another. Rhizome. (202-3)

In this passage, each becoming is conceived as a rhizome of lines; some lines are specific to a species, some “are imposed (…) from outside”; others can be deliberately invented. Even though the rhizome can be traced as an important antecedent for a posthuman approach on the multiverse, philosophically the two notions cannot be assimilated. In the view of Deleuze and Guattari, for instance, the rhizome cannot support the notion of a structure. They state:

> It is certain that they [the lines] have nothing to do with a structure, which is never occupied by anything more than points and positions, by arborescences, and which always form a closed system, precisely in order to prevent escape. (203)

A posthuman multiverse does not necessarily exclude the notion of a structure, but approaches such a notion in a process-ontological way. For instance, if we think about the

201 For a development of all these notions from a specific posthuman standpoint, see Braidotti 2002.

possibilities of parallel dimensions constituted by quantum strings, the specific vibrations which would allow the coherence of each dimension, could be seen as a type of vibrational structure, even if not a definitive nor an essential one. Such vibrations, according to the String Theory, constitute and are constituted by the strings, so that the vibrational structure itself is in a mode of becoming: the structure is what is constituted by the structure, with no separation. Humans, and any other manifestations of being, in the frame of the multiverse revisited through the rhizome, can be perceived as nodes of becoming in a material network; such becomings operate as technologies of the multiverse, as modes of revealing, to go back to Heidegger, thus re-accessing the ontological and existential significations of technology itself. The technologies of the self are also significant here, and can be related to those lines that we are inventing, to re-access Deleuze and Guattari through Foucault. Such technologies become crucial when postulating posthuman normative ethics and pragmatics, which, within the frame of a posthuman multiverse, cannot be separated from ontology. On some level, we are already talking in ethical terms when we are conceiving humanity (and, more in general, existence), as a material network: the way we inhabit our dimension, what we eat, what we think, how we behave, who we relate to, creates part of the network of who and what we are; this is not a disembodied network, but a material one, whose agency exceeds the political, social, and biological human realms. In such a frame, the multiverse can be perceived not only as an ontology, but as a path of self-discovery, once the self has been recognized as the others within, ultimately turning into a relational intra-activity of ontic manifestations, in agreement with Barad. The recognition of the self in such an extended network of pluri-dimensional magnitude bears ethical, social and political implications, not to mention existential ones.

A posthuman agency can be envisioned in modalities of existence which employ strategies of encounter and relationality, rather than assimilation. This complies with a posthuman type of agency where not only the human and non-human realms bear signification, but also the modalities of existence. A posthuman agency, which is necessarily related to the understanding of Posthumanism as a praxis, can be perceived as

an existential awareness which exceeds the notion of a one-dimensional becoming. The human, within this type of framework, turns into a network of energies, alliances, matter and perspectives, relating to any other forms of existence, allied through different material outcomes, and possibly, in different quantum dimensions, in a radical onto-existential re-signification of being. In this type of scenario, the final deconstruction between immanence and transcendence takes place, inviting the situated actors to envision their own network of both alliances and filiations beyond, and at the same time including, any specific space-time complexion. The posthuman has thus reached the final deconstruction, revealing an approach on existence which, although situated in the recognition of its own autopoietic modes, does not comply with any ontological dualism, assimilation, centralization or presumption, relationally expanding its own material and semiotic network of alliances and significations, and ultimately, recognizing itself as a monistic pluralist (or a pluralistic monist) form of becoming.

PART 2.

Philosophical Reflections on Empirical Data

Is The Post-Human A Post-Woman?

Robots, Cyborgs, Artificial Intelligence and the Futures of Gender: A Case Study

1. Premises

The 21st Century has ushered in a redefinition of the body by cybernetic and biotechnological developments. Physicality no longer represents the primary space for social interaction: the decentralization of the self into virtual bodies and digital identities has turned Baudrillard's simulacra (1981) into ultimate hyper-realities, as the growing issue of internet addiction seems to suggest. Human cloning has approached bioethical disputes and surrogate motherhood is deconstructing natural conception. The semantic demarcation between humans and cyborgs[202] has blurred. On one side, electronic pacemakers, high-tech prostheses, and plastic surgery have become accepted practices of body reconfiguration. On the other, following the route opened by Project Cyborg 2.0[203], a growing number of people have begun inserting RFIDs under their skin, in a pioneer experimentation[204] towards technological enhancement. Are these scenarios, which characterize some hyper-technological macro and micro societies of planet Earth[205], inducing a paradigm shift in the ontological and epistemological perception of the human body? If so, will gender and race, among others, represent significant categories of reformulation?

With these interrogatives in mind, between November 2010 and January 2011 I engaged in a study related to Gender and Artificial Intelligence at the Department of Cybernetics, University of Reading (England) with Professor Kevin Warwick, one of the world's

202 The term "cyborg" was coined in 1960 by Manfred Clynes and Nathan Kline, and refers to a being constituted by both biological and artificial parts (Clynes / Kline 1960).
203 On March 2002 a one hundred electrode array was surgically implanted into the left arm of Professor Kevin Warwick (Warwick 2002) – I will present his experiments more in details in the next section.
204 There is not enough data available yet to determine the long term side effects of such implants on humans.
205 I would rather use this geo-political characterization instead of broadly applied "Western societies", to indulge into a more precise account of *glocalized* (the survival of local specificities in a globalized world) policies.

pioneers in cybertechnology. The specific question which motivated me to pursue such a research was: how and to what extent do gender and the intersectional differences characterizing the human species inform the development of Artificial Intelligence and Artificial Life? In this context, I formulated a questionnaire which was answered by more than one hundred students and researchers of the Department. The results offered insightful perspectives on the futures[206] of gender, as well as on its instrumental use and hermeneutical role in the configuration of the forthcoming times. The questionnaire was also conceived as a key to better understand which path the current technological imagination is taking, and who will be its most likely beneficiaries in the long term. As a posthuman philosopher, I had been reflecting on futures which could be desirable for different species (human and non-human, earthly and alien, natural and artificial – if this specification still bears sense), as well as for different types of humans who had been historically excluded from the social, political and cultural hegemony, such as women, African-descendents, gays and lesbians, differently-abled people etc. The futures do not appear out of nowhere: they are based on the presents, the pasts, and the ways they are being conceived. To think about the future might contribute to its emergence.

Unlike Antihumanism, Posthumanism does not dismiss agency, and it actually recognizes its own hermeneutical role, as well as its political and social impact, in the constitution of "reality." Its field of interests stretches from the critique of the humanistic subject, to roboethics and the evolution of the species, and it necessarily relates to Futures Studies. Social Constructivism[207] and Feminist Epistemology[208], among other reflective frames, have noted extensively how science is a constitutive aspect of the human cultural domain, and shares its situated beliefs and inherited biases. The perception of knowledge as a performative process constantly reshaping and reaffirming (or negating[209]) itself – which

206 I am using the plural form to stress the idea that there is no single future, but many possible ones. I would also like to remark that time is neither objective nor linear: there are as many presents, pasts and futures as the subjectivities who are enacting them.

207 On the sociology of scientific knowledge, see Latour / Woolgar 1979; Latour 1987. For a critical account of Social Constructivism, see Latour 2003.

208 I will delve into Feminist Epistemology specifically in section 2.3.

209 Counter-movements, for instance, destabilize the hegemonic knowledge producing other types of knowledges, which might eventually become hegemonic within alternative circles.

radically differs from a fixed notion based on an objective reality that only needs to be discovered – was emphasized in the humanities through the postmodern shift, and has been differently engaged upon by the "hard" sciences. Actually, one could argue that a major input for such a reformulation came from the field of Physics: starting with Einstein's relativity, passing through Quantum Mechanics and String Theory. However, at present, scientists and humanists generally work separately on related subjects, only to meet each other in the battlefield of bioethics. Reflecting on gender within a posthuman paradigm, I saw the need to create a dialogue with the researchers directly involved in designing some of the technological futures. Such a move generated a very productive exchange. Before presenting the results of my investigation, I will introduce the work of Kevin Warwick, along with a critical approach to AI from a posthumanist perspective based on gender, to better comprehend why I decided to focus my research in this specific direction.

1.1 Kevin Warwick

Kevin Warwick is known to be the first human being to have a microchip inserted in his body; he has also been considered the first cyborg, because he used the technologies currently available not only to restore lost human functions (such as sight, hearing, or motor action of a limb), but to enable new capacities that no human had previously experienced[210]. Warwick gained worldwide notoriety through the series of experiments known as "Project Cyborg" (1998 - 2002). In the first one "Cyborg I" (1998), he inserted a microchip under the skin. The signal was picked up by a computer on his arrival to the building of Cybernetics, at the University of Reading; it was set to open doors, turn on the lights and read his e-mails[211]. The second and most famous experiment dates back to

210 In the words of Kevin Warwick:

> I was born human. / This was merely due to the hand of fate acting at a particular place and time. But while fate made me human, it also gave me the power to do something about it. The ability to change myself, to upgrade my human form with the aid of technology. To link my body directly with silicon. To become a cyborg – part human, part machine. This is the extraordinary story of my adventure as the first human entering into a Cyber World; a world which will, most likely, become the next evolutionary step of humankind. (2002: 1)

211 Both the first as the second experiments are explained in details in Warwick's autobiography "I,

2002, when a one hundred electrode array was surgically implanted into the median nerve fibres of his left arm. The implant connected Warwick's nervous system to the internet, producing a series of ground-breaking results. For instance, while based at Columbia University (New York), he was able to control a robotic arm placed at the University of Reading. A crucial aspect of the experiment was the attempt to create a form of technological telepathy or empathy, using the Internet to communicate signals. In order to pursue this outcome, another simpler array was implanted into the arm of Warwick's wife, Irena Warwick, culminating in the first purely electronic communication between the nervous systems of two human beings. The results broke new ground regarding the ways the interface between humans and computers could be conceived. In Warwick's words:

> It really was a super-human power, meaning that, as a cyborg, your physical powers controlled directly from the brain are not restricted to your immediate body's capabilities. In essence, your cyborg body extends as far as you have an electronic connection. With the internet this means that your body extends, as a network, around the world. (2002: 258)

Note the extension of the notion of the body as a network, which we have previously emphasized from a materialist perspective (Part 1, section 23). The possibilities opened by such experiments are extreme. For instance, as Warwick pointed out:

> In the future it would mean that by connections to the nervous system and ultimately the brain, technology could be operated and controlled via the internet from just about anywhere in the world, merely by thinking about it. Not only that, but it would be possible to control a person's movements and actions at a remote location, by selecting and sending signals across the internet from a computer. (260)

Such cutting-edge results carried a consistent amount of ethical issues. Aware of it, in

Cyborg" (2002).

2006 Warwick founded FIDIS ("Future of Identity in the Information Society"), a team focussed on ethicbots – that is, the ethical aspects of cyborgs and robots –, and the future of identity, based at the University of Reading. Intrigued by his researches, in November 2009 I went to Vienna specifically to meet with Professor Warwick at the Conference "Android and Eve," held at the Institute of Molecular Biotechnology. His lecture aroused great interest and major concerns. In particular his statement: "Human beings are destined to be a subspecies" caused controversy. In his view, machines are going to become more intelligent than humans, at least of those humans who will not merge more dramatically with technology[212]. In my opinion, he was not attempting to predict a future still uncertain, but was posing into question a fixed notion of the human, emphasizing instead its dynamic and constantly evolving side. His research was not calling for an abandonment of the human body in favor of the promise of immortality through virtual existence, common in AI and transhuman rhetorics. He was engaged in the merging of the flesh with the machine; in other words, he was already thinking like a cyborg. After listening to his talk, I was sure: he was the scientist I wished to work with. Let's take a step back.

In Western Philosophy, the re-inscription of the body in the knowledge paradigm was enacted in the 20th Century by different schools of thought – notably Phenomenology in the first half of the Century, and Feminism and Critical Race Theory in the second half. Still, the field of Artificial Intelligence, as well as Transhumanism, is largely marked by the dualistic cartesian split of mind/body. AI pioneers such as Marvin Minsky and Hans Moravec have presented the biological body as something to be overcome. For instance, in his classic study significantly entitled "Mind Children" (1988), Moravec stated:

> What awaits is not oblivion but rather a future which, from our present vantage point, is best described by the words 'postbiological' or even 'supernatural'. (1)

212 Such a view is presented in Warwick's book "March of the Machines: The Breakthrough in Artificial Intelligence" (1997).

In his "Society of the Mind" (1985), Minsky totally dismissed the role played by the body in the constitution of the mind, reducing to the brain any biological kinship. Following the same approach, transhumanist thinkers generally present mind uploading (the hypothetical process of transferring a conscious mind from a brain to a non-biological substrate), as a possibility which will be actualized in the near future with no significant loss[213]. Such a prevision genealogically stands as a cyber twist to the dualism which has been structural to the hegemonic Western tradition of thought: the symbolic flesh (a.k.a. body / material / female / black / nature / object etc.) shall be overcome by the symbolic data (a.k.a. mind / virtual / male / white / culture / subject etc.)[214]. Even though technology is often portrayed as an external source which might guarantee humanity a place in post-biological futures, its ontology is not other-than-human. As we have previously stated, technology is a specific trait of the human historical outfit, among and connected to many other aspects, such as empathy, reproduction, communication, survival, spirituality, desire. Humans are technological beings, both in their actions and in their biologies. Warwick's experiments are significant in this regard. For instance, when the implant was taken off his arm, there was no sign of infection. On the contrary, vessels had grown all around it: the body had recognized the chip as its own (Warwick 2002: 291). The successful results of his work are connected to the fact that Warwick, different from other AI researchers, perceives technology as an embodied process. In his words:

> What is of considerable interest now, and will be even more so in the future, is the effect of the body on the intellectual abilities of the body's brain. Ongoing research aims at realising an AI system in a body – embodiment**[215]** – so it can experience the world, whether it be the real version of the world or a virtual or even simulated world. Although the study of AI is still focused on the AI brain in question, the fact that it does have a body with which it can interact with the world is seen as important. (2012: 10)

213 We have presented such a view in Part 1, section 4.
214 On the specific parallel flesh/female and metal/male, see Braidotti 2003.
215 Bold in the text.

His standpoint allows him to take full advantage of what has been defined as the most perfect machine, the biological body; it also grants him the possibility to expand the field of his enquiry. Since 2005, Warwick is involved in the development of biological AI, defined as "a form of AI realised by growing biological neurons"[216]. In his practice of merging the flesh and the machine through embodied narratives, in his scientific approach which empirically dismisses the separation of biology and technology in an evolutionary perception of species, I see the feminist potentials of his vision.

1.2 Post-Man or Post-Woman?

As we have previously seen, "human" is a situated concept, in the sense that not every human being has been considered as such. If the human is not a comprehensive notion, of which human is the posthuman a "post"? Is it a post-woman? A post-man? Before elaborating further, I would like to make a note on the way "post-woman" has been employed in the title of this study. It has often been stated that there is no Woman, but there are many different women: "post-woman" has to be intended here as the singular form of such an extended notion. Going back to our question, while the posthuman has been mainly defined as a post-humanism and a post-anthropocentrism, I would like to stress the posthuman, more generally, as a post-centrism *tout court*: a "post" which is constantly opening possibilities and does not comply with hierarchical ways of thinking. Currently, the future reflected upon in the West is mostly a technological one. Such a questionable preference comes with a set of disadvantages, not only from a post-centric perspective. The historical dimension of technology is a crucial issue, when it comes to a proper understanding of the posthuman agenda, but technology itself cannot be accounted as a comprehensive concept. Feminist and womanist studies have exposed the racist and sexist frame within which the discourse on *techne'* has been formulated. Judy Wajcman, for instance, in "Feminism Confronts Technology" (1991) has noted how only specifically gendered types of technologies have been referred as such:

216 *Ibidem:* 139.

> The very definition of technology, in other words, has a male bias. This emphasis on technologies dominated by men conspires in turn to diminish the significance of women's technologies, such as horticulture, cooking and childcare, and so reproduces the stereotype of women as technologically ignorant and incapable. (137)

The predominant male presence in technological fields is a related aspect, as Wajcman stresses:

> A key issue here is whether the problem lies in men's domination of technology, or whether the technology is in some sense inherently patriarchal. (13)[217]

The generic concept of "men" is not exhaustive either, as Eileen B. Leonard, echoing the critiques offered by postcolonial and critical race theorists, has pointed out in "Women, Technology, and the Myth of Progress" (2003):

> We may ask, along with bell hooks, '*which* men?' Since minorities are systematically steered away from technology, it has become a major instrument of *elite* male domination. (19)

The feminist debate on technology generated in the Nineties, at first mirrored the one on science[218], which developed with the rise of Feminist Epistemology and produced outstanding approaches, such as the Standpoint Theory, Strong Objectivity and Situated Knowledges[219]. But technology, in its commitment to the making of artifacts (which could be physical as well as virtual), radically differs from science[220]. In the words of Deborah G. Johnson:

217 For further reflection, see Chapter 1 "Feminist Critiques of Science and Technology" (*ibidem:* 1-26).

218 As Wajcman has pointed out:

> An initial difficulty in considering the feminist commentary on technology arises from its failure to distinguish between science and technology. (1991: 13)

219 I will present them more extensively in section 2.3 of this article.

220 Even within the current feminist debate on New Materialisms, the focus on matter and processes of materialization is more scientific than technological. See, for instance Coole et al. 2010.

> The materiality of the human-made world is something that has not been fully addressed by feminism. (2010: 40)

Since artifacts are created outside of sexual reproduction, it may seem obsolete to think on technology through the gender paradigm. And still, gender is already shaping the way robots and AI are being developed: bodies matter even in their disembodiment. Anne Balsamo, in "Technologies of the Gendered Body: Reading Cyborg Women" (1996), articulates it epistemologically:

> The cyborg provides a framework for studying gender identity as it is technologically crafted simultaneously from the matter of material bodies and cultural fictions. (11)

More generally, Katherine Hayles has stated:

> The body is the net result of thousands of years of sedimented evolutionary history, and it is naive to think that this history does not affect human behaviors at every level of thought and action. (1999: 284)

Histories and herstories of the human body are herstories and histories of the cyborgs and of the posthumans: future generations of humans, post-humans and intelligent machines will have to process them, in order to access a deeper understanding of themselves. What Moravec stated about the mind, in his dualistic approach, also applies to the body:

> It will be in our artificial offspring's power, and to their benefit, to remember almost everything about us, even, perhaps, the detailed workings of individual human minds. (1988: 1)

We can add to the end of this sentence: "(...) and the social hermeneutics of human

bodies". Posthumanism has to be rooted in a comprehensive critical account of what it means to be human, and humans are differently embodied. When I engaged in my research with Professor Warwick, I had in mind some crucial questions related to this scenario. Was the ontology of the cyborg being investigated in gendered terms? Were cybernetic developments mainly pursuing paths which had been historically associated with a white male symbolic domain, such as rationality and logic? And, in the long run: had this kind of questions any relevance at all in the evolution of the species?

2. Questionnaire "Artificial Intelligence and Gender"

2.1 Methodology

There are many issues related to methodology and contents, when conceiving a questionnaire. My purpose was to understand how sex and gender, as biological, cultural and symbolic frames, had to do with the development of AI. After attending lessons and developing a dialogue with the students I was going to interview, I realized that most of them were not familiar with Gender Studies or feminism. I consulted with Professor Warwick; we agreed that the best results would follow the questionnaire being formulated in the most direct and accessible way. Although aware of the postmodern and queer criticism of the traditional female/male binary, the questionnaire employs it as a cultural and symbolic reference, which in no way is to be accounted in an essentialist manner. I would also like to note that race and ethnicity were directly addressed in one question only; a much deeper investigation is still needed in this particular respect. The questionnaire was articulated in eleven questions, administered to first year students, third year students and Ph.D. candidates, and answered by more than one hundred interviewees.

GENDER OF THE INTERVIEWEES

FIGURE 1.

(p.171)

GENDER OF UNDERGRADUATE/POSTGRADUATE STUDENTS
DEP. CYBERNETICS, UNIV. OF READING – 2004/2010
FIGURE 2.
(p.172)

The feminist acknowledgment that technology is currently a predominantly male field correctly applies in this particular case. As displayed in Figure 1 and 2, the gender of the respondents was mostly male, reflecting the current percentage of the students of the Department, as well as the predominant gender of the students enrolled since the beginning of the Program in 2004. The main age group was early twenties. The prevalent ethnicity was English Caucasian, but a consistent number of students had different ethnic and national backgrounds. Note that, here, I will only focus on the results related to seven of the eleven questions, in order to concentrate on the crucial topics emerged. However, I am including the complete list below for scientific transparency. Consider that minor differences would have applied to the questionnaire if submitted to first year students, third year students or Ph.D. Candidates; and that questions 3 / 4 / 5 / 6 / 7 / 8 / 10 were further formulated in "Can you briefly explain why?", to provide qualitative data, as well as quantitative.

1. When you think of a cyborg, do you think in terms of he / she / it / none?
2. When you think of a robot, do you think in terms of he / she / it / none?
3. Do you think gender has any role in the production of AI?
4. Do you think there is any difference if a robot is conceived by a male or by a female scientist?
5. Do you think of gender as a significant category in the future?
6. Do you think that the new interaction between humans and AI will change the gender balance?
7. Do you think that one of the two biological sexes will be more advantaged by the creation of AI?

8. Would you consider relevant to address gender in any of the academic courses related to AI?
9. Can you think of any experiment in AI where the gender difference would be valuable?
10. Do you think concepts such as race and ethnicity will be significant in the development of AI?
11. Why are you interested in Artificial Intelligence?

2.2. Cyborgs and Robots

1. When you think of a cyborg, do you think in terms of he / she / it / none?
2. When you think of a robot, do you think in terms of he / she / it / none?

While posing these two questions, I was curious to learn in which kind of gendered terms the students were imagining AI. Science and technology are not only performed, they are first imagined. In Einstein's words: "Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world" (Viereck 1929, 117). But imagination is not separated from cultural, social and political contexts, although it can transcend them. A correlation to be reflected upon is the one between technology and science-fiction: such fields constantly inform each other. For instance, the term "robot" was coined by Czech author Karel Čapek in his play "R.U.R Rossum's Universal Robots" (1920); the word "cyberspace" was first introduced by cyberpunk writer William Gibson in his novelette "Burning Chrome" (1982). When I asked the question: "Is science-fiction a source of inspiration for scientists?"[221], Kevin Warwick answered:

> Science fiction can not only accurately represent potential future scenarios (…). It can certainly give ideas to scientists (…); it can raise philosophical questions for us all. (2010: n. pag.)

221 I had the chance to pose this question in a series of video-interviews which I recorded with Prof. Warwick during my staying at the University of Reading, and which I later posted online (Ferrando et al. 2010). What follows is an original transcript.

Furthermore, Warwick added that the inspiration to pursue his own experiments came from Michael Crichton's novel “The Terminal Man” (1972):

> When I had my own implant in 2002 in my nervous system, I read again Crichton's chapter on the implantation, and it was amazing the overlap in the hospital, in the operating theater, what actually happened, the procedures, how long it took and so on: so many similarities, it was unbelievable!” (*ibidem*).

Science-fiction can indeed offer insights and inspiration. And still, from a gender perspective, it is surprising how the large majority of mainstream sci-fi, as well as Japanese anime and manga, not only keeps the patriarchal paradigm untouched, but actively serves as a cultural mean for perpetuating social stereotypes. Female characters – whether they be humans, robots, programs or other entities – are mainly regarded as *loci* for comments on sexual and racial conventions. In the words of Mary Doane:

> Although it is certainly true that in the case of some science fiction – particularly feminist authors – technology makes possible the destabilization of sexual identity as a category, there has also been a curious but fairly insistent history of representations of technology which work to fortify – sometimes desperately – conventional understandings of the feminine. (1990: 163)

The tendency to reaffirm such stereotypes is more evident in movies than in fiction. As Linda Janes has observed:

> The liberatory potential of the cyborg image for challenging the binary impasse of gendered identity, although creatively explored in feminist science fiction literature, has not yet been effectively deployed in the film genre. (2000: 99-100)

Similar to mainstream iconographies, the results of the questionnaire placed a clear emphasis on male characters: while the cyborg was thought of as neutral or male by the

large majority, out of more than one hundred interviewees, no-one thought of robots in feminine terms, as we will see in the following figures.

Question 1

FIGURE 3.

(p.173)

Question 2

FIGURE 4.

(p.174)

Alison Adam, in her extensive work "Artificial Knowing" (1998) provides a sustained critique of AI, arguing that "a gendered vision of the world is inscribed in the technology of AI" (1), which is male: "the knowing of women (…) is left out of AI's thinking machines" (*ibidem*). Such a genealogy of knowledge implies that social exclusivism and biological essentialism, which have historically sustained patriarchy, may be re-inscribed in the ontology of the robot. In this case, there is the risk that the difference characterizing robots will turn into a stigma for new forms of discriminations based on how far such a difference can be placed from the human (or white male) norm.

Interestingly enough, the term "robot" is derived from Čapek's use of *robota*[222], meaning "forced labour" in Czech, which itself comes from *rab* ("slave"), that is, a subjectivity fully under the domination of another[223]. The semantics of such a notion necessarily bring along its complementary counterpart, "rebellion", which has to be eventually enacted in order to redeem the original sovereignty over the self. The fear that robots might revolt against humans and take control, is portrayed in countless sci-fi movies and literature, as

222 Čapek, *op. cit.*

223 In his pioneer work "On the Mode of Existence of Technical Objects" (1958), Gilbert Simondon (1924-1989) stated:

> Ideas about slavery and freedom are too closely bound to the old idea of man as technical object to be able to relate to the real problem of the relationship between man and machine. The technical object must be known in itself if the relationship between man and machine is to be steady and valid. Hence the need for a technical culture. (1980: 70)

well as by scientists. For instance, in "The Artilect War" (2005), Hugo de Garis affirms that the most urgent political question of this century will concern which species will be dominant, and can be summarized in his slogan: "Do we build gods, or do we build our potential exterminators?" (25). In my opinion, the core question is a different one. Specifically: why do some humans need to constantly think in terms of war, confrontation, lack of dialogue? Such a question relates to the structural dualism employed by the traditional subject of hegemonic Western accounts, which has historically been white and male, to create his own narratives. His epistemologies have been sustained through generative polarities, such as male/female, white/black, citizen/alien, hetero/gay, human/machine, echoing the primal psychoanalytical negotiation between the child and the mother, the self and the other. His cartographies of power have been highly hierarchic, guaranteed by an efficient system of control constituted by related means, such as: official laws, unpunished violence, scientific claims, sincere love, fears and superstitions, just to mention a few. Only recently, women, African-descendents and people of colors other than white, gays and lesbians, differently able people, amongst other neglected "others", have successfully reclaimed their space as subjects of their own discourses. Politically-correct policies have banned the legal use of discrimination in the official narratives of Western contemporary societies. The space of the symbolic "other", left empty, has been filled by the automata, which has turned into the new differential category to fear and be fascinated by, the next reverse mirror reflecting true humanhood through its non-human compound, the slave who should never rebel, and the god which, in virtue of its superiority, cannot be comprehended. The robot is becoming the receptacle for the irrational, the subconscious, the mythical, in a similar way to which other subjectivities have been historically accounted.

Envisaging the future does not create the future *per se*, but it may influence the way other people perceive it, and ultimately imagine it, with all the generative power that such an imagination can perform in the actual constitution of reality. This is one of the reasons why I became interested in this field, and this is why I would like to think about robots through a different paradigm than the love/hate one, which has been historically

responsible for much cultural and physical abuse. The Philosophy of the Difference, Feminist Epistemology, Subaltern Studies and Intersectionality, among other critical frames, offer crucial insights on how to develop emphatic approaches in the interaction with different forms of known and hypothetical entities. Such standpoints, risen from the "others" of the traditional subject of the Western hegemonic discourse, locate the starting point of their reflection in the self, and base their developed narratives on phenomenological experience, which is acknowledged as related to social and cultural contexts. In so doing, they deconstruct the theoretical necessity of the symbolic other / the mirror / the speculum to conceive their own existence, and offer crucial hermeneutical tools in dealing with the singular[224] multiplication of differences.

2.3 Feminist Epistemology and AI

3. Do you think gender has any role in the production of AI?
4. Do you think there is any difference if a robot is conceived by a male or by a female scientist?

The Standpoint Theory, which arose in the Nineties amongst feminist theorists such as Dorothy Smith, Donna Haraway, Sandra Harding and Patricia Hill Collins[225], emphasizes the starting point of knowledge production. Each human being views the world from a specific standpoint, which is informed by their embodiments, social and cultural structures, religious beliefs, time and space, among other factors. The notion of "situated knowledges", derived from such a reflection, identifies the pursuit of disembodied neutral objectivity, traditionally claimed by scientific practice, as a rhetorical move which has historically benefited those who claimed it, typically white Western males. Technology and science are not free from sexist, racist and Eurocentric biases; their social construction is embedded in their methods and practice[226]. Objectivity, on the other end,

224 The adjective is employed here in relation to the Technological Singularity (Kurzweil 2005).
225 A comprehensive collection of texts on this Theory, can be found in: Fox Keller / Longino 1996; Harding 1991.
226 See note 202.

is situated and embodied; in Haraway's words: “Feminist objectivity means quite simple *situated knowledges*” (Haraway 1996b: 253). Since marginalized and/or oppressed individuals and groups must learn the views of those who belong to the hegemony, while the ones located at the center of the hegemonic discourse are not required to learn about the margins, they can be considered bicultural, and their perspectives may be seen as more objective. This specific claim developed into the notion of “strong objectivity”. The formation of questions 3 and 4 was informed by these theories. The answers of the students were mixed, displaying a variety of perspectives.

Question 3

FIGURE 5.

(p.175)

Some of the reasons given by respondents as to why they answered “**Yes**” are: “More males seem interested in AI” and “Robots made by females will probably look nicer”. The first answer exposes a crucial aspect which has already been addressed in this article. The second emphasizes design as one of the markers of the gender difference in technology. This viewpoint, which is very common, has received a number of criticisms by feminist thinkers. Linda L. Layne, for instance, presents a specific example to make her point: when some manufacturers realized that they had designed their phones for men, and not for people, they simply thought about altering the design. In her words:

> The next question they had to ask is how are women different from men? A common answer – the most common – is that women have a different aesthetic sense from men. (2010: 4)

She refers to it as the “shrink it and pink it” approach: when it comes to include gender in new technology, the first input is simply to change the color to more vivid ones (*ibidem*: 5). On the other side, it is important to notice that design is not only a component of the

engineering process, but is crucial in the reception of technology by users[227] – think about the centrality of notions such as accessibility and usability in the making of technology.

Another answer to question 3 was: "When machines become more autonomous and can more clearly define their identity, gender might be important because society might find it easier to accept them". Such reflection emphasizes gender identity as a social code which will resist its biological legacies. Let me explain this further. If gender has been historically constructed around the sexual difference, now that no biological nor sexual motives are connected to the genders of the robots, gender finally proceeds in its raw hermeneutical vestiges. In other terms: even if sex will have no biological or physiological significance for robots, gender – its cultural apotheosis – will still be valuable for humans (at least in the near future), in order to relate more easily with our robotic significant others. In their series of experiments, Clifford Nass and Youngme Moon (2000) have illustrated how people tend to relate to computers in the same way they would relate to other humans, including keeping the gender stereotypes and biases untouched, when the robot is given a female or a male voice[228]. To make humans at ease with robots, roboticists apply features which do not have any function other than reception. For instance, the simulation of emotion through various facial expressions, vocalizations, and movements by the robot Kismet[229], was performed for the sole purpose of engaging the human audience.

Some of the people who answered "**No**" to this question, also gave insightful reasons. For instance: "I don't think AI is exclusively the pursuit of replicating human intelligence and therefore is free of the boundaries of gender difference". AI is another type of intelligence, and it should not be reduced to the human range. Kevin Warwick has elaborated greatly on this aspect:

> Computers may well understand things in a different way to humans; animals

227 This point is further developed through the comments on one answer given to question 6.
228 See specifically the section "Over-Use of Categories" (Nass et al. 2000: 84-6).
229 Kismet was created by Dr. Cynthia Breazeal at MIT in the late 1990s.

> probably understand things in different ways to humans; some humans probably understand some things in different ways to other humans. This doesn't make one intelligent and another not. It merely means that one is intelligent in a different way to another. (2012: 64)

In his view: "We need a viewpoint on AI that is much less anthropomorphic than the classical AI" (*ibidem*: 69). To clarify what Warwick means by this, I am going to quote Moravec on machine intelligence[230]:

> Unfortunately for humanlike robots, computers are at their worst trying to do the things most natural to humans, such as seeing, hearing, manipulating objects, learning languages, and commonsense reasoning. This dichotomy – machines doing so well things humans find hard, while doing poorly what is easy for us – is a giant clue to the problem of how to construct an intelligent machine. (1988: 9)

Moravec's human-centrism presents the robotic difference as a "dichotomy" instead of a complementarity, and perceives it as problematic instead of enriching: for him, the final prototype of intelligence is human intelligence. Another answer to question 3 was: "No AI would ever be able to produce sperm nor knit a baby in the womb". This observation leads to a reflection on the sexual interaction between humans and robots. David Levy thinks that humans will be marrying robots in the near future:

> Many humans will expand their horizons of love and sex, learning, experimenting, and enjoying new forms of relationship that will be made possible, pleasurable and satisfying through the development of highly sophisticated humanoid robots. (2007: 22)

The fact that no biological reproduction will result from such an exchange may be seen as

230 Let's consider that Moravec was writing in 1988, even though many AI researchers still hold this type of approach.

unproblematic by many: already at present, numerous human couples cannot, or decide not to, procreate. I would like to quote one last "Yes" response: "It can be thought of as related to a toaster: a machine needs no gender". The ones who might still need it are humans, in order to better interact with the machine.

This is one of the answers responding to "**Maybe**": "I feel more women should be involved in the development of AI tools. I feel men in AI are obsessed with "creation", whereas, because women give birth, women in AI are more concerned with building effective tools which enhance humans". This perspective offers an interesting twist to common biases on female scientists. Their ability to procreate is not seen as an obstacle which might cause them to give priority to building a family instead of pursuing scientific research, as a widespread prejudice recalls. On the contrary, such a capacity is presented as an epistemological advantage, which may allow women to focus on creating "effective tools which enhance humans", rather than trying to guarantee themselves a symbolic progenies through their researches. This reflection recalls Moravec's classic study "Mind Children", in which he states:

> Unleashed from the plodding pace of biological evolution, the children of our minds will be free to grow to confront immense and fundamental challenges in the larger universe. We humans will benefit for a time from their labors, but sooner or later, like natural children, they will seek their own fortunes while we, their aged parents, silently fade away. (1988: 1)

Such an oedipal view is sustained by the dualism "us/them" (an alternative formulation of the self/other parallel, previously discussed); it also fails to include concepts such as empathy or care, which characterize the relationship parents/children in the history of affection. Some feminist theorists have elaborated on this recurring metaphor. Adam remarks:

> There is the notion of 'playing god' in the creation stories of the artificial A-Life

> worlds, where a masculine god, or rather an active male programmer, breathes life into a female program. (1998: 152)[231]

From a psychological perspective, a womb envy seems to motivate this type of researcher.

Question 4

FIGURE 6.

(p.176)

Question 4 received a light predominance of "No", followed by "Maybe", and lastly by "Yes". Among the answers motivating the "**Yes**", one of the respondents wrote: "A robotic fridge that targets people and throws beer to them is far more likely to be a male invention. So gender can affect the purpose of a robot". Even though this example might seem trivial, I would like to briefly reflect on it. The relation between inventions and inventors is not easily predictable, but is still sustained by context and experience. Layne affirms:

> Although feminist technologies need not be designed by women – that is, the sex of the designer is not a requirement – it is more likely that feminist technologies will be designed by women because the life experience of a designer informs every aspect of design, including problem identification and selection. (2010: 8)

Before moving to the next question, I will quote two more answers, one formulated on the "**No**": "People like to revolve around standardized robots"; one on the "**Maybe**": "Depends if the scientist sees differences in gender roles. This difference may unknowingly come out in their work". While the former reflection underlines the importance of establishing a common code which humans can employ to interact with different kinds of robots, the latter stresses the urgency for scientists to situate

231 Adam dedicates the subchapter "A Meat-Free Existence" entirely to these aspects (*ibidem:* 167-9).

themselves, in order to be aware of the limitations that their standpoints might bear.

2.4 Futuristic Gender

5. Do you think of gender as a significant category in the future? Yes, No, Maybe

Postgenderism[232] refers to an hypothetical phase of the future during which the human sexual difference might be voluntarily overcome through the application of advanced biotechnologies. Its narratives, which are informed by Transhumanism, risk falling into a techno-reductionism which does not account the cultural and social ramifications of gender identity. Although the term was first found in "A Cyborg Manifesto" (1985)[233], Donna Haraway has stated: "I have no patience with the term 'post-gender'. I have never liked it" (2004: 328), as she explains:

> Gender is a verb, not a noun. Gender is always about the production of subjects in relation to other subjects, and in relation to artifacts. (...) Things need not be this way, and in this particular sense (...) I approve of the term 'post-gender.' But this is not 'post-gender' in a utopian, beyond-masculine-and-feminine sense, which it is often taken to mean. (*Ibidem*: 328-9)

I am offering a brief genealogy of the term because, although its semantics might suit the reflections which drove me to conceive question n. 5, its pragmatics do not comply with them. In the future, gender will most likely evolve into something different, and thus create a "post", which does not imply cancellations or neutralizations. Such an evolution

232 Not to be confused with transgenderism which, in a very general way, can be defined as not conforming to gender norms; nor with transsexuality, which is related to the sexual reassignment surgery. For further information on these different terms, see Nagoshi et al. 2010. For more material on Postgenderism, see Dvorsky et al. 2008

233 Specifically:

> The cyborg is a creature in a postgender world: it has no truck with bisexuality, pre-Oedipal symbiosis, unalienated labor, or other seductions to organic wholeness through a final appropriation of all the powers of the parts into a higher unity. In a sense, the cyborg has no origin story in the Western sense. (Haraway 1985: 51)

might as well provide a multiplication of genders, not necessarily related to the feminine and masculine archetypes[234]. The answers given by the students were mixed, reflecting the number of possibilities opened by such a question.

Question 5

FIGURE 7.

(p.177)

One of the responses given to formulate on the "**Yes**" was: "It will remain as significant as it has always been, but individuals will have more choices as to whether they want to be identified as male or female". This answer focusses on a constitutive aspect of virtual reality. The possibilities related to experimenting with different digital identities, and specifically, to gender-role playing, have been widely discussed by Cyberfeminism since the Nineties, highlighting both its potentials and its limits. For instance, in her book "The War of Desire and Technology at the Close of the Mechanical Age" (1995), Sandy Stone, presenting the case of "Julie", a man who created a well respected female identity online, stated:

> Julie, the cross-dressing psychiatrist, demonstrated simultaneously the therapeutic possibilities of the virtual mode and the complex and difficult ways in which on-line participants choose to ground themselves in the expectation of a 'true identity' against which other quasi-identities may be judged. (171)

It is important to note that the experience offered by a gendered online identity is different from the embodied one. For instance, a female virtual persona allows one to delve into the personal perception of, and the social response to, one specific gender,

234 As Virginia Woolf has stated:

> We have too much likeness as it is, and if an explorer should come back and bring word of other sexes looking through the branches of other trees at other skies, nothing would be of greater service to humanity. (1929: 86)

Note that in 1929 the term "gender" was not employed in the current sense, and so the meaning of "sex" has to be intended more extensively.

while its biological aspects, such as menstruation or menopause, and its psychological ones, such as the assimilation of rape and sexual assault as constant potential hazards, cannot be encountered. Two more answers given to motivate the "Yes", were: "As logic and emotion develop in machine learning I believe gender will have a stronger influence", and "The 'gender' of an AI would affect how humans interact with it and thus it would become significant". The role of gender is reaffirmed both for machines, in their process of identity formation, and for humans, in their interaction with the machines.

Consider some of the following quotations from the respondents who answered "**No**": "I would hope that over time, sexism and gender stereotypes will disappear"; "As it becomes more and more common to design ourselves (think what plastic surgery will be like in 50 years) or to abandon our original bodies entirely (mental uploading etc.), gender will become obsolete". The term "obsolete" recurs in posthuman and transhuman literature, and needs a brief genealogical introduction. The first person to employ it in such contexts was the Australian artist Stelarc, who notably stated in various occasions: "the body is obsolete". In his text "From Psycho-Body to Cyber-Systems: Images as Post-Human Entities" (1998), he explains:

> It is time to question whether a bipedal, breathing body with binocular vision and a 1400cc brain is an adequate biological form. (2000: 561)

He further formulates:

> The body needs to be repositioned from the psycho realm of the biological to the cyber zone of the interface and extension – from genetic containment to electronic extrusion. (560)

He has gone so far as proposing a "Third Life"[235], where the Second Life formula of biological bodies extending their potentials through avatars will be reversed: in "Third

235 Kalinowski 2013: n. pag.

Life" avatars will be performing in the physical realm through various biological bodies[236]. Warwick himself has echoed Stelarc, referring to the possibility of developing a technology which will make telepathy possible: "Speech, as we know it, may well become obsolete" (2002: 3). I will conclude this section by mentioning one of the "**Maybe**" responses: "Technology will eventually level the gender difference with regard to abilities and chances, but opinions need to change first". Technology is a constitutive aspect of the human: its achievements are not separated from the social and cultural contexts in which they are generated and employed.

Question 6

Do you think that one of the two biological sexes will be more advantaged by the creation of AI?

F, M, I don't know

FIGURE 8.

(p.178)

When I formulated this question, I was intrigued to learn what the respondents thought in regard to the advantages brought about by their researches in gender terms. This is an aspect which is hard to foresee, as Layne remarks:

> Some feminist technologies are feminist by accident; that is, the benefit for women is an unintended consequence. (2010: 11)[237]

The most common answer submitted was: "I don't know", followed by "Male" (let's keep in mind that the large majority of the students were males), and then "Female". The following reason was offered by one respondent who answered "**Male**": "Female's tasks usually have to have a flexible approach and hence are difficult to 'automate' ". The same

236 On the risk of a Cartesian dualism in Stelarc's accounts, see Appleby 2002.

237 As an example, Layne mentions the innovations which followed the American with Disabilities Act (1990): making public spaces accessible to people with motor impairments was beneficial also to those who use strollers (*ibidem:* 11-2).

point can also apply to the opposite view. For instance, Genevieve Bell, while working as an anthropologist for Intel, recalls her surprise when, doing a research on early adopters of Wi-Fi and wireless technology, discovered that women were in fact the early adopters. She identified the reason specifically in such a flexible approach, and in the fact that women's lives are generally characterized by larger amounts of multi-tasking (Layne 2010: 19). Among the other answers given to this question: "There are more male engineers working on this field" and "Most major breakthroughs are supported by military funding: most armed forces are made up primarily of males". The latter observation emphasizes a crucial aspect not yet touched upon. The military funding has had a key role in scientific research since the early 20th century, starting with World War I and increasing massively with World War II. Computer sciences were almost entirely funded by the military in the first decades of their development. As of today, AI programs are still largely funded by defense money, which contributed, for instance, to the widely expanded military use of the unmanned aerial vehicles (UAV) (commonly known as "drones") in the last decade, along with controversies about the growing number of civilian casualties caused by them[238].

Following are some of the reasons given by the people who answered "**Female**": "Women live longer than men and so will need to be cared for more at old age"; "Females have higher incidence of Alzheimer disease". Both answers resonate with the fact that much research is being currently invested in developing robots capable of assisting with activities of daily living. For instance, Pearl was developed at the Carnegie Mellon University in 2004[239], as a nursebot that could help the elderly at home. From a gender perspective, it is worth noticing that Pearl was given a female persona, and that part of the scientific challenge was "studying people's responses to a robot's perceived gender by changing Pearl's lips and voice"[240]. The role played by aesthetics was crucial in developing Pearl, and it may as well be seen as determinant for any robot built for social purposes. Another answer to question 6 was: "Robots with AI can do all of the housework

238 On the ethics related to the military use of unmanned aerial vehicles, see Strawser 2013.
239 Professors Sara Kiesler and Sebastian Thrun led the team project.
240 Pearl the Nursebot 2004: 2.

which is predominantly done by women". House-bots have actually proven to be harder to develop than expected. One of the reasons commonly given is that housework is more resistant to automation because it is characterized by constant interaction with different objects of unpredictable shapes; on the contrary, the assembly line in a factory, for instance, consists of repetitive work accomplished with the same type of objects. From a feminist perspective, such a slow advance may be perceived as the result of a lack of interest in developing technologies which would comply with tasks traditionally done by women. Nowadays, the increasing number of single men and of the elderly population in the Western world has given priority to such a commitment, with successful results such as Roomba, the autonomous robotic vacuum cleaner commercialized by iRobot since 2002.

2.5 Races and Ethnicities

Question 7

Do you think that concepts such as race and ethnicity will be significant in the development of AI?

Yes, No, Maybe

FIGURE 9.

(p.179)

There is no gender separated from race, ethnicity, age, sexual orientation, and many other social and individual differential categories, as the intersectional approach has pointed out (Crenshaw 1989). Not having had an opportunity to formulate on this aspect in the questionnaire, I decided to invest one question specifically on the subject of race and ethnicity. A problem I immediately faced was scientific terminology. In Europe the term "race"[241] has not been reappropriated the way it has been within the US academic debates of the last decades, where the social construction of the term is a given which does not

241 For an account on the use of the term "race" in different European countries, see the section "Lets' Talk about Race", Lutz et al. 2011: 10-13.

have to be remarked each and every time. Because of the fact that my research was pursued at the University of Reading (England), I decided to include in question 7 both notions of "race" and "ethnicity" – the latter one is often employed in the European political discourse to avoid racist connotations, thus risking, on the other side, to silence the issue of racism itself. I would also like to stress the fact that, within a posthuman frame, race and its intersections with gender, class, and other categories, have yet to be addressed. In his reflection on "Racial Knowledge" (1993), David Theo Goldberg has pointed out:

> Production of social knowledge about the racialized Other, then, establishes a library or archive of information, a set of guiding ideas and principles about Otherness: a mind, characteristic behavior or habits, and predictions of likely responses. (155)

Being aware of this "library or archive of information" to which Goldberg refers, is crucial in detecting the re-inscription of racial politics within the cyborg and robotic paradigm.

The responses given by the students were mixed. These are some of the answers formulated on the "**Yes**": "Advanced AI (one that could beat the Turing Test[242]) will need to have some degree of culture associated with ethnicity"; "The assumed personality of the AI will affect its reception by certain social groups". As in the case of gender, race is perceived as significant in its hermeneutical role. Humans relate to AI through human knowledge, which is structured through categories, such as gender and race, and believes, such as sexism and racism, which actually play a key role in the formation of differential categories[243]. As Michael Omi and Howard Winant have pointed out, in their influential

242 The Turing Test was proposed by Alan Turing in his paper "Computing Machinery and Intelligence" (1950), with the purpose of answering the question "Can machines think?".

243 On this regard, Goldberg states:

> The various redefinitions of race, and transformations in the technologies of racial classification and recognition partially reflect and are reflected in the differing forms assumed by racism since the Enlightenment (1990: 295).

study “Racial Formation in the United States: From the 1960s to the 1990s” (1994):

> Everybody learns some combination, some version, of the rules of racial classification, and of her own racial identity, often without obvious teaching or conscious inculcation. (…) Race becomes 'common sense' – a way of comprehending, explaining, and acting in the world. (60)

Far from being immune from these unwritten laws, science has actually held an active part in directing and legitimizing them: in the 19th and 20th century, for instance, the scientific claim of racial superiority was popularized by what will be later defined as social darwinism[244]. Some other answers given as “Yes” remarked on the risk of ethnic and economic disparities being perpetrated: “The robot body will also be provided with voices and accents which will probably be American” and “The subjects of countries (the richest one) will get first access to these technologies”. The limits of technology in terms of accessibility has been pointed out by postcolonial and posthuman theorists. Katherine Hayles, for instance, notes how “the techno-ecstasies found in various magazines” refer to “the transformation into the posthuman as if it were a universal human condition when in fact it affects only a small fraction of the world's population” (1999: 6). It is also important to stress that the ethnic features given to the robots (for instance, “voices and accents which will probably be American”, which I would rephrase as “white American”) represent a form of neo-colonization that should not be underestimated.

The following answers were articulated on the “**Maybe**”: “Human-like robots will look like the country they have been created, e.g. in Japan they look and speak Japanese”; “Intelligence may be defined and seen differently depending on race and culture. Hence when AI is developed, the way of understanding it will be very different”. Humans relate to AI through human categories of comprehension, but these same categories may differ, depending on cultures, nationalities, social, political and religious backgrounds. For

244 Goldberg offers a sharp reflection on social darwinism, in the section: “The Evolution of Modern Racial Awareness” (*ibidem:* 61-2). For further investigation on this subject, see for instance: Hawkins 1997.

instance, in 2010 Japan hosted the first wedding conducted by a robot priest[245]. Naho Kitano, in his article "Animism, Rinri, Modernization: the Base of Japanese Robotics" (2007), associates such an open-mindedness about the spiritual relevance of robots, to the animist component of Shintoism:

> In Japan, there is a traditional belief of the existence of spiritual life in objects or natural phenomena. (...) This belief later expanded to include artificial objects, so that spirits are thought to exist in all the articles and utensils of daily use. (n. pag.)

As early as 1974, Masahiro Mori, one of the Japanese pioneers of Robotics, presented robots as spiritual beings eligible for attaining buddhahood (Mori 1974). Cultural beliefs play a crucial role in the reception and development of advanced AI, so that, while in the West robots are portrayed as the new "other" which might rebel and try to take over the world, like the golem in Jewish folklore or Mary Shelley's Frankenstein (1818), in Japan they partake of the spiritual quest.

Some of the answers formulated on the "**No**" were: "Market must be international! They won't spend fortunes with any ethnic limitations", and "Race and Ethnicity are very abstract concepts. There have always been males and females. Borders and religions always change". The former response underlines the centrality of economic profits in scientific developments. The latter points out the fact that race and ethnicity are not fixed notions, but are always changing, resonating with Omi and Winant's view of race as a fluid and dynamic social construct (Omi / Winant 1994). At the same time, this answer presents gender in a static way, while the concepts of "female" and "male" do not exist in any essentialist form, but are constantly performed and re-enacted (Butler 1999).

245 Tokyo Couple Married by Robot 2010: n. pag.

3. Concluding Remarks

Is the "post-human" a "post-woman"? The questionnaire results offer revealing points on this respect. On one side, it could be argued that AI is currently being developed under a predominantly male imagination: for instance, while the cyborg was thought of as neutral or male by the majority of respondents, none of them thought of robots in feminine terms. On the other side, gender as a social code seems to resist its biological legacies. Even if sex will have no biological or physiological relevance for robots, in the future gender[246] will be reaffirmed in its hermeneutical role, and precisely: for machines, in their process of identity formation; for humans, to better interact with the machines[247]. The relationship between humans and robots has attracted much attention from the interviewees. In respect to humans, robots are, at the same time: the other, the same and the chimera. They can communicate in a human code without being human; they can hold a mechanical body and a biological brain (think of biological AI); they have been constructed on human knowledge and categories, and still, they transcend them both. Cultural beliefs play a key role in the human reception of advanced AI, while political, social and economic interests are crucial to its developments.

Robots are going to evolve in unique and peculiar ways, which are hard to predict. The main risk run by humans consists in turning the robotic difference into a stigma for new forms of racism, based on how far such a difference can be placed from the human norm. To osmose with the robot ontology, humans have to undergo a radical deconstruction of the human as a fixed notion, emphasizing instead its dynamic and constantly evolving side, and celebrating the differences inhabiting the human species itself. For this reason, I stress the importance of employing critical frames such as the Philosophy of the Difference, Feminist Epistemology, Critical Race Theory, Postcolonial Studies, Queer Theory, Disability Studies and Intersectionality, among others. Adopting such standpoints will allow humans to generate an emphatic approach, preventing them from turning the

246 Here utilized as an umbrella term.

247 A similar reflection seems to apply to race as well, even though such an investigation still need to be elaborated.

robot into their new symbolic other, and so falling into the dualistic paradigm which has historically characterized Western hegemonic accounts, and which has been articulated in opposites such as: self/other, male/female, white/black, human/machine. Reflecting on this interaction among species has not only a scientific value, but a social and political one. It ultimately offers a perception of the difference as a constituent of the unity of every and each form of being, an evolutionary trait of existence. In the long run, such an integral approach may allow humans and robots to fully develop their interconnected potentials, eventually facilitating an original interspecies venture into the existential quest.

Figures

FIGURE 1

Gender of the Interviewees

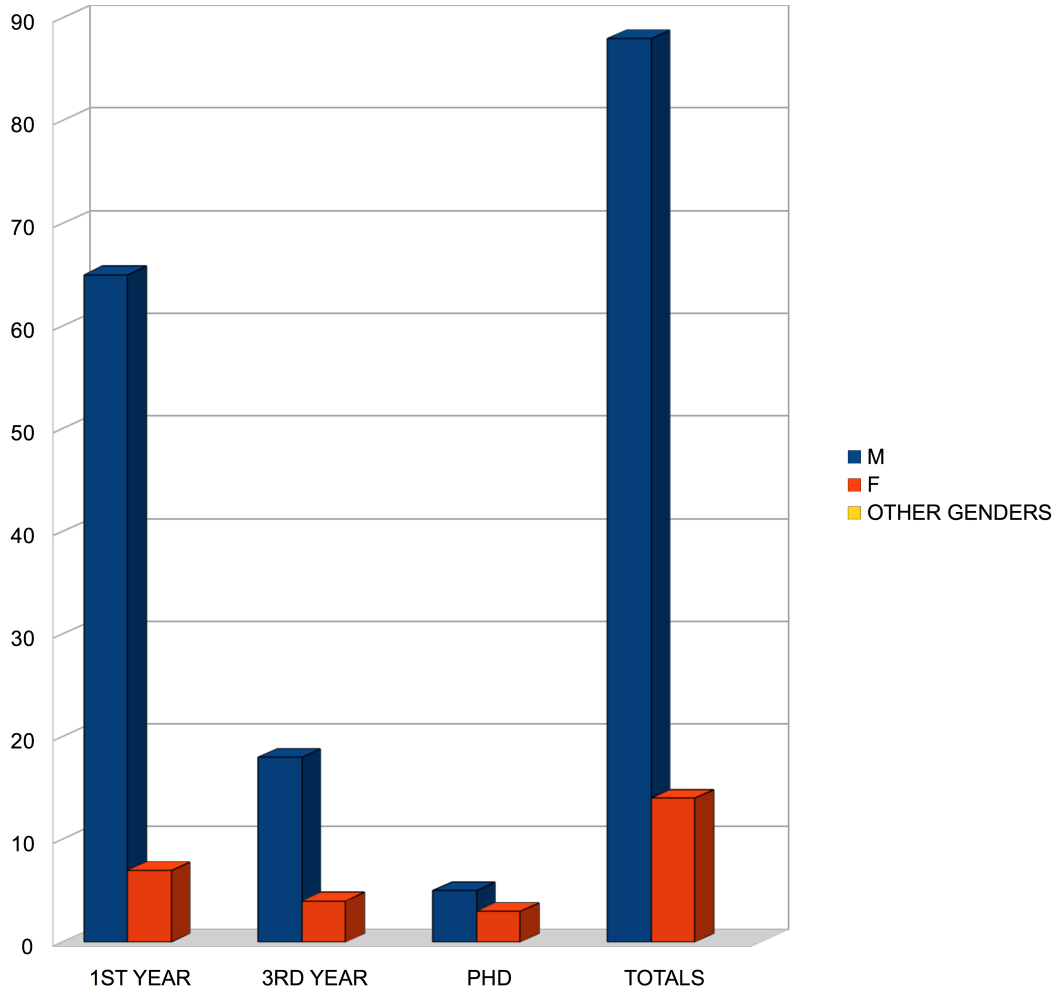


FIGURE 2

Gender of Undergraduate / Postgraduate Students

Department of Cybernetics, University of Reading, 2004/2010

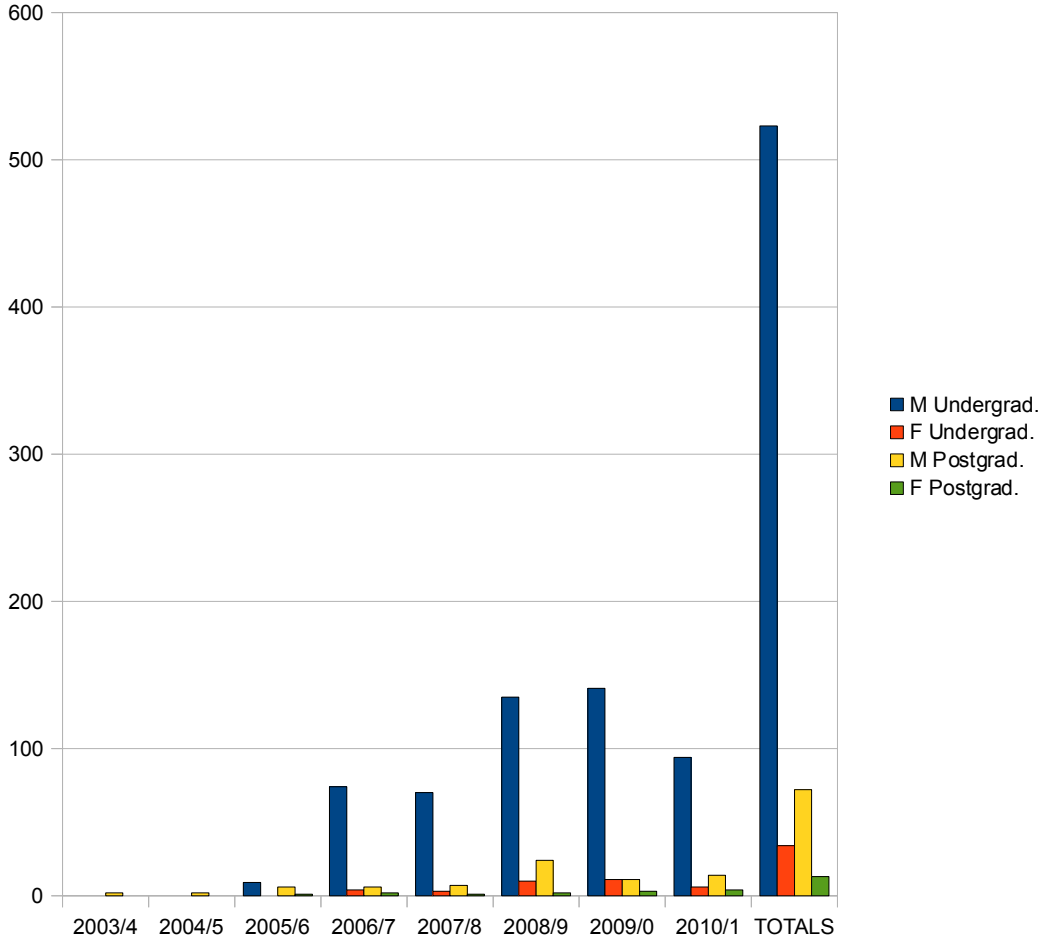


FIGURE 3

Question 1:

When you think of a cyborg, do you think in terms of he / she / it / none?

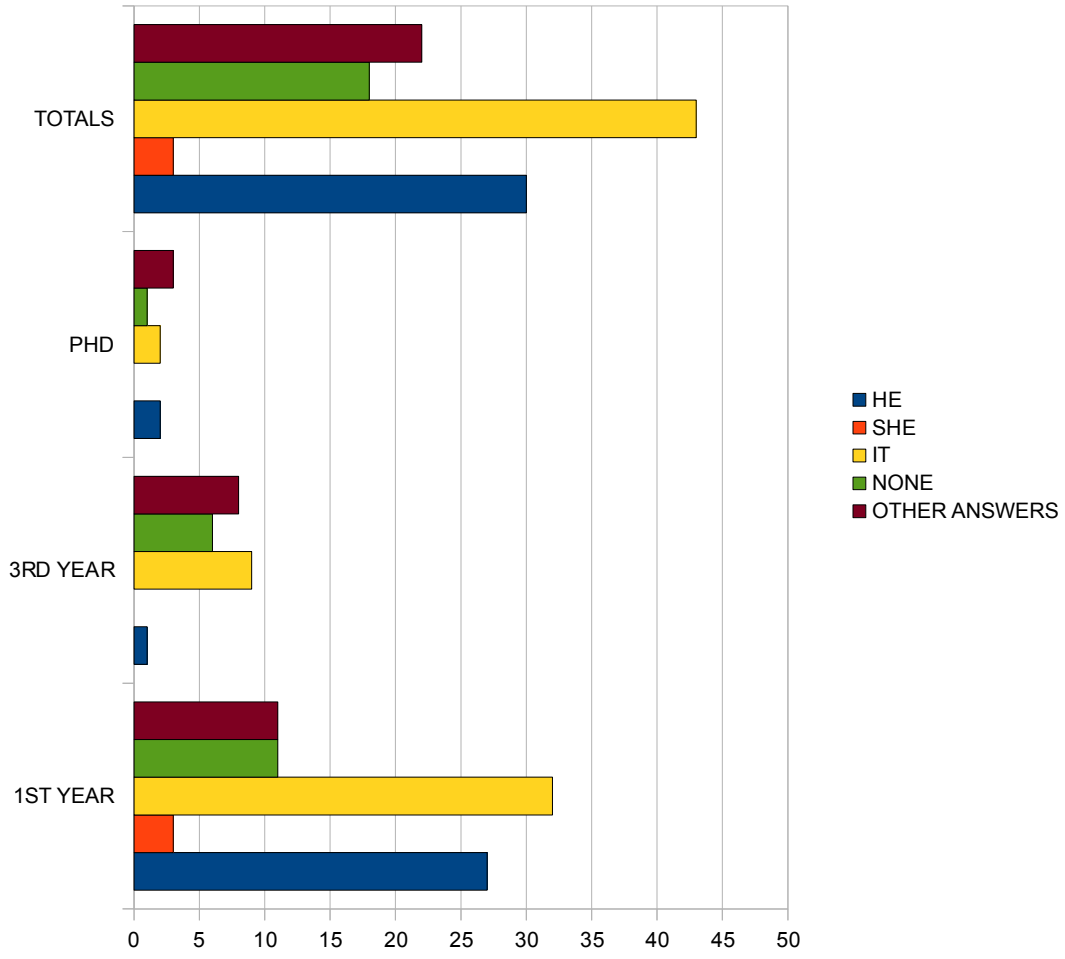


FIGURE 4

Question 2:

When you think of a robot, do you think in terms of he / she / it / none?

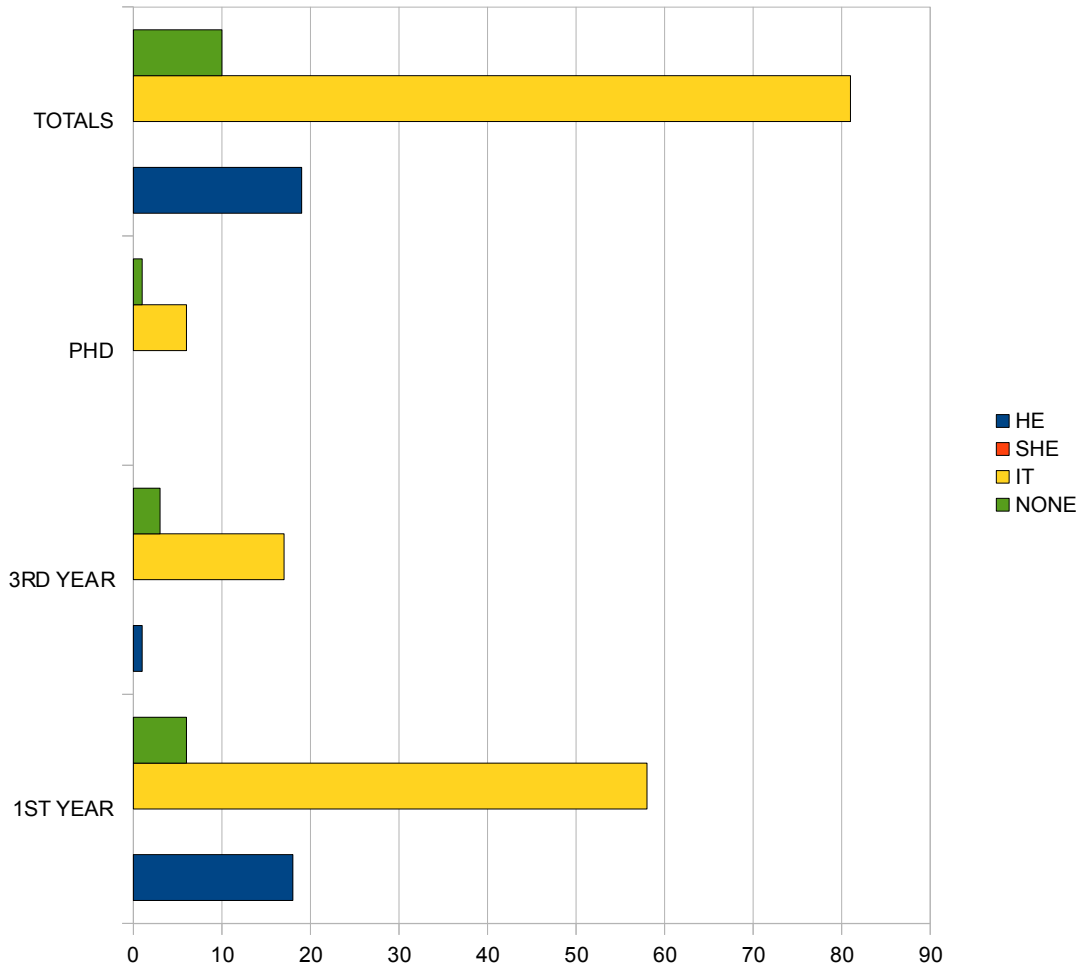


FIGURE 5

Question 3:

Do you think gender has any role in the production of AI?

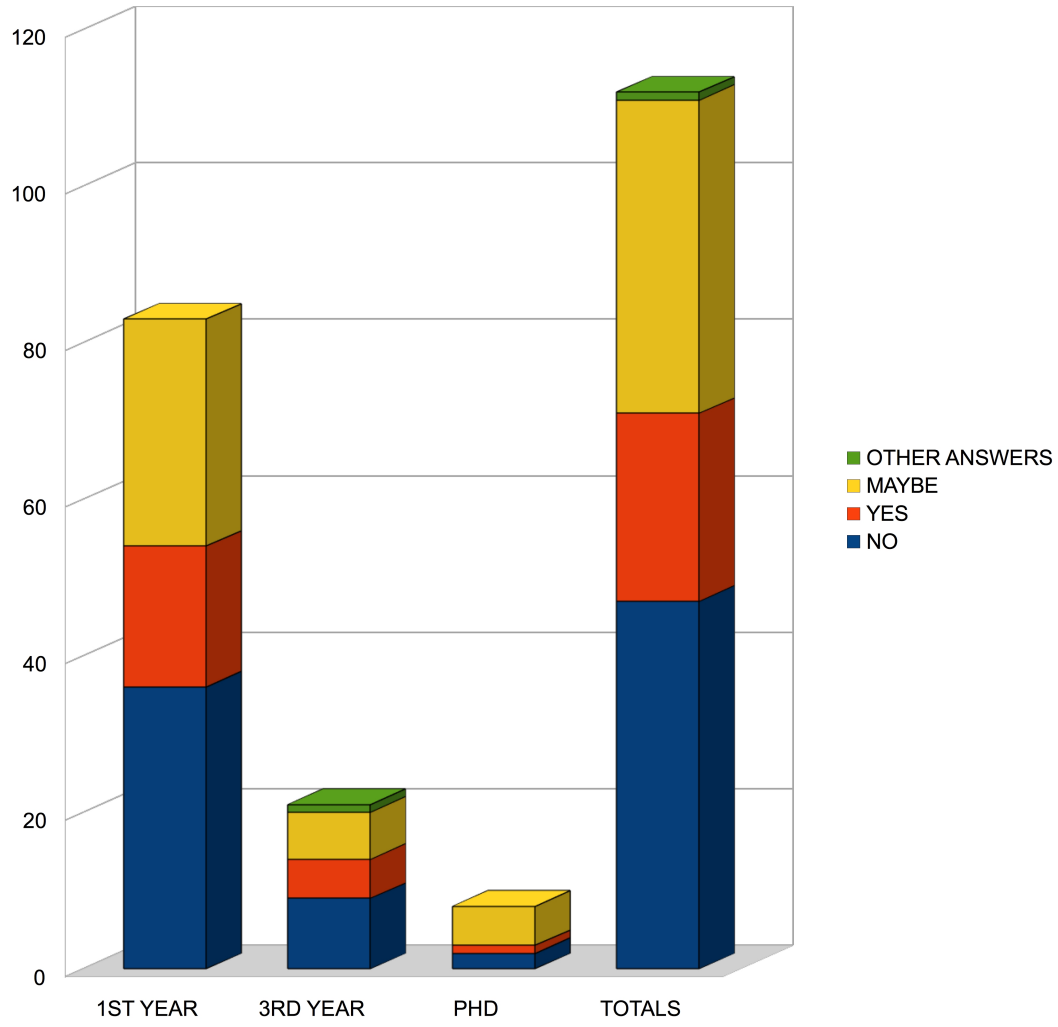


FIGURE 6

Question 4:

Do you think there is any difference

if a robot is conceived by a male or by a female scientist?

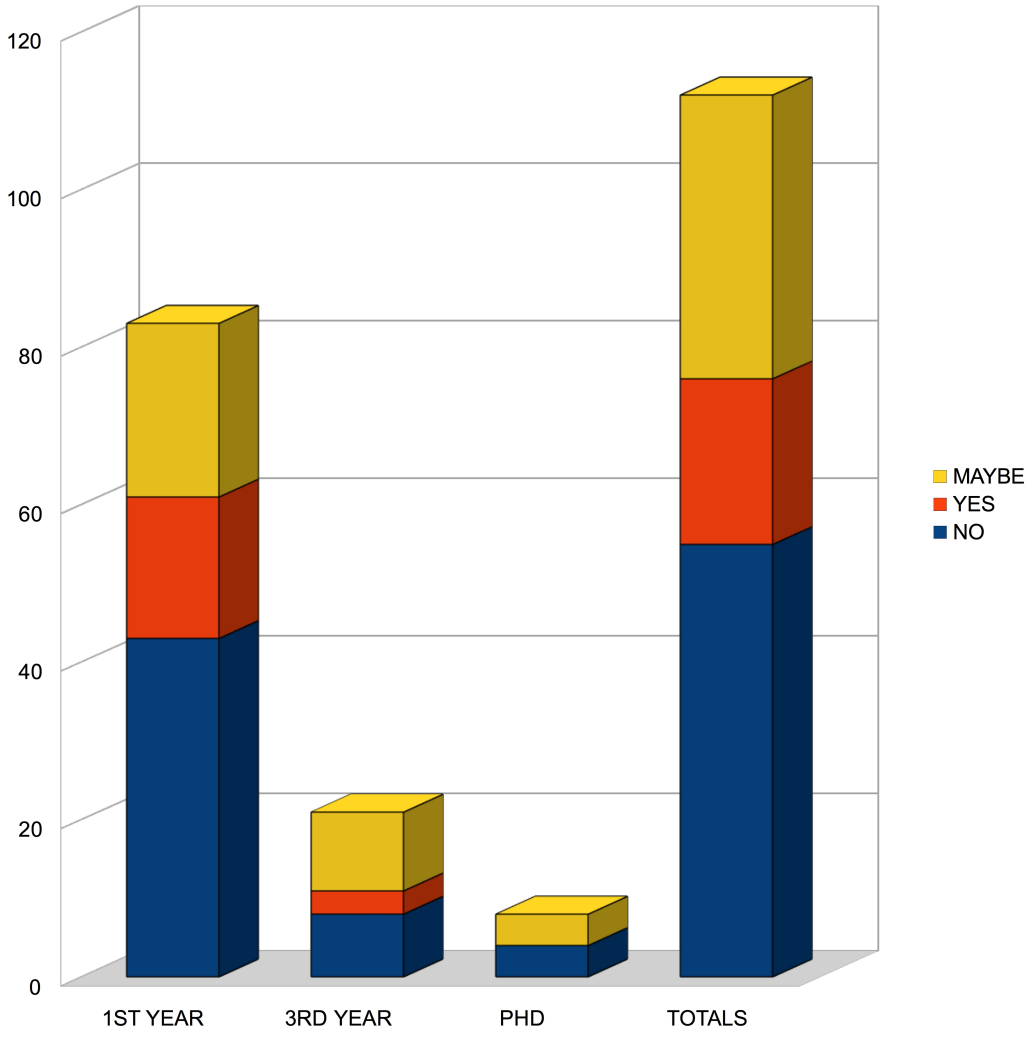


FIGURE 7

Question 5:

Do you think of gender as a significant category in the future?

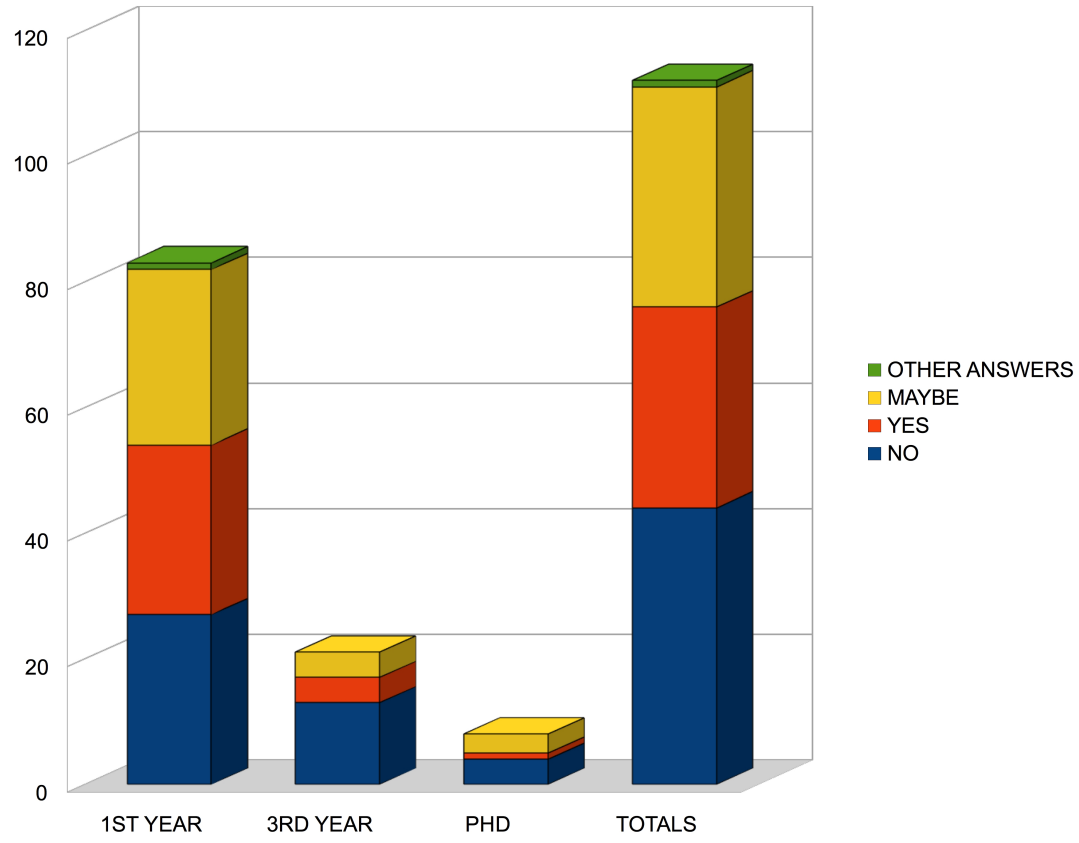


FIGURE 8

Question 6:

Do you think that one of the two biological sexes will be more advantaged by the creation of AI?

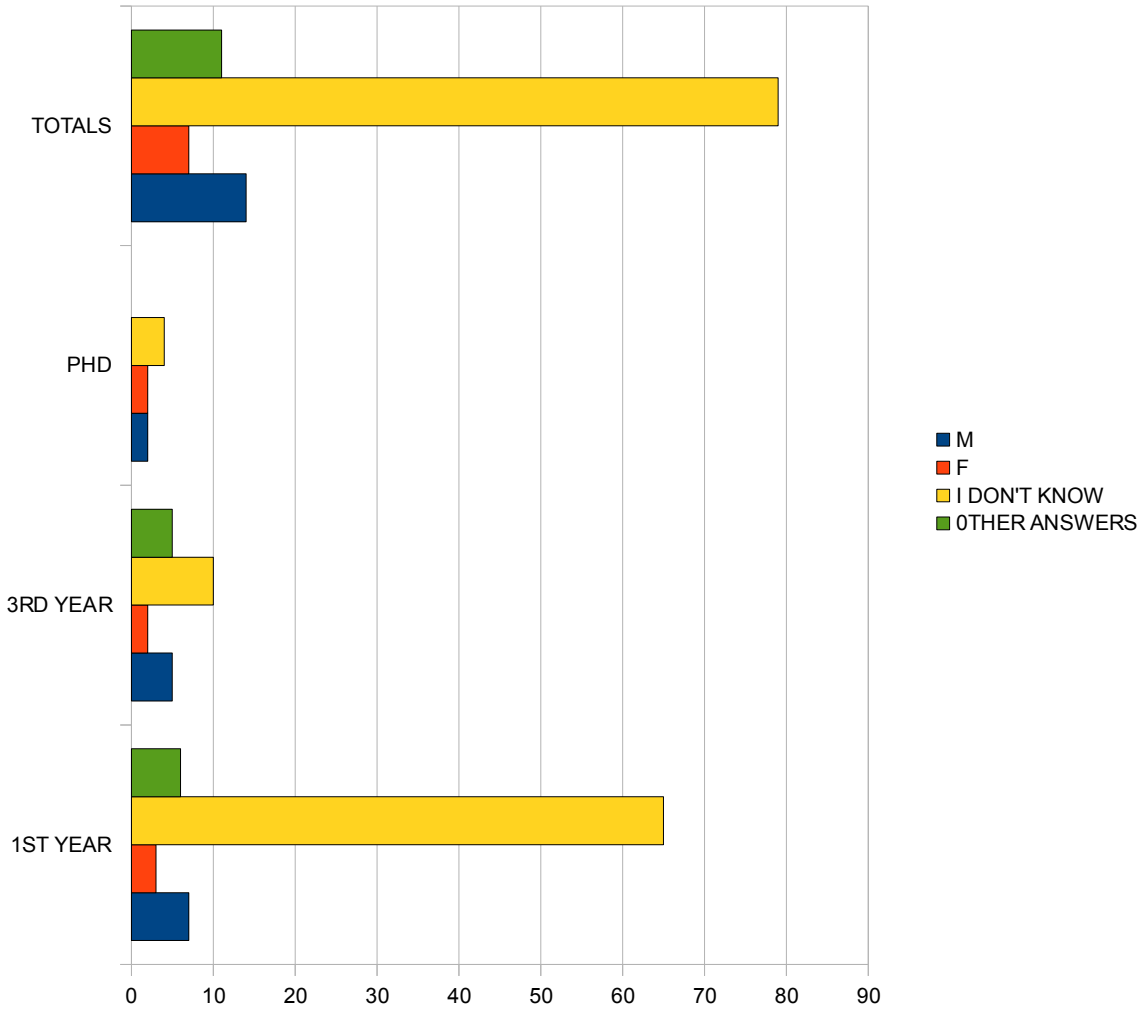
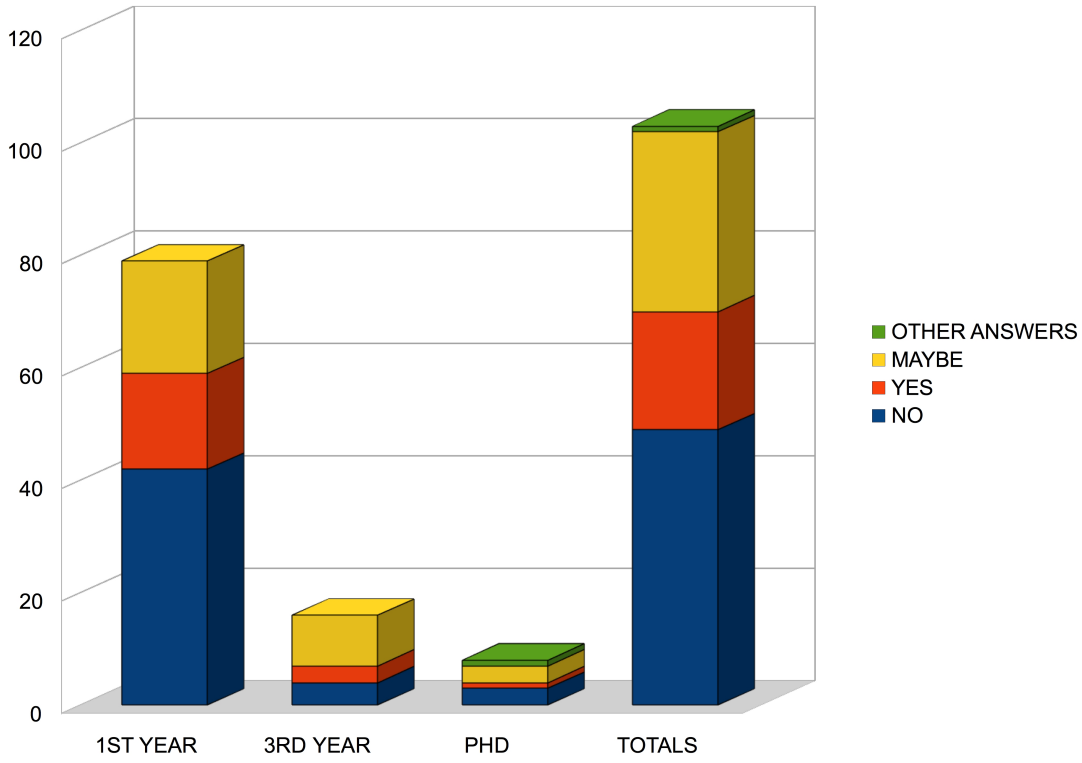


FIGURE 9

Question 7:

Do you think that concepts such as race and ethnicity will be significant in the development of AI?



APPENDIX 1

Towards A Posthumanist Methodology
A Statement

1. Introduction

In the emerging field of Posthuman Studies, extensive debate has been formulated on what is Posthumanism. The main focus has been directed towards the contents and meanings of a posthuman paradigm shift, while the methodology employed to reflect upon has hardly been disputed. The two aspects are not separated. The overcoming of dualisms called upon by Posthumanism includes the traditional divide between theory and practice. Posthumanism is praxis; it has to be comprehensive in its contents as well as in the way such contents are explored. In this statement, I will present Posthumanism, the reasons why posthuman theorists should reflect on methodology, and which kind of methodological risks they may encounter, with a special focus on essentialism[248]. I will also address what it entails to adopt a posthumanist methodology, and how a posthuman approach marks ground for a radical reflection in the field of applied philosophy and normative ethics. Note that the notions of "posthuman" and "posthumanist" are interrelated, but not synonyms. "Posthuman" applies to a broad field of studies, including advanced robotics, nanotechnology and bioethics. "Posthumanist" mainly refers to a shift in the humanistic paradigm and its anthropocentric *Weltanschauung*. A posthuman text shall imply a posthumanist perspective, and *vice versa*.

2. A Posthumanist Methodology

Generated from Postmodernism, Posthumanism seems to resist the notion of "method", and it actually does. A posthumanist "methodology", for lack of better word, finds its rhizomatic outlines in the postmodern critique of objective knowledge and absolute truth. It is in no way definitive, but dynamic, mutant, shifting; it has to be aware of the state of

248 Essentialism suggests that specific sets of characteristics apply to defined categories. It emphasizes fixed traits over discontinuities; and a static view of nature rather than the processes through which knowledge is constituted as such.

things in order to acknowledge current challenges and be open to possibilities. It resonates with Feyerabend's "Against Method" (1975), in the sense that its value is merely transitional and contingent. A posthumanist methodology has to be adaptable and sensitive; it has to indulge in its own semiotics, hermeneutics, pragmatics, metalinguistics, in order to be aware of the possible consequences which they might enact on a political, social, cultural, ecological level. Such effects are based on what Posthumanism theoretically states, as well as on how it expresses its own narratives; on what kind of traditions situates its claims, and which language uses to offer its contributions. To quote McLuhan "the medium is the message"[249]. A posthumanist methodology does not recognize any primacy to the written text; it is aware that Posthumanism can be performed in many ways. It is inspired by multi-sited ethnography for its "diffuse time-space" approach (Marcus 1995: 96), and by autoethnographic performance (Spry 2001) as a vehicle for relocating the "I" and the body in scholarly reflection. It is closely related to alternative ways of handing down history, such as oral history, proverbs and songs. A posthumanist methodology also involves distribution and divulgation. It sympathizes with the legal system of creative commons and open source to promote knowledge in a "share alike" way, in order to offer the generations to come an accessible cultural heritage.

3. Theoretical and Methodological Risks

In the praxis of a posthumanist methodology, there are many risks which can be encountered, such as the possibility of flattening difference (Luft 2009), and the difficulty of including non-human voices. At present, non-human standpoints are arduous to be engaged in, outside of an empathic approach by humans reflecting in an "as if" mode. In the future, such limitation might be overcome. For instance, biological AI and advanced robotics may become fully aware and able to express their phenomenological perception of existence in a human accessible-code, so ending the human solipsistic supremacy in the intellectual domain, and opening to the configuration of an actual posthuman

249 McLuhan 1964: 23.

methodology. In the meantime, while the possibilities related to non-human perspectives should be mentioned and recognized, it is crucial that posthumanist texts reflect the human experience in its full spectrum. This attempt can be pursued by quoting theorists and thinkers coming from different backgrounds and disciplines, offering alternative standpoints: from what has been historically portrayed as the human margins (hooks 1984), to what has been represented as the center; an intersectional approach should be adopted (Crenshaw 1989). I will now focus on an extremely common methodological fallacy in the current posthumanist debate and literature, which consists in losing the openness and inclusiveness of the posthuman approach by strictly referring to hegemonic traditions, a routine which becomes evident in the chosen references – note that I am only referring to the written tradition, although similar practices may be traced in other semiotic conventions.

3.1 Hegemonic Essentialism

By "hegemonic essentialism" I refer to the widespread habit of only referring to thinkers, artists or theorists who belong to the cultural hegemony. A text written by such standards might claim a posthuman content, but does not appear posthuman in its praxis. Its inner contradiction is obvious: while attempting to produce a discourse critical of humanism, it uncritically frames itself within those same traditions from which humanism developed. In self-limiting its approach, it reaffirms certainty and prevents to pursue epistemological pluralism. Within the field of Posthuman Studies, a surprisingly common example of hegemonic essentialism is a text which only quotes white male intellectuals. A related aspect to be noted, is that such a text usually does not situate its standpoints, but presents them as neutral and fit-for-all. Even if the writer is not aware of its political redundancy, such content is enacting a subliminal racist and sexist methodology, implying that no female, black nor black female thinkers are relevant enough for their contributions to be acknowledged. The academics who fall into this habit, often offer similar explanations: "these were the only theorists I could quote, and they happened to be white and male". Let's be clear. This is not a call for political correctness or affirmative action, but an

invitation to fully embrace the posthuman in the way we, as academics, do research. It is an invitation to investigate perspectives we usually leave aside, as an intellectual exercise towards a posthuman future which will radically stretch the boundaries of human comprehension. I will offer a personal example of the richness that such an attitude can convey.

I recently completed a study in which I wished to assemble a feminist genealogy of the posthuman in the visual arts[250]. As I explained in its methodological preliminaries, the reason was based on the fact that female artists are hardly mentioned in Posthuman Studies, with the exception of ORLAN[251]. After doing extensive research, I gathered a considerable amount of female artists who contributed to the configuration of posthuman aesthetics; at the same time, I realized that I had difficulty finding Black artists, while I had included a decent number of Asian, European and Latin American women. I talked about it with an African-American friend of mine; she suggested that I should try to think about the same subjects while changing my perspective (and consequently, my key-words). As a result, I stepped into Afrofuturism and the enormous body of related works. What seemed to be one of the most challenging parts of my research, became a source of inspiration which has enriched my own perception of Posthumanism. I am relating this experience in order to suggest that adopting a critical posthumanist methodology might be hard to pursue, but it can present unique insights. Its dialectic approach also facilitates an attitude of intellectual curiosity in constant search for knowledge, which enables the researcher, when discovering new knowledge, to perceive it and recognize it as such. Posthumanism ultimately exceeds academic theory and turns into a way of life.

250 I am referring to my article "A Feminist Genealogy of Posthuman Aesthetics in the Visual Arts" (forthcoming).

251 ORLAN was the first performer to employ plastic surgery for artistic purposes ("The Reincarnation of Saint-Orlan", 1990-1993). It is worth reporting that on her website (www.orlan.net), under "Frequently Asked Questions and Common Mistakes", it is stated that ORLAN is written in capital letters. On ORLAN's work, see Donger / Shepherd 2010.

3.2 Resistant Essentialism

Essentialism does not necessarily reflect an hegemonic standpoint, but it can arise from the place of the resistance: I will refer to this other form of essentialism as "resistant". Resistant essentialism is not as common as the hegemonic one, but it still presents the problem of setting boundaries, which do not pertain to the posthuman approach, unless reconciled for strategic reasons (Spivak 1987). As stated before, Posthumanism finds its roots in the radical deconstruction of the "Human". Women, people of colors other than white, gays and lesbians, differently abled people and many other outsiders challenged the hegemonic Discourse from the back door, from the margins, from the closet (Sedgwick 1990). They had to maintain a position of resistance in order to protect their ontological survival; their effort was crucial in assembling a genealogy of knowledge which recognized and validated their own existence. As a reaction to the hegemonic intellectual discourse, and in order to give space to voices which otherwise would have none, they often produced essentialist accounts, i.e. women-only or black-only. In some cases, the entire production of key authors who were considered responsible in authorizing the traditional symbolic hierarchy was banned. For instance, in "Let's spit on Hegel" (1970), feminist philosopher Carla Lonzi noticed that women were willing to place themselves in a subordinate position, if they held in high esteem those thinkers who promoted notions of female inferiority, or advocated the importance of postponing feminist demands to other more impelling targets. Consequently, Lonzi claimed a theoretical space free from uncritical respect towards the big names, such as Marx, Freud, Lenin. This kind of approach, which may be seen as a philosophical antecedent of the punk anti-authoritarian attitude, proved vital in producing fresh knowledge and insights, without the ghosts of the intellectual founding fathers silencing the voices of the new subjects.

3.3 Neither Resisting, nor Hegemonizing

These two type of essentialisms – the hegemonic and the resistant – do not equally carry the same amount of theoretical and methodological risks. In the West, essentialist accounts coming from the perspective of the resistance have been officially recognized only since the Seventies. The theorists of such accounts had to be deeply aware of the hegemonic discourses they were resisting, so they could be considered "bicultural", as pointed out by the standpoint theory and the elaboration of the concept of "strong objectivity" (Harding 1991). Furthermore, such theorists strategically situated themselves, as a response to the universalism of traditional writings. Resistant essentialist writers actually shaped the critical tools which allowed the integral deconstruction of the "Human" enacted by Posthumanism. They are mentioned here because the posthuman approach might encourage them to leave the safe, but still marginalized, position of the resistance, to find a theoretical environment which should not include their views for conservative reasons, in order to protect them from being ignored and erased, but should merge with them and think through them, as means of unique intellectual investigation, necessary to offer deeper and less partial narratives.

On the contrary, hegemonic essentialist accounts (typically, the ones giving full primacy to the symbolic Western white man) have been produced since the beginning of recorded civilization and presented as objective truth. They seem to possess the phoenix capacity of being reborn from their own ashes, surviving their own deconstruction and foundational critique: there should be much more attention towards avoiding such accounts, since the risk of recreating them is very high. Falling into the white male essentialist mode means choosing a position of illusionary intellectual comfort (the *ipse dixit* regime as an easy way to validate one's own claims), while losing the challenge of the posthuman perspective. Ultimately, Posthumanism should not position itself in the hegemony nor in the resistance, but it should promote a dynamic openness which reflects its intellectual and existential inquiry. If posthuman theorists are truly committed to

envisioning the future, they first need to be aware of the fact that the future is already present, and that any biases will hold them back and make their vision less accurate.

4. Conclusions

Posthumanism should be performed in a way which expresses its full meanings and ambitious purposes not only by paying lip service to a new fashionable academic trend, but through a research which finds in the difference its theoretical kernel. Posthumanism has to acknowledge the whole human experience in order to be receptive to the non-human and be open to unknown possibilities. Such inclusiveness must be reflected in its methods. A posthumanist methodology should not be sustained by exclusive traditions of thought, nor indulge in hegemonic or resistant essentialist narratives. It should be dynamic and shifting, engaging in pluralistic epistemological accounts, not in order to comply with external requirements of political correctness, but to pursue less partial and more extensive perspectives, in tune with a posthuman future which will radically challenge human comprehension. In so doing, Posthumanism may ultimately become a mode of existential inquiry to be applied in everyday life.

CONCLUDING REMARKS

Posthuman Agency

Philosophical Posthumanism, and more in general Posthumanism, can be counted as a theoretical philosophy of the difference, which demystifies any ontological polarization through the postmodern practice of deconstruction, thus announcing its modes as a post-dualism. In this dissertation, Posthumanism has been defined not only as a post-humanism and a post-anthropocentrism but, more broadly, as a post-centrism and a post-exclusivism: a "post" which is constantly opening possibilities and does not comply with hierarchical standpoints. In Part 1, any assumptions on human primacy or exceptionalism have been undermined in three levels of deconstruction. I have first emphasized the deconstruction of the human: the human is not one but many. I have then expanded my investigation to a second level, re-accessing the bio-realm from a post-anthropocentric perspective; on a third level, I inquired into a physics understanding of matter, destabilizing any reductionist approach, and rethinking existence from a non universe-centric perspective. Such an onto-epistemic extension is not sustained through assimilations, but through recognitions. Posthumanism is an empirical philosophy of mediation, which offers a reconciliation of existence in its broadest signification: all matter is vibrating energy. Evolution works through technologies of differentiation, which do not manifest in any homogenization of processes. Nature is technological, technology is natural.

Posthumanism offers precious insights to relate, not only, to the singularitarian openness of the possibilities contemplated within the contemporary developments of science and technology; but also, to the ontological potentials following the discoveries and hypotheses postulated within the field of Physics. Posthumanism can be perceived as an existential awareness which exceeds the notion of a one-dimensional becoming, accepting the challenge of the physics hypothesis of the multiverse. Humans, and any other manifestation of being, are perceived as nodes of becoming in a material network; such becomings operate as technologies of the multiverse, as modes of revealing, thus re-accessing the ontological and existential significations of technology itself. Within a

pluralistic monism, or a monistic pluralism, any manifestation of being can relate to each other (the monistic character), but it cannot be assimilated nor reduced to the other (the pluralistic character). Within this type of scenario, any type of essentialist presumptions or intrinsic biases represents irredeemable obstacles to the fluidity of the material as well as biosemiotic possibilities of such networks.

Posthumanism recalls *agency;* its investigative fields relates to *Futures Studies* and includes bioethics, but does not resolve in them. Currently, the future reflected upon in the West is mostly a technological one. The ontological dimension of technology is a crucial issue, when it comes to a proper understanding of the posthuman agenda; but the posthuman, different from the transhuman approach, does not comply with any technocentric attitude. While the transhuman emphasis on the techno-realm risks to create a new exceptionalism (the one of the machine), the openness of the posthuman approach is not hierarchical, and does not locate the deconstruction of the human/machine dualism before others. For instance, the posthuman can be seen as the philosophical approach which suits the informal geological time of the anthropocene: in the posthuman perspective, the ecological dimension is not separated from the technological one, and technology is not reduced to its technical endeavors. Feminist and womanist studies have exposed the racist and sexist frame within which the discourse on *techné* has been historically formulated. In this sense, relating the posthuman to the emergence of the cyborg, we have asked in Part 2: is the "Post-Human" a "Post-Woman"?

The questionnaire results offered revealing points on this respect. For instance, while the cyborg was thought of as neutral or male by the majority of respondents, none of them thought of robots in feminine terms. On the other side, the results emphasized the hermeneutical role of gender: in the future, even if sex will have no biological or physiological relevance for robots, gender may be reaffirmed, for machines, in their process of identity formation, and for humans, to better interact with the machines. One of the main risks run by humans in approaching artificial intelligence through the anthropomorphic paradigm, consists in turning the robotic difference into a stigma for

new forms of exclusions, based on how far such a difference can be placed from the human norm. To osmose with the robot ontology, humans have to first undergo a radical deconstruction of the human as a fixed notion, emphasizing instead its dynamic and constantly evolving side, and celebrating the differences inhabiting the human species itself.

These are the reasons why, in the context of contemporary thought, Philosophical Posthumanism represents a promising approach to reflect upon the present, the past, and on possible futures. On the one hand, Posthumanism eviscerates the meanings and potentials of the onto-epistemological passage from the human to the post-(human); on the other, it highlights the importance of the philosophical, political and social deconstruction of the human, in order to develop inclusive, mediated and comprehensive modes, which are, at the same time, situated. Posthumanism must be rooted in an extensive critical account of what it means to be human, providing a *terminus a quo* from which imagining strategic posthumanities which call into question the traditional discourse on "neutral" power. Philosophical Posthumanism dismisses the need to establish the symbolic "other", once the human has been recognized as the others within. It offers a theoretical invitation to think inclusively, in a genealogical relocation of humanity within multiversality, and alterity within the self. In this sense, it can be ultimately claimed that, after all, humans have always been posthumans.

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ACKNOWLEDGMENTS

My most sincere thanks for their invaluable intellectual and human support to: Prof. Francesca Brezzi, Prof. Kevin Warwick, Prof. Stefan Lorenz Sorgner, Prof. Achille Varzi, Prof. Evi Sampanikou, Prof. Luisa Passerini, Prof. Jean-Marie Vivaldi, Dr. Natasha Vita-More, Prof. David Roden. All my love and gratitude to: Ellen Delahunty Roby, Renata Prato, Thomas Roby, Ugo Ferrando, Luciana Salomone and the Department of Philosophy at the Universitá di Roma Tre.